

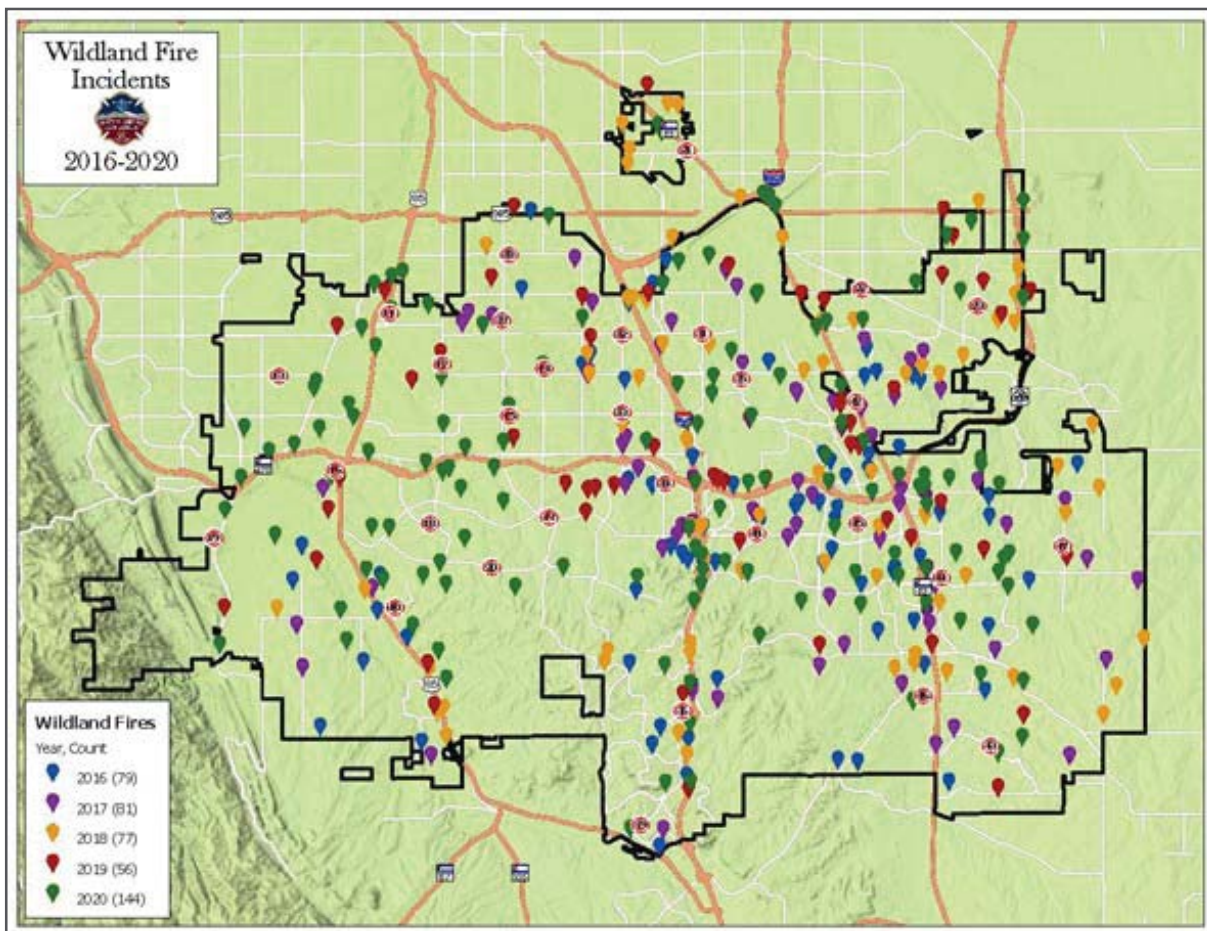


## NEIGHBORHOOD MITIGATION PLANNING GUIDE

South Metro Fire Rescue (SMFR) has many resources for government entities, land managers, and homeowner’s associations interested in reducing risks from low- and moderate-intensity wildfires. This guide provides general information that is useful throughout our fire district to create a fire-adapted fire district. A fire-adapted district is more resilient when wildfires occur. For additional resources, contact the Community Risk Reduction Bureau at [ReducingRisk@southmetro.org](mailto:ReducingRisk@southmetro.org).

