Utah Firewise Living

UTAH
LIVING WITH
FIRE

A Wildfire Preparation Guide

Why Prepare

Wildfire preparation increases the potential that homes will survive wildfire. By preparing homes and property ahead of time, we can better protect our homes, investment, surrounding area and families. If each of us does our part, we can collectively create a safer environment.

Current Conditions

Every year, more people are moving into fire prone wildland urban interface or WUI areas. The "wildland urban interface" (WUI) is where development has occurred in wildland settings. This general movement to WUI areas has placed more homes, property and lives at risk. Why? There are not enough firefighting resources to protect every home under all situations.

Recent conditions, including drought, insect infestations and lack of fire (which normally cleans out densely vegetated areas) have resulted in dangerously fire-prone WUI regions. These circumstances have forced WUI residents to take additional precautions.

Prepare House To Survive Wildfire On Its Own

By moving into wildland urban interface areas, residents assume additional responsibilities for wildfire preparation and protection. This general movement out of urban areas has stretched already limited firefighting equipment and personnel. Many counties are not able to provide adequate firefighting resources for all WUI residents and communities. In addition, many WUI houses are only used part time, and chances are good that owners will not be present during wildfire.

for Wildfire?

Insurance Situation

Due to extraordinary wildfire years in several states, insurance companies are tightening their requirements. Some insurance companies are no longer writing policies in wildland urban interface areas. Other companies have developed strict requirements to obtain and maintain insurance coverage. Rebuilding a home in an area after a wildfire may not be appealing. Depending on the local vegetation, it may take many years for it to grow back.

"Residents need to understand that there will never be enough firefighting equipment, fire fighters or emergency vehicles to protect every house during severe wildland fires...
even when things go well, it is not unusual for family life to be disrupted for a year or more while rebuilding and returning to a new home. It's even more disconcerting to learn that the insurance company will pay for only the replacement costs of the home and personal property." From *Assessing Wildifire Hazards in the Home Ignition Zone* (NWCG Publication HIZ-SWB-2006).

The Limitations of Wildland Firefighting

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 suppression. Three percent of the time wildfires burn so intensely that there is little firefighters can do. Under extreme wildfire conditions, even with the use of airtankers and helicopters, some homes will not survive.

Residents who prepare their homes and property to withstand wildfire before fire season, increase the chance that their investment is not lost.

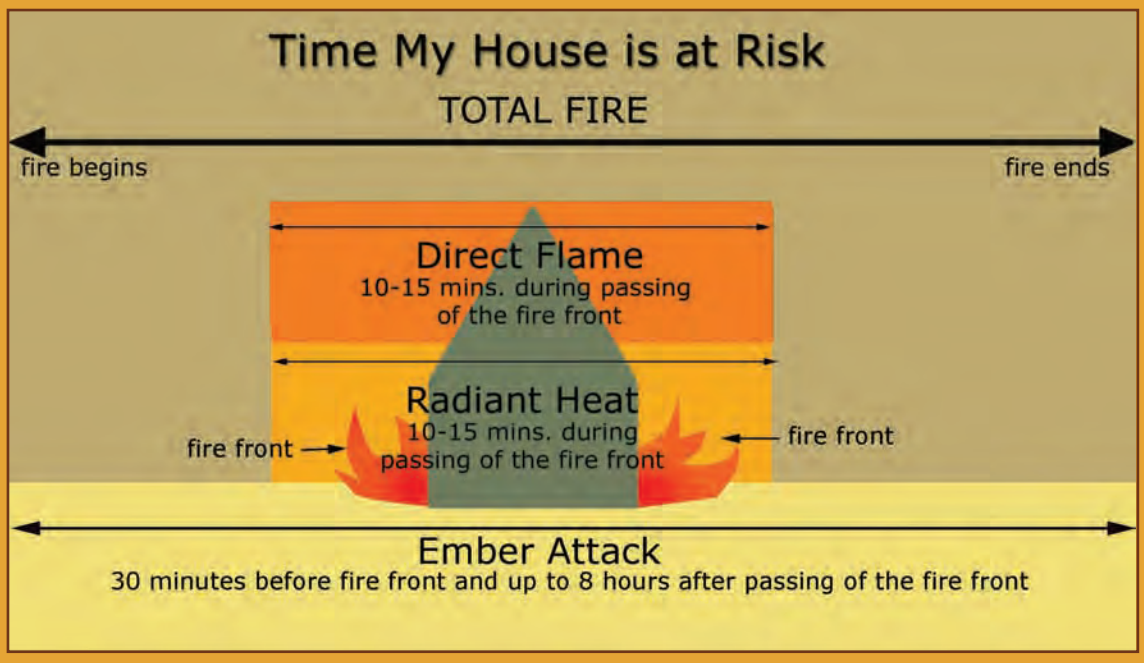
New research is helping us to better und

It is important to understand how fire can damage your house and how you can lessen the possibility of its ignition. In the past, most people thought direct flames were the only way that structures ignited. Recent research has shown differently.

The three primary ways that wildfire damages houses are:

- **Radiant heat:** All fire produces radiant heat. This is the heat you feel from a fireplace or campfire. Given enough time and energy, radiant heat can ignite an object without direct contact.
- **Direct flames:** This occurs when flames directly touch and ignite a structure.
- **Ember attack:** Ember attack occurs during a wildfire when ignited fuels like dry grass, twigs and leaves become airborne and land on or around a house before, during or after the main fire front has passed. The flame front of a wildfire is the leading edge of the fire where continuous flaming combustion is taking place.

How long your house can be at risk from all three methods.



erstand how houses burn down in a wildfire

Radiant

Embers

Direct

The Role of Wind in Ignition

Most catastrophic wildfires are driven by high winds. Many people who live in fire-prone areas know that the fire risk goes up significantly during high winds. Wind can move fire embers miles from a flame front, or the leading edge of the fire, putting the house at risk for catching fire.

Wind can also change flame characteristics. Wind can increase flames from insignificant to substantial, or move vertical flames to horizontal flames, allowing flames to contact and ignite substances that ordinarily would not be ignited. For instance, enflamed tree branches can be moved by wind onto a wood shake roof, causing it to ignite a house.

High winds can move large items into windows, breaking them and allowing embers to draft into houses, causing interior items to ignite the house. High wind may also remove parts of roofs and walls, allowing embers to enter and set the house on fire.

RADIANT HEAT
How Radiant Heat Can Ignite houses

Radiant heat can be dangerous in several ways. Not only can it directly injure humans and animals, it can heat fuels like vegetation or woodpiles to the point that they can more easily be ignited by embers or direct flames.

The amount of radiant heat a wildfire can transfer to a structure depends on how far the fire is from the building and how long it stays there. Research has shown that it is impossible for radiant heat from wildfire to ignite a typical wood sided home from 100 or more feet away. In fact, in simulations, homes as close as 33 feet from a wildfire have survived if flames were not allowed to touch the structure. (*Michigan Wildfire Series Extension Bulletin,* April 2004, Michigan State University Extension)

Many factors influence whether a home ignites or not. **Factors like weather are beyond our control.** What we can control is the flammability of the house and the materials near the house. Homeowners in wildland areas need to understand the risks they are taking with dense vegetation, woodpiles and other stored flammables, and make informed decisions.

Research consistently shows that ember attack is the main way houses are set on fire during a wildfire.

DIRECT FLAMES

The time wildfire stays in one area depends on the amount of fuel, or combustible material, available. Typically this will be ten to fifteen minutes. Homes are at risk from direct flames for only this short time, but preparation for those few minutes of direct contact can make the difference between having a home once the flame front has passed or not. Direct flames typically impact a home because flammable materials are located next to, under or on top of the home.

By paying attention to the building materials used to construct your house (flammability level), the type and amount of vegetation you have next to your house (33 to 100 feet from your home), as well as the storage of flammables outside of the house, you can greatly impact the probability that your home will survive a wildfire.

EMBERS

How Embers Can Ignite Houses

Embers consist of light debris such as dry grass, leaves and twigs that have been ignited and become airborne. Embers can be blown long distances from a wildfire flame front creating additional fires when they land on other ignitable surfaces.

