

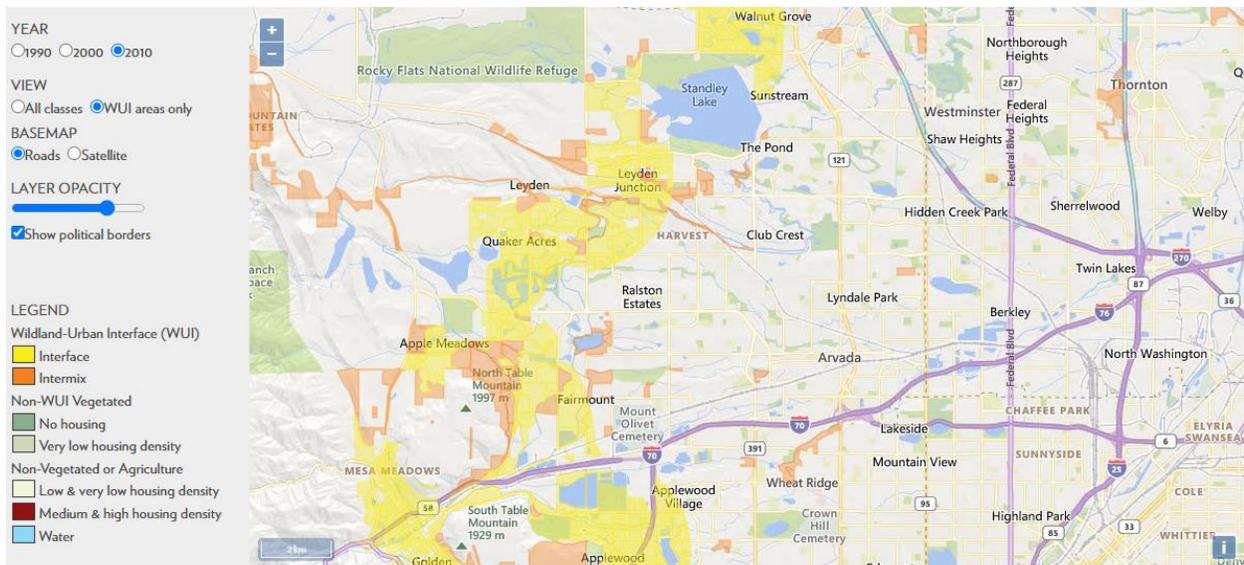
Nighborhood Mitigation Planning Guide

Arvada Fire 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 Section at pio@arvadafire.co.gov.

Wildfire History

The land to the west of our district is considered the WUI or Wildland Urban Interface. This area is at risk of exposure to fires due to the nearby high grasses and high winds notable to the area. However, all of Arvada Fire’s district is built within wildfire-prone ecosystems (see incident mapping on following page). Therefore, residents of and visitors to all our neighborhoods can benefit from learning about wildfire hazards and risk reduction. To better understand the areas that are considered WUI within our district please reference the map below.