### WILDFIRE HISTORY

All of SMFR’s district is built within wildfire-prone ecosystems. As the following map reveals, these wildfires occur throughout the district. Therefore, residents of and visitors to all of our neighborhoods can benefit from learning about wildfire hazards and risk reduction.





## *EMERGENCY RESPONSE*

SMFR has earned an ISO (Insurance Services Office) Public Protection Classification (PPC) rating of 1 for its entire service area. The rating, which is rare in the United States, represents the best fire protection according to insurance industry criteria and may provide a discount on homeowner's insurance policies to district residents.

## *ECOLOGICAL CONTEXT*

The ecological context of an area influences the behavior of wildfires.

**Topography:** Fire typically burns faster uphill than downhill. Structures built above slopes with native vegetation face a higher risk from low-, moderate-, and high-intensity wildfires than other homes. Gullies and canyons can funnel heated air upslope to create a chimney effect. Wind can eddy as it crosses ridges.

**Vegetation:** Vegetation is one of two fuels in our fire district (structures are the other). Different species of vegetation ignite and burn differently. Vegetation height, density, size, and moisture content also influence flammability. Some of those factors can change from day to day.

**Weather:** Precipitation, wind, relative humidity, lightning, and air temperature impact wildfire behavior. The dominant wind in our part of Colorado is from the southwest, but storms and fronts can change wind direction quickly. Weather patterns also are changing as part of the continent's climate change.

One of SMFR's risk reduction specialists can help you understand the ecological context of an area as it relates to wildfire risk.



## *FIRE SCIENCE AND FIRE BEHAVIOR REFRESHER*

Wildfire hazard identification is based on the following fire behavior concepts:

1. A given fuel (structure or vegetation) can produce a flame length 1 ½ times its height. Thus, a bush that is 12 inches tall can produce a flame length 18 inches in length; a tree that stands 12 feet tall can produce a flame 18 feet long. Shorter fuels produce shorter flames; shorter flames release less heat.

2. Firefighters are unable to engage any flame length greater than four feet with a direct attack because of safety concerns. A direct attack places firefighters along the head or front of a wildfire where they create a handline—a path down to mineral soil—in front of the flames to stop its growth. Longer flames generate more heat.

When flames are longer than four feet, firefighters can use indirect attack techniques such as spraying water from further away or building a handline a distance away and burning out unburned fuels between their line and the fire. They also may be able to drive into the burned area and spray water from engine-mounted nozzles depending on topography and other factors.

Flames between four and eight feet in length can be attacked directly with bulldozers and air resources such as air tankers and helicopters. Flames longer than eight feet can be attacked directly by air resources alone.

3. Before a fuel can burn, it must absorb enough heat to cause the remaining water in it to evaporate. The dry part of the fuel then absorbs more heat that causes the solid fuel to break apart into its gaseous state. It's the gaseous state that actually burns. Thus, denser, wetter fuels typically resist ignition longer than lighter, drier fuels.

4. Most deciduous trees and shrubs resist fire because they are full of water. Gambel oak is an exception. The resin inside oak makes it flammable for most of the year during drought conditions.

5. As noted previously, plants that contain flammable resins, saps and oils are bad choices to have within 30 feet of homes. These “bad” plant species include Gambel oak, juniper, Pfitzer, cedar, arborvitae, Mugho pine, piñon pine, Austrian pine, and bristlecone pine, as well as decorative conifers such as Alberta or Norway spruce. They dry and vaporize quickly, which makes them vulnerable to igniting quickly. They also release significant heat.



6. Ponderosa pines are a fire-resistant tree species (not fire-proof) because they have thick bark and low sap content. They were prevalent when the area was developed because low-intensity wildfires limited other plants from competing for limited water, soil nutrients, sunlight, and space. Removing lower branches from mature ponderosa pines and/or limiting vegetation growing and accumulating under these trees helps protect canopies from ignition.

7. Ladder fuels are low-hanging branches of trees. If they ignite, they allow flames to “climb” into tree canopies. By removing these ladder fuels, flames can stay on the ground where they typically are shorter and firefighters have a better opportunity to extinguish them directly.