This mode of spreading fire is the primary way that structures catch fire during a wildfire. Because wildfires produce so many embers that can be moved by wind, embers can attack homes before, during and after a flame front reaches a home. A house is at greater risk for a longer time from ember attack than from radiant heat or direct flames. See graphic on page three.

It makes sense, then, to prepare a house and the surrounding vegetation to be as resistant to ember attack as possible. One way to discover where a house is vulnerable to ember attack is to study where airborne leaf litter and other debris collect around a structure. Such places are a good indicator of where embers will land and accumulate during a wildfire. Typical places include gaps in roof cladding, exterior walls and windows, in gutters, at the base of window and door jams, on decks, porches, stairs, and in piles of wood and other flammable materials.

During wildfire, embers are typically drafted into tight areas where they can collect, smolder and ignite flammable material. By discovering where a house is vulnerable to ember attack and conducting preventative actions, a house has an increased chance of surviving a fire. These actions include cleaning gutters, caulking around door and window jams and using fire resistant materials for house appendages like decks, porches, attached fences and stairs. Keep all areas around the house free from ignitable material like leaves, twigs, dried grass and flammable doormats. Store flammable piles like wood and building materials at least 30 feet from the structure.

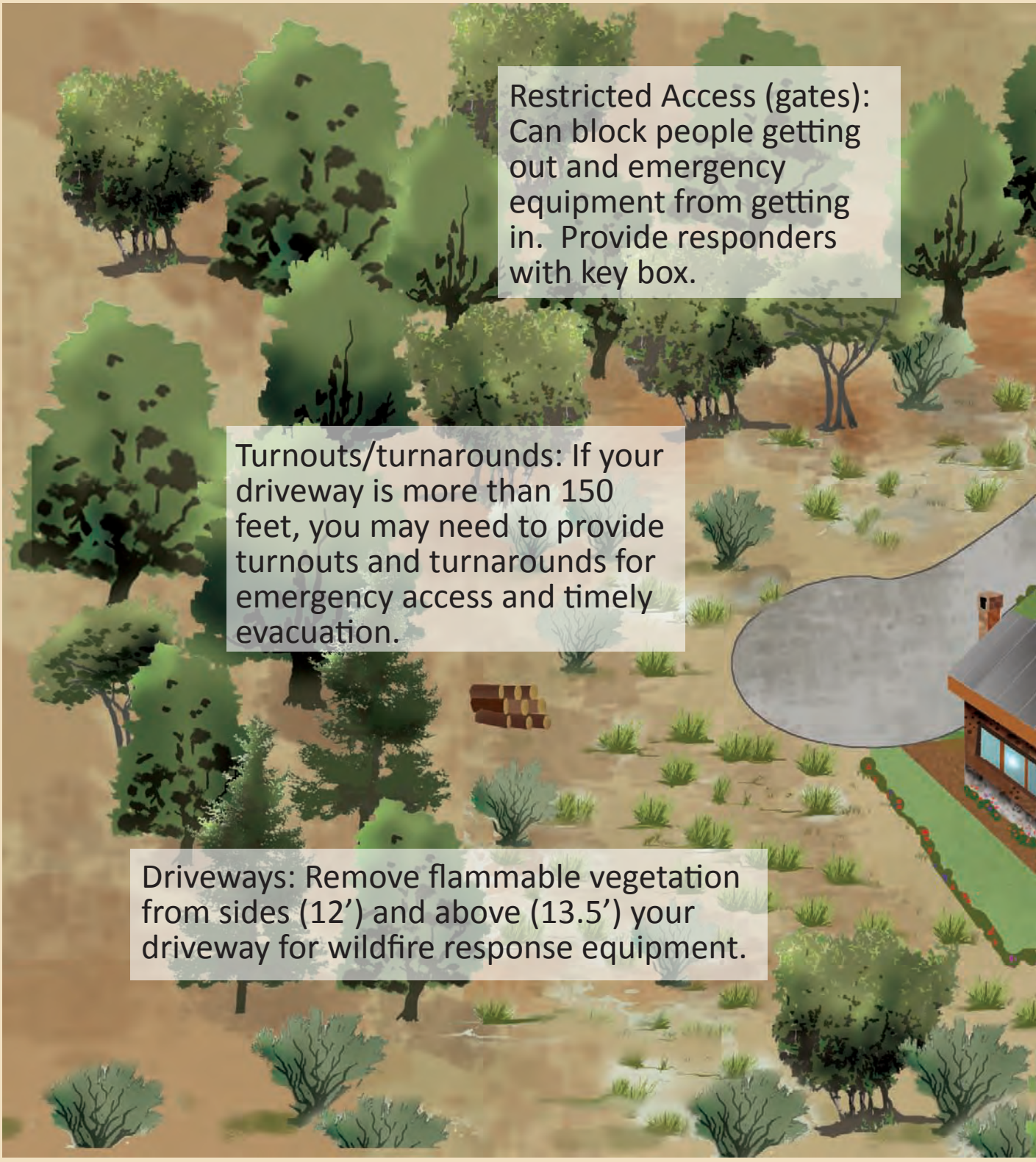
By reducing the flammability of construction material and maintaining areas where embers may collect, homeowners are more effectively preparing for wildfire. Reducing the amount of flammable vegetation around the house and planting fire resistant vegetation can also dramatically improve the chances that a house will survive ember attack. This will be discussed in detail later in this brochure.

What Can Homeowners Do to Prepare for Wildfire?

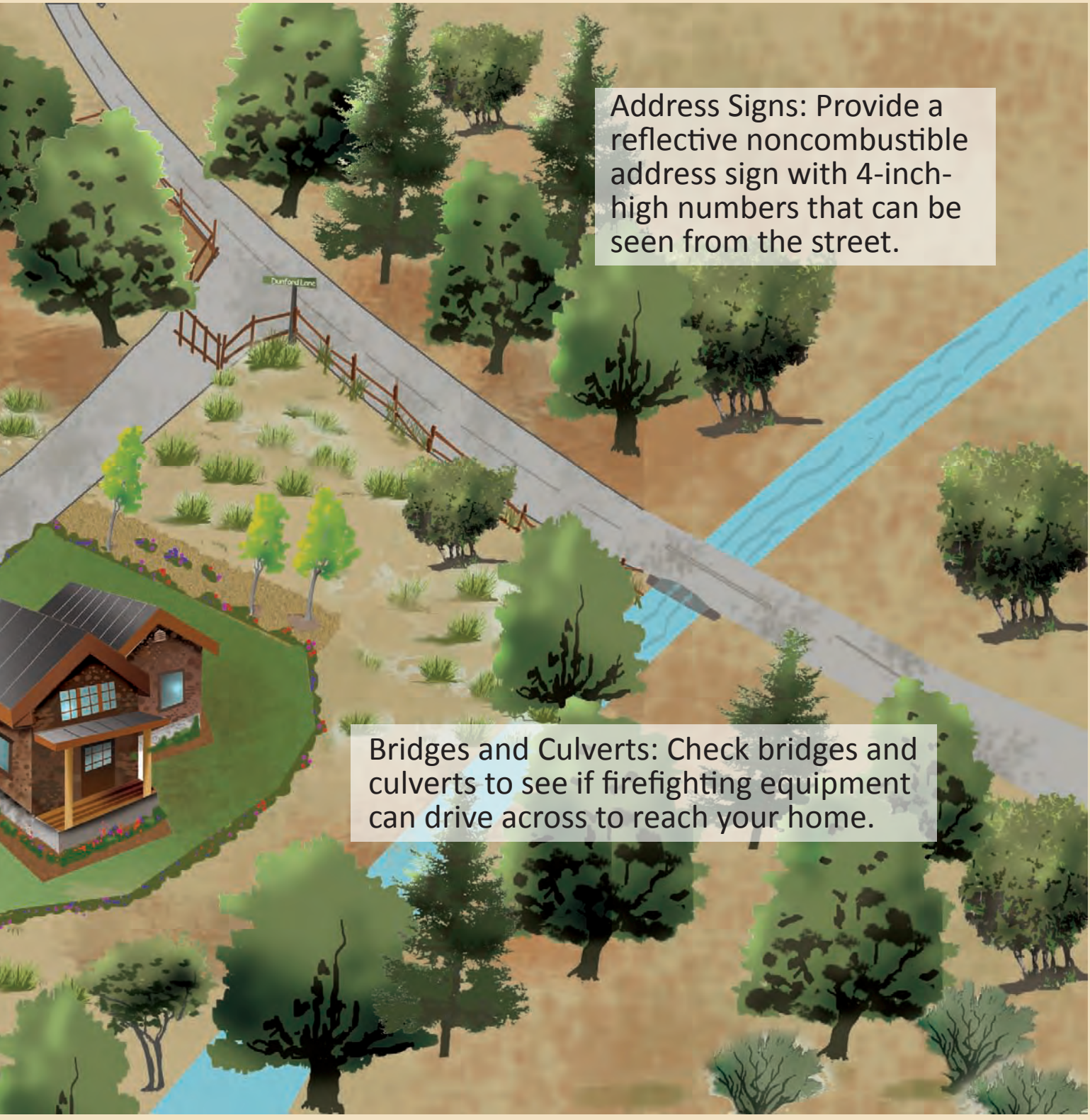
"It is the ignitability of a home in relation to its immediate surroundings that has the most influence on home damage or loss."

