

Neighborhood Mitigation Plan: Castle Pines North Metro District

This Neighborhood Mitigation Plan (NMP) is a cooperative effort between the Castle Pines North Metro District (CPNMD), the City of Castle Pines, and South Metro Fire Rescue (SMFR). This NMP assesses the hazards and vulnerabilities of the district's open space and infrastructure, identifies a path for it to adapt to the potential for wildfires, improves safety for residents and emergency responders, reduces home-ignition risks from wildfires, and prioritizes projects to address those risks.

District Description

The CPNMD, established in 1984, is a Title 32 Special District located in Douglas County, Colorado. It is responsible for water and wastewater utilities, storm drainage, three parks, fourteen miles of trails, and 352 acres of open space in and surrounding the City of Castle Pines.

The CPNMD's assets include wells, a water treatment plant, distribution system, hydrants, water rights, and 1,500 acre-feet of storage at Reuter-Hess Reservoir.

Infrastructure

Infrastructure consists of the basic systems that support neighborhoods physically, socially, and economically. Infrastructure within the CPNMD boundaries that is not managed by it includes the following systems: roads, electricity, and natural gas.

Roads

- There are five main routes out of CPNMD: West Castle Pines Parkway splits into Daniel's Park Road which can lead vehicles northwest or south, Monarch Boulevard leads vehicle north, Lagae Road leads vehicles south, and Castle Pines Parkway leads vehicles east to and beyond Interstate 25.
- All roads within the CPNMD are paved and most are wide enough for fire apparatus. They are maintained by the City of Castle Pines.
- Some of neighborhood roads are gated. Each gate has Knox Box technology for emergency access, but access to neighborhoods may be compromised during a power outage.

Electricity

- CORE Electric Cooperative (formerly known as IREA) provides electrical service throughout the jurisdiction. Electrical distribution lines are buried, but transmission lines are above ground.
- Xcel Energy also has above-ground transmission lines in the jurisdiction.

Natural Gas

- Xcel Energy provides natural gas service within CPNMD's boundaries.

This infrastructure is vulnerable to interruption and damage from wildfires. Mitigation recommendations for individual buildings or sites are available from SMFR. Email

ReducingRisk@southmetro.org to set an appointment. General mitigation recommendations are listed later in this plan.

Emergency Response

The first-due firefighting resources respond from SMFR Station 36 (421 E. Castle Pines Parkway), Station 17 (9554 S University Boulevard, Highlands Ranch), and Station 39 (475 W. Happy Canyon Road). 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.

The City of Castle Pines contracts with the Douglas County Sheriff’s Office, which is based in Castle Rock, for law enforcement.

Douglas County provides emergency management services.

Ecological Context

Topography is one of the key factors that influences wildfire behavior, largely because fire typically burns faster uphill than downhill. District facilities and other assets built above slopes with native vegetation face a higher risk from low-, moderate-, and high-intensity wildfires than other buildings.

Additionally, Castle Pines is on a plateau between Lone Tree and Castle Rock. As a result, its weather can be more extreme than in those adjacent communities. Stronger winds and more frequent lightning strikes add to the intrinsic hazards for this area.

Vegetation within the district is a combination of native and exotic tree, shrub, flower, and ground cover species. Unfortunately, many of the plants chosen for landscaping on district property as well as around homes adjacent to CPNMD facilities and open space can ignite quickly and produce significant radiant and convective heat.

Juniper, piñon pine, Pfitzer, cedar, Mugho pine, arborvitae, Scotch pine, bristlecone pine, ornamental spruces and pines, and Gambel oak are volatile throughout the year. None of these species should be within 30 feet of a structure. Replace them with native wildfire-resistant species including the following options:

Fire-Resistant Groundcovers		
Common Name	Watering	Lighting
Creeping grape holly	Low	Shade
Kinnikinnick	Medium	Either
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
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Fire-Resistant Low Shrubs		
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/Mtn. Lilac	Medium	Sun
Golden currant	Low	Filtered
Little-leaf mockorange	Medium	Sun
Little-leaf mtn. 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 mtn. mahogany	Low	Sun
Wax flower	Medium	Either
Western sand cherry	Low	Sun

Fire-Resistant Large Shrubs and Trees		
Common Name	Watering	Lighting
American wild plum	Medium	Partly Shaded
Aspen	Medium	Sun
Boulder raspberry, thimbleberry	Medium	Partly Shaded
Filbert, 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

Austrian pines also are an exotic, flammable tree. Depending on their location, removing low-hanging branches to protect the canopy may be sufficient mitigation.

Fire History

CPNMD is within a wildfire-prone ecosystem. Seven wildfires burned a total of nine tenths of an acre within the city boundaries between 2016 and 2020. Additionally, this neighborhood was threatened by the Cherokee Ranch Fire in October 2003. That wildfire began to the west of the district’s boundaries when high winds toppled a tree onto utility lines. The 1,000-acre wildfire burned eastward toward the district and stopped when a cold front brought lower temperatures and higher relative humidity to the region after sunset. Those conditions helped firefighters contain and extinguish the blaze.

Hazard Identification and Risk Reduction Recommendations

Community risk reduction takes a village; it requires individual actions and collective action to be effective over a longer term. 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 and release less heat.
2. Firefighters are unable to engage directly any flame length greater than four feet because of safety concerns. A direct attack places firefighters along the head or front of a wildfire where they use hand tools to create a handline—a path down to mineral soil—in front of the flames to stop its growth. 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 remaining fuels between their line and the fire.