8. Most structures ignite from embers: burning chunks of fuels lofted above a fire by the rising column of heated air (a convective column). When those burning chunks of fuel, which can be pea- to grapefruit-sized, land on other flammable fuels such as dead needles, dead leaves, junipers, or combustible deck furniture, they can ignite spot fires. Embers typically find vulnerabilities in the nooks and crannies of buildings.

9. Structures also can ignite from heat radiating laterally from burning fuels such as junipers and other buildings.

### ***MITIGATION RECOMMENDATIONS***

Below are recommendations for landowners and land stewards to reduce risks posed by low- and moderate-intensity wildfires. As recommendations, they will not be enforced by SMFR, but they can reduce the potential for structural and vegetation ignitions and improve safety for both residents and firefighters. These recommendations are appropriate throughout the fire district.

During a wildfire incident in which structures are threatened, firefighters will prioritize structure protection based on what they deem defensible in light of current and expected fire behavior and weather conditions. Ideally, property owners will conduct mitigation that allows their buildings to withstand low- and moderate-intensity wildfires without firefighter intervention.



### Open Space

The following recommendations from SMFR apply to open space areas.

- Mow grasses along property lines and/or fence lines. A mow strip at least six feet wide (the width of a typical commercial mower deck) will provide a speed bump as low- to moderate-intensity wildfires burn from taller grasses into mowed grasses, lowering flame intensity and reducing speed of spread.
- Cut back Gambel oak along fence and property lines. The oak-less width between remaining oak trees/shrubs and fence lines should be at least 1 ½ times the remaining oaks' height.
- Within the remaining oak groves throughout an open space, thin at least 20% of stems and trunks, and remove ladder fuels (low-hanging branches) within six feet of the ground.
- Remove ladder fuels (lower branches) from coniferous trees to protect tree canopies from wildfire. Trim branches within six feet of the ground on mature pines and within three feet of the ground for mature spruces. Adjust those parameters for younger trees to maintain at least two thirds of the tree's canopy.

SMFR will provide specific recommendations for each open space tract as requested by the land management entity. The impact of open space mitigation is leveraged with private property mitigation and vice versa.

### Infrastructure

Infrastructure consists of the basic systems that support neighborhoods physically, socially, and economically. Infrastructure includes the following systems: water, roads, electricity, natural gas, and parks.

These systems are vulnerable to interruption and damage from wildfires. Mitigation recommendations for individual buildings or sites are available from SMFR. Email [ReducingRisk@southmetro.org](mailto:ReducingRisk@southmetro.org) to set an appointment. General mitigation recommendations include:



- Maintain three feet of clearance around fire hydrants. Mow grasses during the growing season, trim or remove larger vegetation, and clear snow when necessary.
- Mitigation around utility infrastructure should emulate that of structures or fire hydrants. Although those boxes or structures may be unsightly, their destruction during a wildfire delays neighborhood recovery.
- Firefighting will be limited below electrical lines because smoke plumes can conduct electricity from the lines to firefighters and apparatus on the ground.

### **Private Property**

The following recommendations apply to properties with structures such as office buildings, clubhouses, and maintenance buildings, but they also are appropriate for homeowners.

- Post address numerals so they are visible and legible throughout the day and, when a light is shined on them, at night. Having an easy-to-read address helps emergency responders as well as law enforcement, utility workers, and delivery people. Use numerals at least four inches tall and of a color that contrasts with their background.
- Prune branches above roofing to create a six-foot tall window of clearance. Removing these branches will reduce the volume of leaves and needles that collect on roofing and in gutters, protect shingles from scraping, and protect the tree from any fire on the roof.
- Trim branches away from eaves and exterior walls. Trimming these branches will maintain the integrity of those structural components and prevent flames from having a direct route to your home.
- Eliminate fuels under decking.
- Mow a six-foot wide moat around foundations where grass is adjacent to a building. Maintain similar mow strips along backyard fence lines to create “speed bumps” for low- to moderate-intensity grassfires where the rate of spread and flame lengths can decrease momentarily.
- Remove dead pine needles and dead leaves from roofing, gutters, gutter screens, and along the base of walls. These piles of dead vegetation are easy fuel for embers.