From: *Assessing Wildfire Hazards in the Home Ignition Zone Student Book*

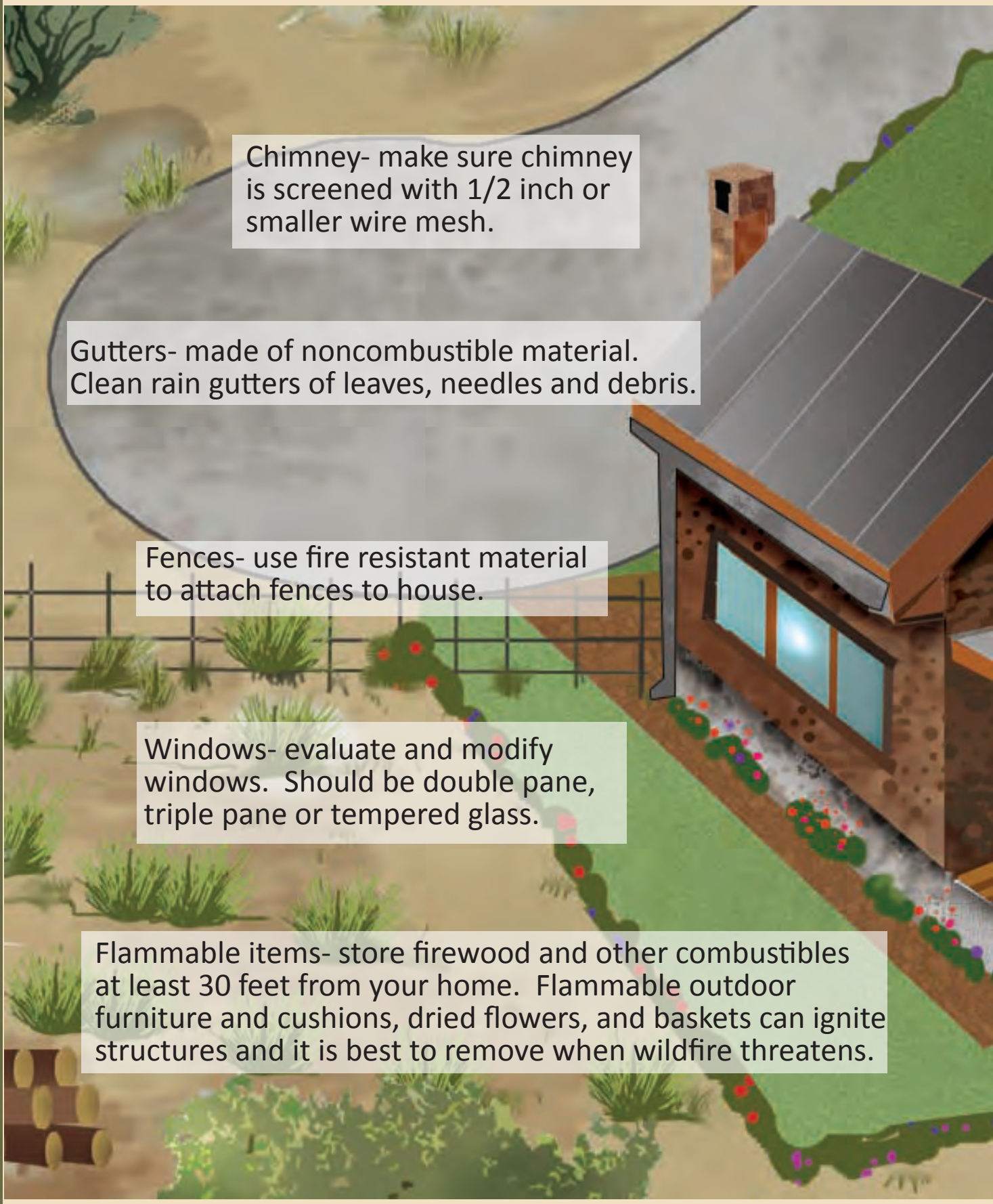
Access Helps emergency responders to locate yo
and firefighters are available, attending to the follow
protection.



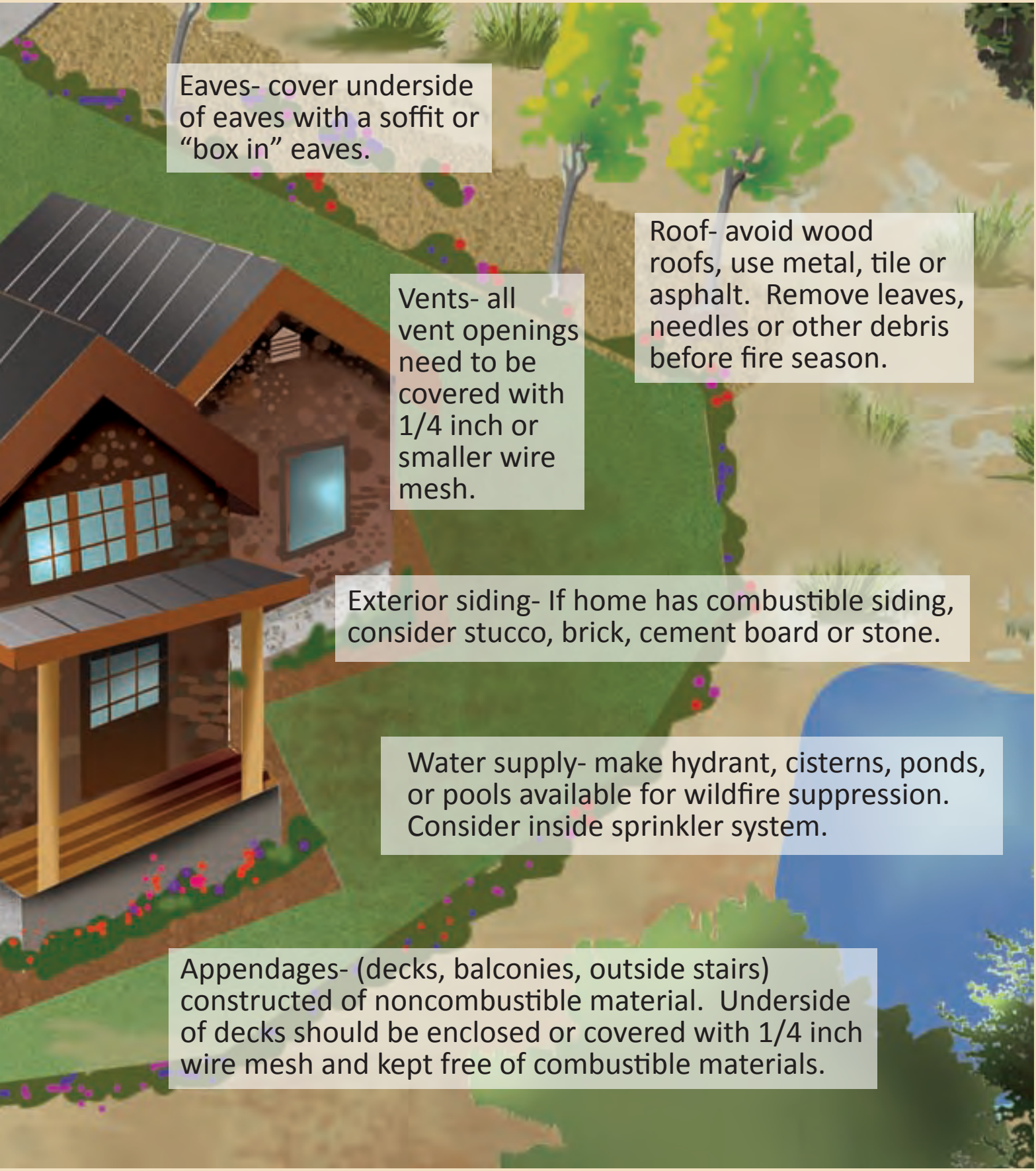
ur home and improve your evacuation. If equipment
ing items will increase the chance of receiving firefighting