WILDLAND-URBAN INTERFACE (WUI) CHANGE 1990-2010

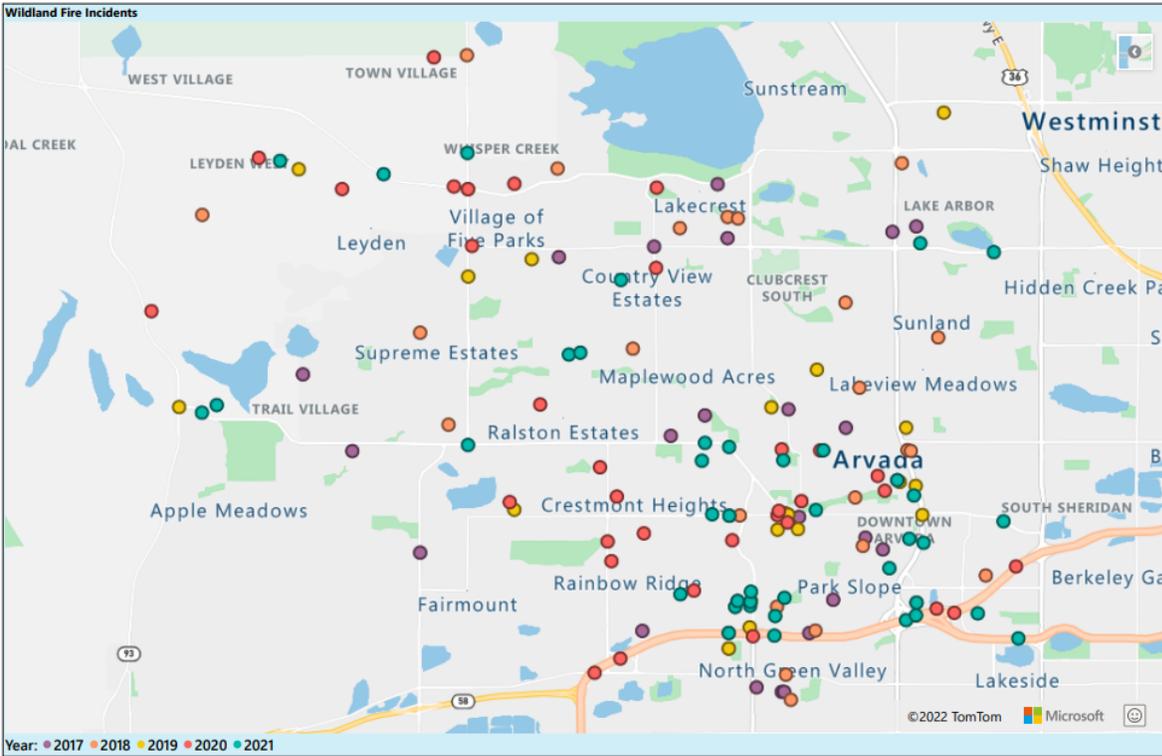




Arvada Fire Incident Reporting

Incidents From:	Incidents Through:	Total Incidents:
2017	2021	153

Wildland Fire Incidents





Emergency Response

The impacts of hazards can often be lessened or even avoided if appropriate actions are taken before events occur. The Jefferson County Hazard Mitigation Plan (HMP) was updated in 2021 and describes what the County and jurisdictions will do to reduce their vulnerability to the hazards. You can access the plan here: <https://www.jeffco.us/488/Hazard-Mitigation-Plan>.

Arvada Fire 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. Arvada Fire has a robust wildland team that is ready to respond within our community but is also used for deployments around the United States. Our wildland response capabilities include three brush trucks in addition to our other apparatus. Mutual aid agreements with our surrounding agencies enhances our ability to respond to a larger incident within our district.

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.

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 $1 \frac{1}{2}$ 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 Arvada Fire, 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.

Undeveloped Land

The following recommendations from Arvada Fire apply to undeveloped land.

- 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 undeveloped land, 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.

Arvada Fire will provide specific recommendations for each open space tract as requested by the land management entity. The impact of undeveloped land 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 Arvada Fire. Email pio@arvadafire.co.gov 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:

GROUNDCOVER SPECIES		
COMMON NAME	WATERING	LIGHTING
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

LOW SHRUB SPECIES		
COMMON NAME	WATERING	LIGHTING
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

LARGE SHRUBS, TREE SPECIES		
COMMON NAME	WATERING	LIGHTING
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



Evacuations

Everyone should register for their county's reverse emergency notification system to receive emergency information such as pre-evacuation and evacuation notices. Currently, the CodeRED system is used by emergency services agencies in Jefferson County. Landlines are automatically included in CodeRED notifications, but residents and businesses are encouraged to visit the [CodeRED registration website](#) to add additional contact information, including additional cell phone numbers, SMS (text) and email address preferences. You may also elect to receive severe weather notifications, including severe winter storm, flood watch and warning, and red flag warning conditions. In early 2022, the CodeRED system will be transitioned to a new vendor. Residents may need to opt back into the new system when it is available. Arvada Fire, Jefferson County and the City of Arvada will share information as soon as it is available. If you do not have internet access or need assistance, please contact the Jefferson County Communications Center Authority at 303-980-7300.

Ready

- Sign up for local emergency notification system.
- Assemble a Go Kit. Remember the 8 P's!
 - People & Pets
 - Pictures and Photo Albums
 - PC's
 - Papers (important)
 - Prescriptions and Medications (pets too)
 - Plastics (credit cards)
 - Personal devices (phones and chargers)
 - Passports & IDs
- Create an Action Plan:
 - Includes evacuation meeting locations
 - Include communication plans.
 - Include the evacuation of animals.
 - Designate an emergency meeting location outside of the hazard area.
- Practice your plan
 - Assemble remaining items from your go-kit and load your vehicle(s).
 - Drive to your designated meeting place.
 - Practice notifying a family or friend of your status.
 - Practice several different evacuation routes.
- Ensure that everyone in your household knows where your gas, electric, and water main shut-off controls are located and how to use them.