- Add 1/8-inch mesh to vents to prevent embers from entering ductwork, attics, and eaves. Embers may still enter those vents, but they shouldn't hold enough heat to threaten the building.
- Wood fencing can act like a fuse and lead flames to buildings. Minimize vegetation growing along wood fences. Consider replacing wood posts and slats with composite materials that resist ignition.
- Replace flammable groundcover, shrubs, and trees within 30 feet of buildings and infrastructure with native wildfire-resistant species including the following options:

<b>GROUNDCOVER SPECIES</b>		
<b>COMMON NAME</b>	<b>WATERING</b>	<b>LIGHTING</b>
CREEPING GRAPE HOLLY	LOW	SHADE
KINNIKINNICK	MEDIUM	SHADE OR SUN
MAT PENSTEMON	LOW	SUN
MOUSE EAR CHICKWEED	MEDIUM	PARTLY SHADED
NORTHERN BEDSTRAW	MEDIUM	SHADE
ROSY PUSSYTOES	MEDIUM	PARTLY SHADED
SMALL-LEAF PUSSYTOES	MEDIUM	PARTLY SHADED



## SOUTH METRO FIRE RESCUE

<b>LOW SHRUB SPECIES</b>		
<b>COMMON NAME</b>	<b>WATERING</b>	<b>LIGHTING</b>
ADAM'S NEEDLE	MEDIUM	PARTLY SHADED
ANTELOPE BITTERBRUSH	LOW	SUN
APACHE PLUME	LOW	SUN
BANANA/BROAD-LEAF YUCCA	VERY LOW	PARTLY SHADED
BOG BIRCH	HIGH	PARTLY SHADED
BUCKBRUSH/MOUNTAIN LILAC	MEDIUM	SUN
GOLDEN CURRANT	LOW	FILTERED
LITTLE-LEAF MOCKORANGE	MEDIUM	SUN
LITTLE-LEAF MOUNTAIN MAHOGANY	VERY LOW	SUN
MOUNTAIN NINEBARK	LOW	SUN
NATIVE WILD ROSE	MEDIUM	PARTLY SHADED
OCEAN SPRAY/ROCK SPIREA	LOW	PARTLY SHADED
RABBITBRUSH	VERY LOW	SUN
REDTWIG DOGWOOD	HIGH	EITHER
SHRUBBY CINQUEFOIL	MEDIUM	PARTLY SHADED
SPANISH BAYONET	VERY LOW	PARTLY SHADED
TRUE MOUNTAIN MAHOGANY	LOW	SUN
WAX FLOWER	MEDIUM	EITHER
WESTERN SAND CHERRY	LOW	SUN





<b>LARGE SHRUBS, TREE SPECIES</b>		
<b>COMMON NAME</b>	<b>WATERING</b>	<b>LIGHTING</b>
AMERICAN WILD PLUM	MEDIUM	PARTLY SHADED
ASPEN	MEDIUM	SUN
BOULDER RASPBERRY	MEDIUM	PARTLY SHADED
BEAKED HAZELNUT	HIGH	PARTLY SHADED
HAWTHORN	MEDIUM	SUN
MOUNTAIN MAHOGANY	LOW	SUN
PEACHLEAF WILLOW	HIGH	PARTLY SHADED
PIN/FIRE/WILD/RED CHERRY	MEDIUM	PARTLY SHADED
PONDEROSA PINE	LOW	SUN
RIVER BIRCH	HIGH	PARTLY SHADED
ROCKY MOUNTAIN MAPLE	MEDIUM	PARTLY SHADED
SASKATOON ALDER-LEAF SERVICEBERRY	MEDIUM	PARTLY SHADED
SILVER BUFFALOBERRY	MEDIUM	PARTLY SHADED
TALL NINEBARK	MEDIUM	PARTLY SHADED
THINLEAF ALDER	HIGH	PARTLY SHADED
UTAH SERVICEBERRY	LOW	SUN
WASATCH MAPLE	MEDIUM	PARTLY SHADED
WESTERN CHOKECHERRY	MEDIUM	PARTLY SHADED
WESTERN MOUNTAIN ASH	MEDIUM	PARTLY SHADED

You may request a personalized free building or site wildfire risk assessment by emailing [ReducingRisk@southmetro.org](mailto:ReducingRisk@southmetro.org). These assessments typically last 20-30 minutes.