Construction Limit ways

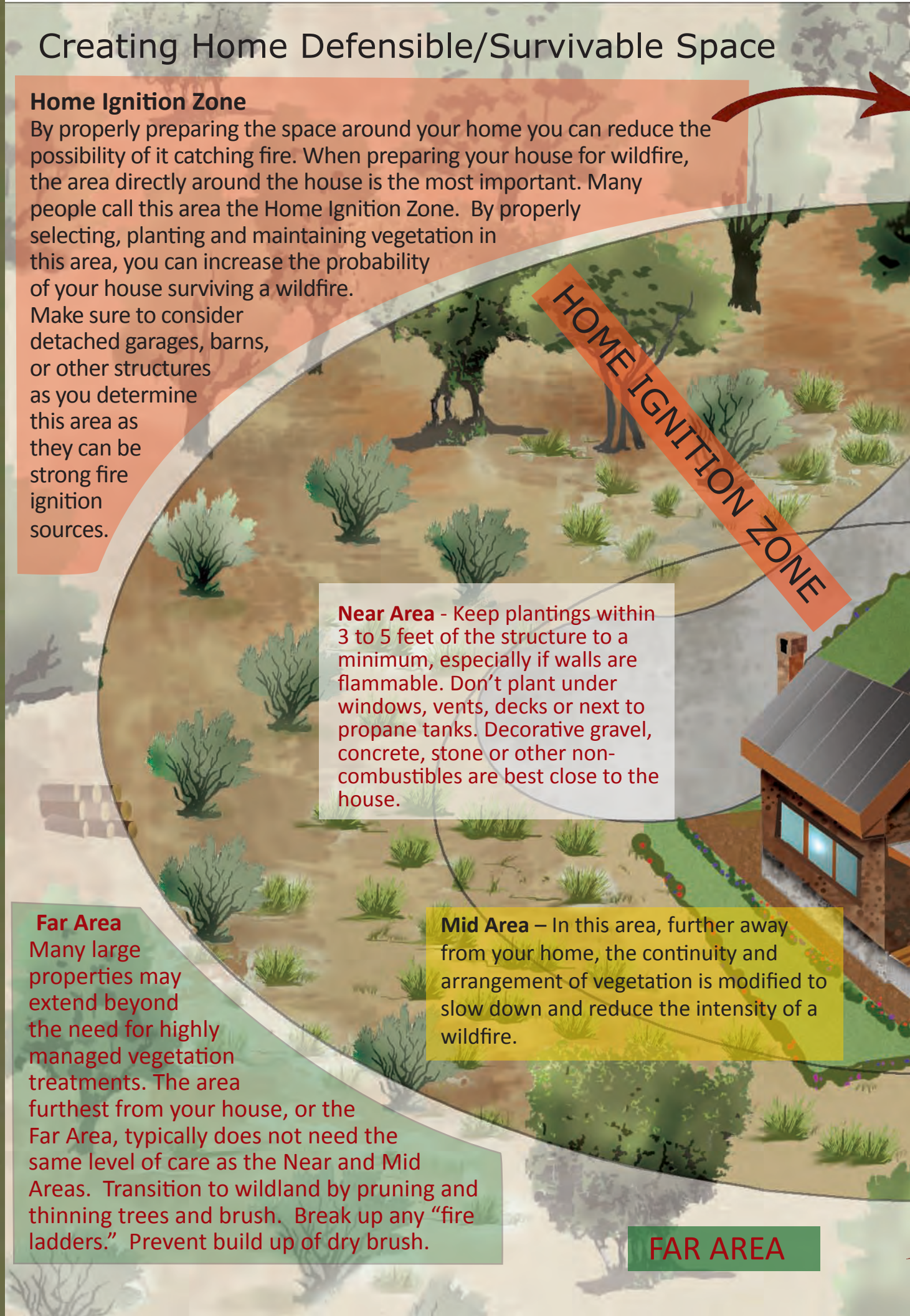


fire can ignite your home



Creating Home Defensible/Survivable Space

Home Ignition Zone
By properly preparing the space around your home you can reduce the possibility of it catching fire. When preparing your house for wildfire, the area directly around the house is the most important. Many people call this area the Home Ignition Zone. By properly selecting, planting and maintaining vegetation in this area, you can increase the probability of your house surviving a wildfire. Make sure to consider detached garages, barns, or other structures as you determine this area as they can be strong fire ignition sources.



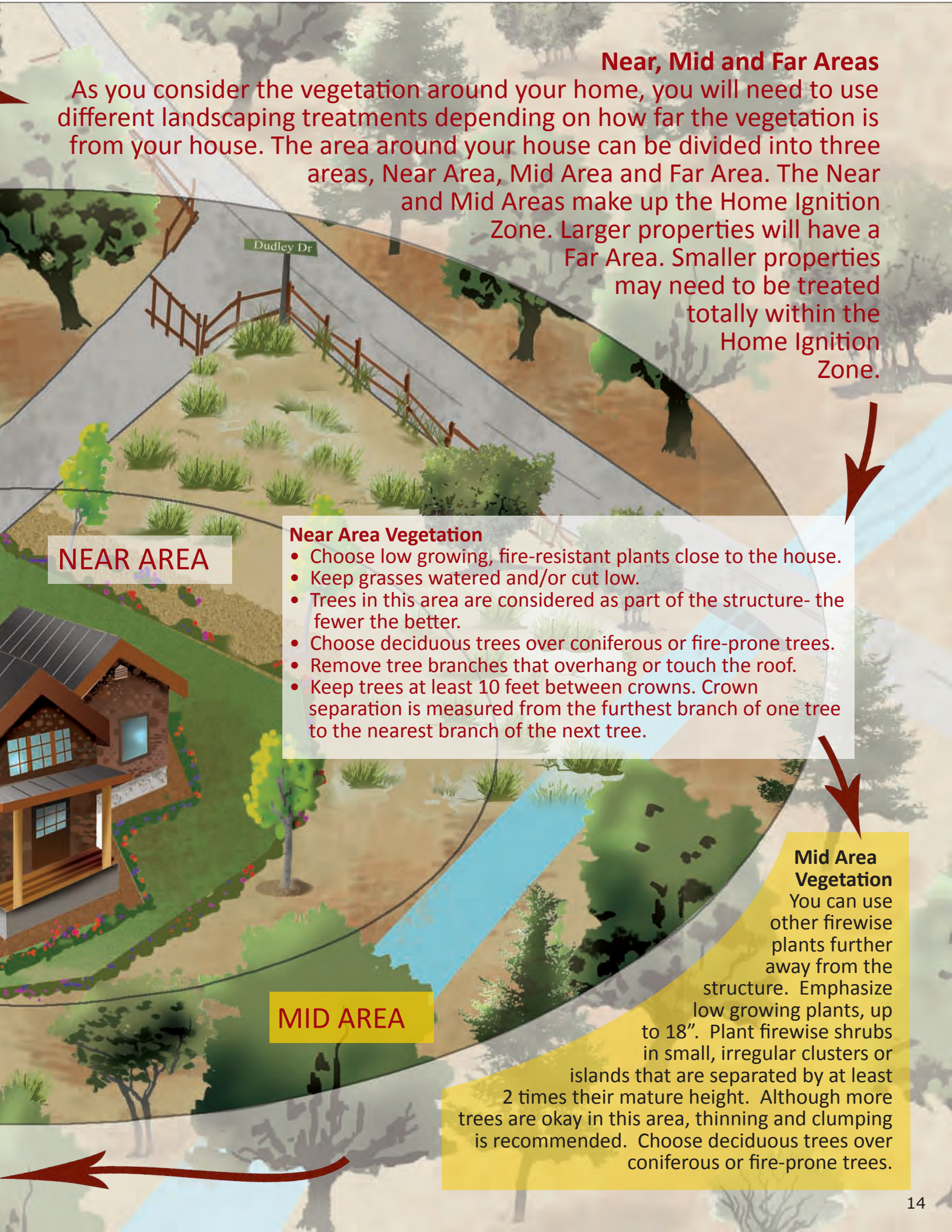
Near Area - Keep plantings within 3 to 5 feet of the structure to a minimum, especially if walls are flammable. Don't plant under windows, vents, decks or next to propane tanks. Decorative gravel, concrete, stone or other non-combustibles are best close to the house.