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.
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 because they have thick bark and low sap content. Removing low-hanging branches increases their fire resistance. 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.
7. 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 building contents, they can ignite spot fires. Embers typically find vulnerabilities in the nooks and crannies of buildings.
8. Structures also can ignite from heat radiating laterally from burning fuels such as junipers and other buildings.
9. 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 an opportunity to extinguish them directly.

SMFR personnel conducted surveys of the district in February and March 2022 to prioritize open space for mitigation.

Priority	Legal Name	Location	Size	Adjacent Homes
1	Tract H1-A Romar West 2nd Amendment	W of Topaz Vista	12.10	45
2	Tract M-1 Romar West 1st Amendment	E and S of Turquoise Terrace	19.37	24
3	Tract A Castle Pines North #27	W of Tapadero Way	9.63	37
4	Tract K Castle Pines North #27	W of Whisper Canyon	21.88	16
5	Tract A (Open Space) Castle Pines North #17a	S of Briar Cliff Drive	20.88	31
6	Tract 5 Castle Pines North Phase I	Surrounding The Retreat	28.83	6
7	Tract E Castle Pines North #27	N of Esperanza Drive	13.46	22
8	Tract K Castle Pines North #21	S of Shoreham Circle	8.40	33
9	Tract AA Castle Pines North #27	S of Esperanza Drive	10.14	26
10	Tract F1 Castle Pines North Filing #27 3rd Amd	S of Serena	11.51	50

11	Tract J1-A Romar West 2nd Amendment	Surrounding Jasper Pointe	7.97	27
12	E1/2 4-7-67 Lying W Of Castle Pines North Filing #6	E of Monarch, N of Tenby Way	8.37	14
13	Tract E Castle Pines North #24	S of Berganot Trail	4.02	26
14	Tract N1 Castle Pines North Filing 27 Amendment 2	S of Twisted Oak Drive	6.11	7
15	Tract D Castle Pines North #11 Amended	SE of Kent Place	9.13	23
16	Tract C Romar West	SE of Vacquero Drive	2.10	7
17	Tract L Castle Pines North #21	W of Buffalo Ridge Elementary	2.67	0

Properties adjacent to these 196.57 acres of open space face additional risks from the proximity of vegetation managed less often than that on adjacent private property. The impact of open space mitigation is leveraged with backyard mitigation and vice versa.

The following recommendations from SMFR, which are available in the 2022 Neighborhood Mitigation Planning Guide, apply to these open space areas.

- Cut back Gambel oak along fence and property lines. The oak-less width between remaining oak groves and fence lines should be at least 1 ½ times the remaining oaks' height.
- Within the remaining oak groves throughout the open space thin at least 20% of stems and trunks and remove ladder fuels (low-hanging branches) within six feet of the ground. Remove previous years' frost-kill.
- Mow grasses along backyard property lines. A mow strip at least six feet wide (the width of a typical commercial mower deck) will provide a speed bump as wildfires burn from taller grasses into mowed grasses, lowering flame intensity and reducing speed of spread.
- Remove ladder fuels 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. Maintain at least two thirds of a tree's canopy to protect its vitality.

There are several options for treating Gambel oak including outright removal, top-kill with mastication and follow-up mowing/trimming new growth, removing ladder fuels, thinning a percentage of stems from groves, restricting the height of oak, and clumping oak into groves. This work can be performed mechanically, chemically, manually, or with goats.

CPNMD Infrastructure

- 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 residential buildings or fire hydrants.
- If mitigation around any of these infrastructural improvements is the responsibility of residents, provide such guidance to them seasonally.

Evacuations

It's essential that CPNMD staff understand their responsibilities and roles during wildfires generally, but particularly during evacuations so that they do not put themselves into dangerous situations. 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 and www.wildlandfirersg.org. Adding that guide to the CPNMD website would increase resident access to it.

CPNMD also can encourage residents to register for Douglas County's reverse emergency notification system called Code Red to receive emergency information such as pre-evacuation and evacuation notices. Register land lines and cell phones by following the links to the system at dcsheriff.net.

Risk Reduction Priorities

Based on this analysis, SMFR offers the following recommendations for EHA:

Priority	General Project	Timeline	Guidance
1	Conduct mitigation on private property based on recommendations above. Open space mitigation is more effective with private property mitigation.	2022	Residents are encouraged to contact SMFR for a free, in-person home wildfire risk assessment to create a written plan as required by local and state regulations. Email Einar.Jensen@southmetro.org to schedule an assessment.
2	Open Space Mitigation	2022	See above
3	Conduct an evacuation drill	2022	Collaborate with SMFR and DCSO to practice evacuating the neighborhood.

4	Provide multiple educational opportunities for large and small groups of residents.		See below
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Additionally, SMFR recommends that CPNMD hosts 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, Douglas 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.

Risk Reduction Resources

SMFR recognizes that wildfire mitigation can be expensive. The following programs may assist homeowners or the HOAs with some of those costs:

- The Douglas County Soil Conservation District may have grants or cost-sharing programs for mitigation projects. Check this website for information: <https://douglasconserves.org/grants/>
- The City of Castle Pines is 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.
- SMFR personnel are available to write letters of support for projects and provide prescriptions for open space mitigation.

SMFR recommends that this neighborhood mitigation plan be updated regularly to track achievements and adjust priorities.