SMFR has a specialized guide for new construction: *Wildfire-Resistant Construction and Improvement Guide*. Request a copy by emailing [ReducingRisk@southmetro.org](mailto:ReducingRisk@southmetro.org).



## *EVACUATIONS*

It's essential that all of us prepare for evacuations generated by wildfires or other emergencies. The goal of an evacuation is to move civilians safely and quickly out of the way of impending hazards, but poor preparation can result in confusion, injuries, and deaths.

SMFR utilizes messaging and materials from the national Ready, Set, Go campaign to empower residents of its fire district to evacuate safely. The complete guide is available at no cost at [www.southmetro.org](http://www.southmetro.org) and [www.wildlandfirersg.org](http://www.wildlandfirersg.org). SMFR also can provide presentations on evacuation preparedness.

Everyone should register for their county's reverse emergency notification system to receive emergency information such as pre-evacuation and evacuation notices.

One way to prepare for an evacuation is to practice. Families should give themselves 30 minutes to assemble a go-kit and load their vehicle(s). They also should practice driving to their designated family meeting place, preferably in a different zip code. Families also can use that evacuation drill to practice their communications plan of notifying a family member or friend in a different zip code or region of their status and asking that person to contact other family members.

## *RISK REDUCTION RESOURCES*

SMFR recognizes that wildfire mitigation can be expensive. The following programs may assist property owners with some of those costs: Note that some programs may not apply to your area of our fire district.

- As individuals conduct wildfire mitigation on personal property, a percentage of expenses may be subtracted from state taxable income. The details are outlined in §39-22-104(4)(n), Colorado Revised Statutes and [www.taxcolorado.com](http://www.taxcolorado.com), but the quick version is that the mitigation applies to vegetation rather than structural changes. The total amount of the subtraction may not exceed \$2,500.



- The Colorado State Forest Service may have cost-reimbursement or similar programs to offset part of your expenses for mitigation. The knowledgeable personnel in the Franktown District Office may be contacted at [CSFS\\_Franktown@mail.colostate.edu](mailto:CSFS_Franktown@mail.colostate.edu) or 303-660-9625. The knowledgeable personnel at the Golden District Office are available at <https://csfs.colostate.edu/golden/>, [CSFS\\_Golden@mail.colostate.edu](mailto:CSFS_Golden@mail.colostate.edu), or 303-279-9757.
- The Jefferson Conservation District may have grants or cost-sharing programs for mitigation projects. Check this website for information: <https://www.jeffersoncd.com/>.
- The Douglas County Conservation District also may have grants or cost-sharing programs for mitigation projects. Check this website for information: <https://douglasconserves.org/grants/>.
- For some areas, the City of Littleton may be an essential partner. It has several grant programs that could be used for wildfire mitigation and neighborhood resilience. Visit <https://www.littletongov.org/business-resources/grants-incentives> for information.
- For some areas, the City of Castle Pines may be an essential partner. In the future, it may have funding to assist with grant matching, resources for cost-sharing, and personnel who can write letters of support for projects.
- Douglas County hosts a free Slash-Mulch Site at 1400 Caprice Drive in Castle Rock for county residents on Saturdays from May through October. Acceptable items include tree limbs, loose pine needles, shrubs, and brush with a maximum length of 6 feet and maximum diameter of 12 inches. Information is at <https://www.douglas.co.us/land/wildfire-mitigation/slash-mulch-program/>.
- SMFR personnel are available to write letters of support for projects and provide prescriptions for open space mitigation.



## ***EDUCATIONAL RESOURCES***

SMFR recommends that agencies and other organizations host opportunities (in-person and/or virtual) to educate residents about wildfire risk and preparedness utilizing resources such as those from the Ready, Set, Go project and personnel from SMFR, Colorado State Forest Service, their County, and/or other entities. These subject matter experts can attend meetings and community events, contribute to newsletters and websites, and conduct property risk assessments when requested by residents.