Mid Area – In this area, further away from your home, the continuity and arrangement of vegetation is modified to slow down and reduce the intensity of a wildfire.

Far Area
Many large properties may extend beyond the need for highly managed vegetation treatments. The area furthest from your house, or the Far Area, typically does not need the same level of care as the Near and Mid Areas. Transition to wildland by pruning and thinning trees and brush. Break up any "fire ladders." Prevent build up of dry brush.

Near, Mid and Far Areas

As you consider the vegetation around your home, you will need to use different landscaping treatments depending on how far the vegetation is from your house. The area around your house can be divided into three areas, Near Area, Mid Area and Far Area. The Near and Mid Areas make up the Home Ignition Zone. Larger properties will have a Far Area. Smaller properties may need to be treated totally within the Home Ignition Zone.



Near Area Vegetation

- Choose low growing, fire-resistant plants close to the house.
- Keep grasses watered and/or cut low.
- Trees in this area are considered as part of the structure- the fewer the better.
- Choose deciduous trees over coniferous or fire-prone trees.
- Remove tree branches that overhang or touch the roof.
- Keep trees at least 10 feet between crowns. Crown separation is measured from the furthest branch of one tree to the nearest branch of the next tree.

Mid Area Vegetation

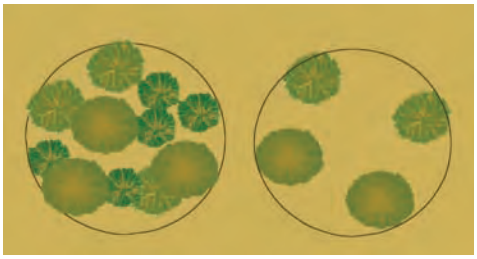
You can use other firewise plants further away from the structure. Emphasize low growing plants, up to 18". Plant firewise shrubs in small, irregular clusters or islands that are separated by at least 2 times their mature height. Although more trees are okay in this area, thinning and clumping is recommended. Choose deciduous trees over coniferous or fire-prone trees.

Remove Reduce Replace

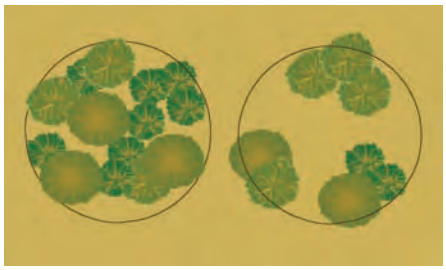
Remove, Reduce, Replace

For those homeowners who already have established vegetation, you can create a survivable space in your Home Ignition Zone by removing, reducing and replacing existing vegetation to slow or stop the spread of wildfire. Reducing and removing highly flammable vegetation and replacing them with fire-resistant or firewise vegetation increases the probability that nearby structures can survive most wildfires.

- **Remove** - all standing or fallen dead trees, shrubs, other plantings and any piled debris in the Home Ignition Zone.
- **Reduce** - the amount of trees (or fuels) by "thinning," "clumping" and "reducing ladder fuels."



Thinning



Clumping

Thinning

Thinning is the process of removing selected trees and leaving others. The goal of thinning is to reduce the number of overcrowded trees to create a healthier forest of more fire-resistant trees. This separation reduces the probability of fire spreading laterally from one tree to another. The amount and type of thinning depends on the type and density of trees.

Clumping

Clumping is the process of creating "islands" or "groupings" of trees or brush within open space. Clumping is used with certain trees and brush, i.e., oak brush that naturally grow in clumps. Clumping can reduce fire spread and improve vegetation health. In the Mid Area of the Home Ignition Zone, trees or clumps of trees should be spaced 20 to 30 feet apart.

Ladder Fuels

Reducing ladder fuels is a fuel reduction process that can help keep ground fire from moving into the crowns or the upper part of trees, creating a hot, fast-moving crown fire. First, remove and/or prune plants and shrubs that could help move fire from the ground to the crowns of trees. Then prune low-to-the ground tree branches (without leaving stubs) from trees to a height of 10 feet or roughly 1/3 the height of the tree.

Ladder fuels

Reducing Ladder Fuels

- **Replace-** flammable vegetation with more fire resistant trees, shrubs, ground cover, grasses or hardscape such as decorative gravel, concrete, stone or other non-combustibles. Valuable resources include publications like *Firewise Landscaping for Utah* and websites such as **www.firewise.org.**

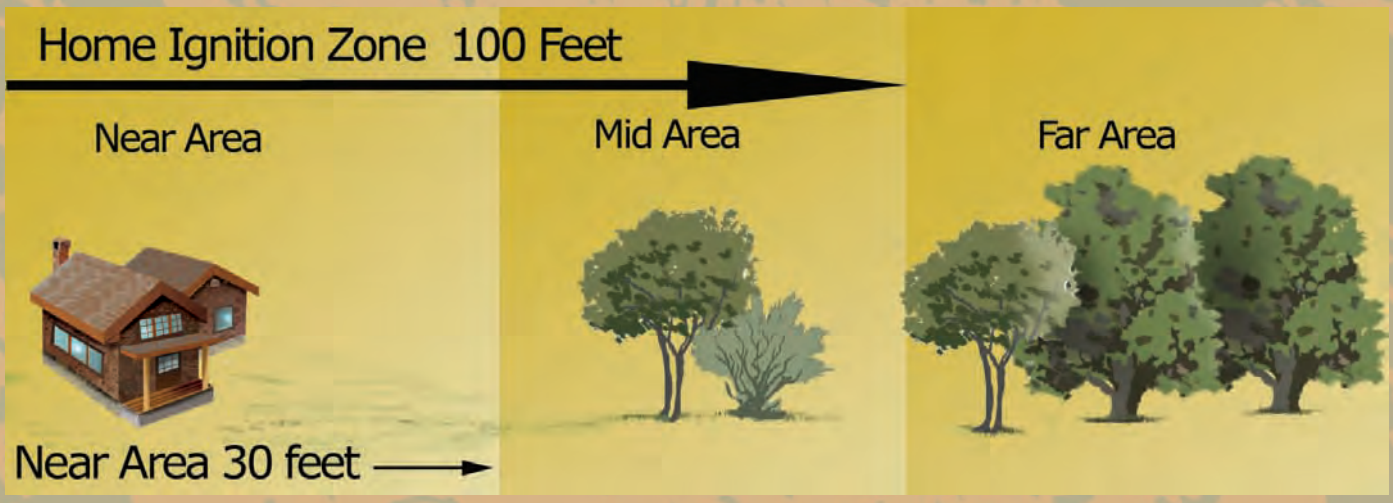
Home Defensible/Survivable Space

The size of the home ignition zone varies from property to property. Factors that influence the size of this zone are vegetation, weather, construction type and house position in regard to slope. The number of factors makes it impossible to designate one size of Home Ignition Zone for all properties.

Research of fire behavior and structures has yielded two distances that can **"help"** homeowners determine how big they want their Home Ignition Zone to be.