Set

- Monitor fire weather conditions and fire status. Monitor emergency alerts. Check Arvada Fire, County and City social media. Note: Twitter is often the preferred social media platform for providing emergency updates as it is quick and to the point.
- Alert household and neighbors.
- Dress in appropriate clothing (i.e., clothing made from natural fibers, such as cotton, and work boots). Have goggles and a dry bandana or particle mask handy.
- Ensure your Go Kit includes all necessary items, such as a battery powered radio, spare batteries, emergency contact numbers, and drinking water.
- Remain close to your house, drink plenty of water, and ensure your household members and pets are accounted for and ready to leave.

INSIDE CHECKLIST, IF TIME ALLOWS

- Close all windows and doors.
- Remove all shades and curtains from windows and ensure all blinds remain open unless you have metal blinds. Close all metal blinds.
- Move furniture to the center of the room, away from windows and doors.
- Turn off pilot lights and air conditioning units.
- Leave your lights on so firefighters can see your house in smoky conditions

OUTSIDE CHECKLIST, IF TIME ALLOWS

- Make sure combustible items are a safe distance away from the exterior of the house (e.g., patio furniture, children's toys, door mats, etc.) If you have time, place these items inside your garage or home where they will not become a hazard.
- Turn off propane tanks and other gas at the meter.
- Don't leave sprinklers on or water running. They can affect critical water pressure.
- Leave exterior lights on.
- Back your car into the driveway to facilitate a quick departure. Shut doors and roll up windows.
- Have a ladder ready to use to cover attic vents. Use pre-cut plywood or commercial seals. Use the same for ground vents. Do so in a safe manner, and only if time permits.
- Patrol your property and extinguish small fires, if you can do so safely, until you leave.

Go!

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.

Arvada Fire 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 www.wildlandfirersg.org. Arvada Fire and the City of Arvada also can provide presentations on evacuation preparedness.

What are the different types of emergency notifications and what do they mean?

Shelter-in-place: Stay put

There is a hazard in your area, and you should remain or go indoors. Do not go outdoors and do not evacuate the area. This may be the safest strategy for hazardous materials spills, law enforcement activity, or other incidents where an evacuation could actually increase the threat to your safety.

Pre-evacuation: Prepare to leave

There is a hazard in your area that may require you to evacuate in the near future. Everyone should be prepared to leave at a moment's notice. If you feel you are in danger and want to leave now, do not wait. You should also consider leaving now instead of waiting for an evacuation order if you meet any of these conditions:

- You need additional time to evacuate
- You need to arrange for transportation assistance
- You have livestock or other large animals that need to be evacuated

Evacuation: Leave now

There is a hazard in your area and you have been ordered to evacuate immediately. Do not pack up valuables. Take only what you need and GET OUT. If you need assistance evacuating yourself or animals, call 9-1-1. If you are provided the safest escape route, make sure you follow the instructions, as other routes may be closed or impassable.

What to do when the incident is occurring?

Listen to the first responders in your area during evacuations. Your reverse 911 system will be your primary source of information you can also keep an eye on social media: @ArvadaFire @ArvadaPolice.



Risk Reduction Resources

We recognize 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, 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.
- Connected communities result in more resilient communities. Get enrolled in the Neighbors Connected program through the City of Arvada. Those enrolled have access to amenities (trailer, movies, grants) and will build more connected and sustainable neighborhoods. Within their resources is also a [Talent Bank Tool](#) where you can gather important information about the collaborative resources within your community.
- The Colorado State Forest Service may have cost-reimbursement or similar programs to offset part of your expenses for mitigation. The knowledgeable personnel at the Golden District Office are available at <https://csfs.colostate.edu/golden/>, 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/>.

Educational Resources

Arvada Fire and the City of Arvada 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 Arvada Fire, 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 neighborhood risk assessments when requested by residents.

What's Next?

- Provide your residents with a map of the area
- Provide resident with the [Ready Set Go Action Plan](#), Arvada Fire can provide you with printed versions.
- Review your HOA guidelines. What can you adapt to make your community more resilient?
- [Attend American Red Cross trainings:](#)
 - The American Red Cross Colorado Chapter is a non-profit humanitarian organization that provides disaster relief and helps people during disasters.
- [Join the Arvada CERT team:](#)
 - The Arvada Community Emergency Response Team (Arvada CERT) is a volunteer emergency response team that was started in partnership with the City of Arvada and the Arvada Fire Protection District. Arvada CERT Members are trained to be ready for disasters and will be better able to help themselves and their neighbors respond and recover from emergencies. CERT Members become part of a specialized team that can help our local first responders on special projects related to emergencies and disasters.
- Reference [Ready.gov](#) to learn more:
 - This website has many resources on making a preparedness plan for individuals, families, and small businesses. It is useful for residents to begin their overall preparedness planning for all types of disasters and emergencies, including wildfire, that may impact our community.