Near Area Distance - Research is showing that when intense flames are kept 30 plus feet away from structures (with non-flammable roofing) the chances of structure survival is roughly between 85 and 95%. So this provides us with an estimate of the size of the Near Area. Source: *"Assessing Wildfire Hazards in the Home Ignition Zone"* Firewise National Wildfire Coordinating Group

Home Ignition Zone Distance (Near and Mid Areas) - Research is also explaining that effective vegetation management about 100 feet from a structure increases the structure survival rate significantly. It is the ignitability of a home in relation to its immediate surroundings that has the most influence on home survivability. Source: *"Assessing Wildfire Hazards in the Home Ignition Zone"* Firewise National Wildfire Coordinating Group



Degree of Slope Impacts Size of Home Ignition Zone

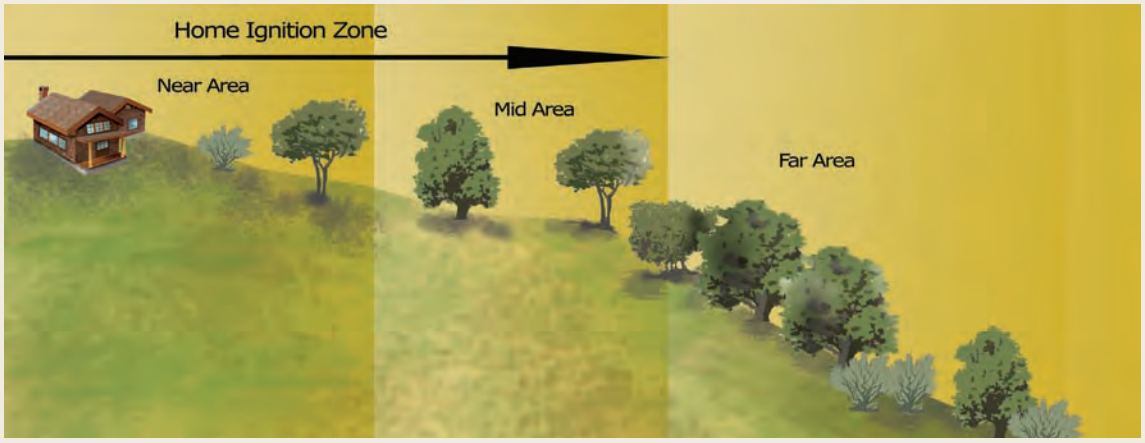
If possible, avoid building on slopes or on the ridges of hills. Fire moves more rapidly up hill. Heavy vegetation down-slope of a structure increases the probability that the house will not survive a wildfire. If your home is at the top or somewhere on a slope greater than 10 degrees, you need to double the recommended vegetation management distances. However, if the home is set back from the slope about 30 feet, most of the vegetation management can be concentrated in that 30 feet area and about 30 feet down the slope.

Home Defensible/Survivable Space

Determining Home Ignition Zone Size on Slope

The critical slope of concern is about 10 to 20 degrees. Less than 10 degrees can be thought of as flat. Slopes over 20 degrees are considered very hazardous. Amount of recommended vegetation management depends largely on the degree of the slope.

More Slope Means Greater Home Ignition Zone



Slope	Amount of Near Area Space
0 to 10 degrees	30 feet
Over 10 degrees	Multiply the number of degrees by 3

Flat Some Slope More Slope

Increased slopes require increased treatment distances to be effective. In general, where there is a gradual slope (around 20%) below the building, it is suggested that homeowners reduce vegetation about twice the distance down the slope than the non-sloped areas. If the slope is substantial (over 50%), it is suggested that slope clearance distances be four times the non-sloped area distance. In short, the greater the slope, the greater the clearance distance down the slope is needed to better protect the structure. (Suggested distances taken from *Firesmart*, Alberta Canada).

Remove Reduce Replace

MOST IMPORTANT ACTION YOU CAN TAKE?

Get a lot assessment

Contact your local Forestry, Fire and State Lands office or fire department for a referral

Ask for an expert to walk your lot with you to assess:

- Access
- Construction
- Defensible/Survivable Space
- Maintenance Needs

Maintenance

Creating a home that is prepared for wildfire is an ongoing process. Depending on your property, the inital work can require a fair investment of time and/or resources. The key to successfully keeping your property prepared for wildfire is maintenance. Using the following checklist before each wildfire season will improve the survivability of your home and property.

Annual Checklist

Property

Make sure that:

- □ Trees and shrubs are properly thinned and pruned within the Home Ignition Zone. Cut and dead vegetation is removed from property.
- □ Branches overhanging the roof and chimney are removed.
- □ Grass and weeds are mowed to a low height.
- □ Driveway clearance of trees and branches is adequate for emergency equipment, 12 feet on the sides and 13.5 feet above.
- □ Trash and other debris accumulations are removed from the Home Ignition Zone. Woodpiles are kept at least 30 feet from structure.
- □ Limbs near power lines need to be removed by power company.

House and other Structures

Make sure that:

- □ Roof and gutters are clear of debris.
- □ Attic, roof, eaves and foundation vents are screened and in good condition.
- □ See that foundations and decks are enclosed, screened or walled up.
- □ Chimney screens are in place and in good condition.
- □ Road signs and house number are posted and easily visible.
- □ An outdoor water supply (ponds, cisterns, etc.) is ready for drafting.

Utah Forestry Fire and State Land Area Offices

Bear River Area
435.752.8701
Box Elder
Cache
Rich
Weber

Northeastern Area
435.781.5463
Daggett
Duchesne
Summit
Uintah
Wasatch

Southwestern Area
435.586.4408
Beaver
Garfield
Iron
Kane
Washington

Central Area
435.896.5697
Juab
Millard
Piute
Sanpete
Sevier
Wayne

Southeastern Area
435.259.3766
Carbon
Emery
Grand
San Juan

Wasatch Front Area
801.538.5555
Davis
Morgan
Salt Lake
Tooele
Utah

Utah Vegetation Types

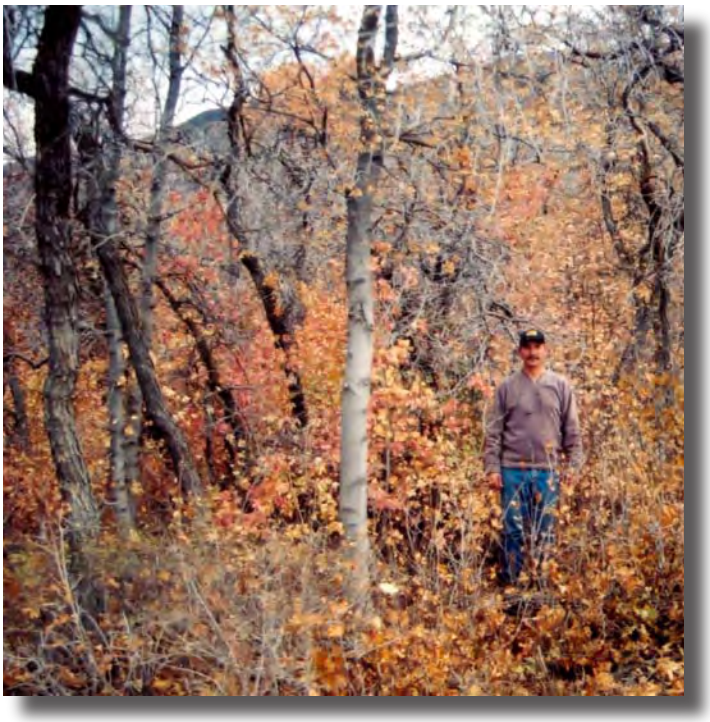
Utah is known as one of the most beautiful and unusual locations in the world. Home to mountains, plains, and deserts, this state provides diverse types of vegetation. Each has its rewards and hazards. It is important to understand fire behavior in the area you have chosen to live. Knowing how wildfire can move in your area can help you make smart decisions as you prepare for wildfire. Utah has four basic vegetation types: grasses, brush, pinyon/juniper and timber.

Grass

Grasses can dry out rapidly and burn quickly, creating fast, low-intensity fires. Grasses frequently carry fire rapidly to other vegetation, which then can burn intensely. Many areas of Utah are being infested with cheatgrass, which is a pervasive, highly flammable grass that is difficult to eliminate. Fire behavior in grasses will vary as wind, slope and moisture change.

Sagebrush- a highly flammable brush type

Utah produces two primary brush types, Sagebrush and Gambel Oak/Maple.



Brush

Gambel Oak and Maple brush typically grow 15 or more feet high. Oak grows in closely packed formations that can produce intense fire behavior. Fire behavior in this brush type can vary radically as wind, slope and moisture change.

Pinyon/Juniper

Usually found on slopes between 4,000 and 7,000 feet. Fires are typically moderate to high intensity. Fire behavior will vary as wind, slope and moisture change.

Timber

Timber or Forest fuel types in Utah can be grouped into 3 basic types, Aspen, Lodgepole/Ponderosa and Spruce/Fir. Each has its own fire behavior and mitigation considerations. Fire behavior will vary as wind, slope and moisture change.

Vegetation Type	Flame Length	Speed	Acres Burned in 1 Hour
Grasses	8 feet	4.5 mph	3000
Brush	22 feet	6.5 mph	3400
Pinyon/Juniper	16 feet	3 mph	500
Timber	8 feet	.25 mph	10

Fire behavior will vary as wind, slope and moisture change. Source: University of Nevada, Reno Cooperative Extension

For homeowners who wish to remove vegetation and replace with firewise plantings, please consult the **Utah State University Extension** publication, ***"Firewise Landscaping for Utah"*** for specific information to Utah. For more generalized information, look on the Firewise website at **www.firewise.org**

Utah Vegetation Types

Grasses

Video coverage of wildfire is usually shown in timber or forest areas. Consequently, many people have never seen how wildfire reacts with grass. When grass is green the fire danger is relatively low due to the high moisture content. However, when cured and dry, grasses can become almost explosive, especially when wind is added to the formula. Dry grass is easily ignited and can produce surprisingly long flame lengths up to 8 feet. Given an average grass fire, three thousand acres can burn in one hour and grass fires are capable of moving up to 4 ½ miles per hour. Fire behavior in grass will vary as wind, slope and moisture change.

Kentucky Bluegrass
Poa pratensis

Although grass height varies, the primary method of reducing wildfire danger is to mow it short. Watering grass close to structures can also be helpful if water is plentiful. As soon as grass dries out, mow it short, rake and safely remove from property.

Blue Fescue
Festuca cinerea and others

Wheatgrass
Agropyron species

Orchardgrass
Dactylis glomerata

Buffalograss
Buchloe dactyloides

Other grasses not pictured that are recommended for landscaping include:

Rye Grass	*Lolium species*
Western Wheatgrass	*Pascopyrum smithii*
Sandberg Bluegrass	*Poa secunda*

Cheatgrass

Cheatgrass is an invasive species that is prevalent in the Western states. This species requires special attention. Because it germinates early, it out-competes many other species. It is also difficult to eradicate and is highly flammable. Once ignited, cheatgrass fires can travel very fast...faster than you can run! During years of above-average precipitation, a large quantity of cheatgrass can be present during a fire season. Dry cheatgrass can also serve as the kindling necessary to ignite hotter burning plants such as big sagebrush and pinyon pine, creating more intense wildfires.

If cheatgrass is present near your home, remove it for a distance of at least 30 feet from your house and other buildings. Use a lawn mower with a mulching blade or cut it with a weed eater while it is still green, rake it up, and remove it. Make sure there's a connected garden hose with a spray nozzle attached in case there is an accidental fire. People living, working, or recreating in cheatgrass country should learn to identify it and take care not to ignite it while removing it from their properties. Contact Utah State University Forestry Extension Office or consult www.livingwithfire.info for more information.

Utah Vegetation Types

Sagebrush Environment

Mixed Sage and Juniper

Sagebrush rarely grows by itself and usually grows with a mixture of grasses and other shrubs. Once the vegetation dries out, or if the sagebrush is old, it becomes more combustible. This situation can also be enhanced by the companion plants found growing with it, such as dry grass and rabbitbrush. Typical flame lengths in this environment can reach 22 feet, traveling up to 6 ½ mph, burning 3400 acres in one hour. Fire behavior will vary as wind, slope and moisture change.

On flat to gently sloping terrain, individual shrubs or small clumps within the Home Ignition Zone should be separated from one another by at least twice the height of the average shrub. For homes located on steeper slopes, the separation distance should be greater. For example, if the typical shrub height is 2 feet, then there should be a separation between shrub branches of at least 4 feet. Remove shrubs or prune to reduce their height and/or diameter. In most instances, removing big sagebrush is the preferred approach. It is a very flammable plant which is easily removed, does not resprout, and is typically abundant.

Sagebrush and Rabbit brush mixed

Sagebrush in foreground to middle of image

Maple/Oak Environment

Gambel Oak and Mountain Maple are often short, stubby trees. They often grow in groves that resemble “islands” with grass or short brush channels between them. Without disturbance, these trees can become quite large, 20-30 feet tall and 8-10 inches in diameter, in favored locations. Gambel Oak is very tenacious and readily resprouts following disturbance such as fire or cutting.

Maple

Once the live fuel moisture has dropped due to the onset of summer, or especially if Gambel Oak has a significant amount of dead branch material, the fire behavior can be spectacular and difficult to control.

In order to preserve privacy and safety, key in on the island characteristic of the Gambel Oak growing pattern and mimic. Thin the concentration of plants. Usually oak stands are overstocked (too many stems for the carrying capacity). Remove one of every four stems and prune the dead wood from the remaining stems. Keep the best looking stems and remove diseased stems. Finally, once you cut it, you must be vigilant as oak readily resprouts. Continue to prune or remove new sprouts.

A thinned oak brush stand to the left, unthinned above

Utah Vegetation Types

Pinyon/Juniper

Pinyon/Juniper trees often grow with sagebrush in its understory. Junipers tend to spread their branches to capture sunlight. Pinyon trees, on the other hand, tend to grow in a triangular or pyramidal shape with lower branches in contact with the ground. Lightning strikes account for many fires in Pinyon/Juniper areas. If the tree canopies are close and weather conditions are dry, wildfire moves readily, even in low wind speeds.

This situation is enhanced when the understory has grass/shrubs or a large amount of dead material that will help the fire "climb the ladder."

By reducing the number of trees, the likelihood of fire spread from tree crown to crown is reduced. Prune low branches to a height of at least 5 feet. This reduces laddering potential. Lastly, reduce fuel load in the understory by reducing material and flammable shrubs such as sagebrush and rabbitbrush.

Timber

Timber or Forest fuel types in Utah can be grouped into three basic types: Lodgepole/Ponderosa, Aspen and Spruce/Fir.

The two different levels of forests are overstory and understory. The overstory of a forest consists of the trees that form the uppermost canopy layer in a forest. The understory consists of smaller trees, grasses, and shrubs that grow beneath the overstory. The greater the amount of flammable material in the understory, like fallen and dead material, the greater the wildfire risk. If a fire burning along the ground of a forest is able to access an overload of flammable material, it will increase in intensity. This increase in intensity can enable fire to "climb the ladder" to overstory trees, thus increasing the chance of a catastrophic forest fire.

In general, we need to create a separation between overstory trees and understory trees and shrubs. Within the Home Ignition Zone, trees and shrubs should not occur in dense stands. Dense stands of trees and shrubs pose a significant wildfire threat. Thin and clump dense tree and shrub stands to decrease the amount of vegetation and to create separation. By opening the space among trees and shrubs we create a healthier forest system, and slow potential wildfire spread.

Lodgepole/Ponderosa

Forests of overgrown or unhealthy lodgepole or ponderosa pines can generate hazardous situations. These trees are more prone to crown fire. They are longer burning and more difficult to control from a firefighting standpoint. Single or groups of trees can "torch" or explode, sending embers out that can rapidly spread fire. Insect infestation and disease can also reduce forest health, creating highly flammable conditions.

Due to the growth pattern of these trees, pruning lower limbs to a height of at least 5-6 feet from the ground is necessary to lessen the probability of a ground fire moving into tree canopies. Reduction of the amount of trees may be necessary to reduce the amount of overstory material. It is best to use a wildfire professional to determine whether this is necessary, and if so, to what degree.

To reduce ember attack to structures, consider non-flammable roofing material and firewise vegetation management. Remove dead and dying vegetation and ladder fuels, water or mow any grasses and plant or cut shrubs and understory trees into islands or clumps. Pay special attention to fallen needles from these trees; they are highly flammable and can act as an ignition source during a wildfire by being on roofs, in roof gutters, or adjacent to flammable house siding or appendages like decks or stairs.

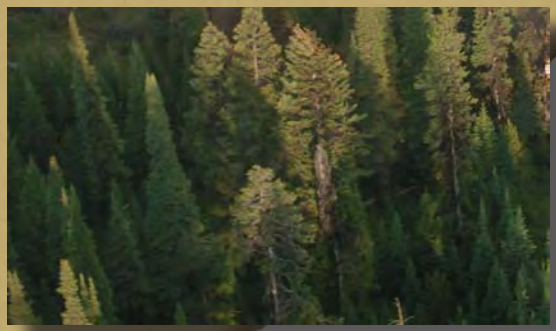
Aspen

From a wildfire perspective, forests of aspen are considered to be one of the least threatening. Only if there is a large amount of down/dead fuels or flammable grass/shrubs found in the understory are conditions considered dangerous. When thinking about aspen, know that it has a relatively short life span and is susceptible to wood rotting diseases.

The best way to reduce the threat of wildfire in aspen forests is to pay attention to tree health and to keep the understory minimal, healthy and well maintained. Remove ladder fuels, water or mow any grasses and plant or cut shrubs and understory trees into islands or clumps. Clearing dead and dying material annually reduces the probability that wildfire will be carried to structures by direct flame or radiant heat.

Spruce/Fir

Forests of unhealthy or overgrown spruce/fir trees can be dangerous. During wildfire, these trees are prone to crown fire. Spruce and fir trees, if too close to structures, can produce enough radiant heat to ignite flammable siding and roofs. Flames from these trees can also ignite homes through direct flame contact. These trees, particularly when dry, catch fire and "torch," sending embers that can travel far from their source. Throughout the Western states, recent beetle infestations have weakened these species, making them more susceptible to wildfire. Mitigation strategies for spruce and fir are the same as for lodgepole and ponderosa trees.



Utah Vegetation Types

Select Firewise Plants

SHRUBS

Currant Gooseberry
Ribes species

Buffaloberry
Shepherdia species

Skunkbush Sumac
Rhus trilotata

Woods Rose
Rosa woodsll

Serviceberry
Amelanchier species

Lilac
Syringa vulgaris

Firethorn, Pyracantha
Pyrcantha coccinea

Rockspray, Rock Cotoneaster
Cotoneaster horizontalis

Cotoneaster
Cotoneaster
other compact species

English Ivy
Hedera helix

Firethorn, Pyracantha
Pyracantha coccinea

Creeping Oregon Grape
Mahonia repens

Other shrubs not pictured:

Honeysuckle	*Lonicera species and hybrids*	**New Jersey Tea**	*Ceanothus americanus*
Western Sandcherry	*Pranus besseyi*	**Ceanothus**	*Ceanothus ovatus*
Sumac	*Rhus – other species*	**Mountain mahogany**	*Cercocarpus specie*
Saltbush	*Atriples species*	**Prostrate Kochia**	*Kochia prostrata*
Rock-rose	*Cistus species*		

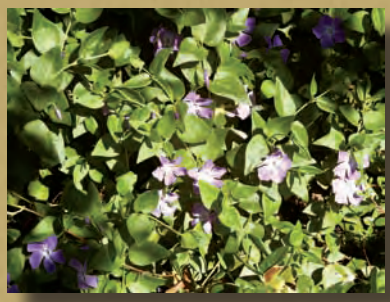
GROUND COVERS

Snow-in-summer
Cerastium tomentosum

Bearberry, Kinnikinnick
Arctestaphylas-uva-ursi

Sea Pink, Sea Thrift
Armeria maritime

Beach Wormwood Dusty Miller
Artemisla steileriana



Periwinkle
Vinca species

Evergreen Candytuft
Iberis sempervirens

Bearberry Cotoneaster
Cotoneaster dammer

Other ground covers not pictured:
Spring Cinquefoil *Potentillia neumanniana*
Creeping Potentilla *Potentilla Verma*

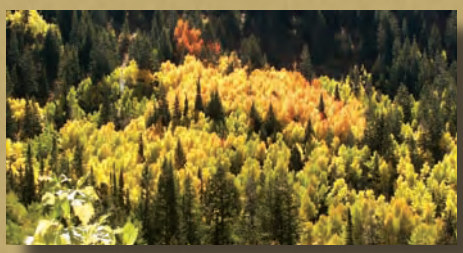
Hen and Chicks
Sempervivum tectorum

Stonecrop Sedum
Sedum species

RECOMMENDED TREES

Poplar Cottonwood
Populus

Maple
Acer species



Quaking Aspen
Populus tremuloides

Other trees not pictured:

Thinleaf Alder *Alnus tenuifolia*
Willow *Salix*
Birch *Betula species*

California Redbud
Cercis occidentallis

Fire Season Safety Tips

- Crush your cigarette butts out
- Don’t use fireworks in wildland urban interface areas
- Store hazard materials in a cool, dry place
- Obey fire restrictions regarding camp fires, outdoor cooking, target shooting and fireworks. Restrictions change seasonally; check with local fire department before any activity
- When using equipment that may produce sparks, work before 10:00 AM and avoid windy conditions
- Be sure spark arresters are installed and working properly on all portable equipment including mowers, chainsaws, weed-eaters, tractors, and harvesters
- Don’t drive vehicles -including dirt bikes- on dry grass or brush. Remember that hot exhaust pipes and mufflers can ignite dry vegetation
- Check with local fire department and obtain permits before you burn debris or fields
- Dowse BBQ charcoal in water before disposing

This publication was produced by Utah Living With Fire which consists of organizations and individuals dedicated to the education of Utah Wildland Urban Interface property owners.

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Contact: Utah Forestry, Fire and State Lands National Fire Plan Coordinator, Tyre Holfeltz at 801 538-7487 or tyreholfeltz@utah.gov

Utah Division of Forestry, Fire and State Lands
www.ffsl.utah.gov

Utah Office of the State Fire Marshal
http://firemarshal.utah.gov

United States Department of the Interior Bureau of Land Management
http://www.blm.gov/ut/st/en/prog/fire.1.html

Utah Fire Corps
www.utfirecorps.org

United States Forest Service
http://www.fs.fed.us/fire/

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If Wildfire Approaches

It is recommended that people living in WUI areas prepare before wildfire season begins. This includes planning for the possibility of evacuation. Many people use checklists like the one below to help them select and organize important possessions to take when evacuating their home. By storing these items in one place and assuring that all family members understand family evacuation plans, people living in fire prone areas can be more at ease. Preparation and the willingness to evacuate early can prevent unnecessary problems.

What should I wear and have with me?

- □ Wear only cotton or wool clothes
- □ Proper attire includes long pants, long-sleeved shirt or jacket, and boots
- □ Carry gloves, a handkerchief to cover your face, water to drink, and goggles
- □ Keep a flashlight and portable radio with you at all times
- □ Tune into a local radio station and listen for instructions

What about family members and pets?

- □ If possible, evacuate all family members not essential to preparing the house for wildfire
- □ Make sure to designate a safe meeting place and contact person
- □ Relay your plans to the contact person
- □ Evacuate pets
- □ Contact the local Humane Society for pet assistance if needed

How should I prepare my car?

- □ Place vehicles in the garage, pointing out with keys in the ignition
- □ Roll up the windows
- □ Close the garage door, but leave it unlocked
- □ If applicable, disconnect the electric garage door opener so that the door can be opened manually

What should I take?

- □ Important documents (bank, IRS, trust, investment, insurance policy, birth certificates, medical records)
- □ Credit and ATM cards
- □ Medications
- □ Prescription glasses
- □ Driver license
- □ Passport
- □ Computer backup files
- □ Inventory of home contents (consider videotaping)
- □ Photograph the exterior of the house and landscape
- □ Address book
- □ Cell phone and charger
- □ Personal toiletries
- □ Change of clothing
- □ Family photo albums and videos
- □ Family heirlooms

How should I leave my home?

- □ Close all interior doors
- □ Leave a light on in each room