

**Cheyenne / Laramie
County**

**Community Wildfire
Protection Plan**

**Laramie County Fire Authority
District and Laramie County Fire
District #10**



**Prepared for
Laramie County Emergency
Management Agency
3962 Archer Parkway
Cheyenne, WY 82009**

Updated December 2021 – By LCFW

Original CWPP

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Adoption and Approval

This Laramie County Fire Districts #10 and Laramie County Fire Authority Fire District (LCFA) Community Wildfire Protection Plan (CWPP) is hereby approved and adopted this ____ day of _____, 2021(2). This Plan meets all minimum standards of the Healthy Forests Initiative of 2002 and Healthy Forests Restoration Act of 2003 (PL108-148) for CWPP's and presents a desired direction for wildfire protection and preparedness for Wildland Urban Interface residents, property, infrastructure and valued resources in the portions of Laramie County for which it has been prepared.

Board of County Commissioners

Laramie County Fire Warden

Fire Protection Districts

District 10

Laramie County Fire Authority Fire District

Laramie County Sheriff

Wyoming State Forestry

Cheyenne Board of Public Utilities

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Introduction to Update

This document is an update to the 2016 Laramie County Community Wildfire Protection Plan. The 2016 CWPP plans main objective was to identify the high-risk areas of Western Laramie County and the measures and actions that could be taken to mitigate and prevent the devastating affect wildland fires have on communities. This update serves as a clerical update as the original fire protection districts have changed by way of name. Other updates to this plan include referencing Laramie County Land Use Regulations and a nearly implemented rural water regulation. All subdivision mapping is still relevant for the 2021 update, no changes needed.

Background and Legal Authorization

The Western United States has experienced increasing growth since the end of World War II, with much of that growth occurring in previously rural areas. Growth in Wyoming has accelerated since the 1970's as a result of energy development, expansion of military bases and exercise areas, and improved transportation infrastructure. Laramie County has seen increases in population in the unincorporated areas of the County as subdivisions of one to fifty-acre tracts have spread from the Cheyenne urban area to the west and north along the Interstate Highway 25 and 80 and State Highway 210 and 211 corridors. The majority of these subdivisions have developed in grassland ecosystems, but now are moving into the foothills and the ponderosa pine forestlands. Most of the subdivisions do not have central water systems or storage systems for firefighting. Fire protection has been the responsibility of volunteer Fire Protection Districts covering large rural and semi-rural areas. Response times are long due to the distances involved.

Recurring drought periods have stressed both prairie and forestland vegetation, allowing invasion by non-native vegetation like tumbleweeds and cheatgrass as well as prompting forest insect outbreaks. Mountain Pine Beetle (MPB) and Ips beetles have infested many forest stands, killing up to half of the standing trees in some locations. Fire suppression due to increasing population and infrastructure in the area has increased fuel loads over historic levels and set the stage for more intense wildfires when they do occur.

Large wildfires in grasslands, ponderosa pine/grassland savannahs and ponderosa pine forestlands have occurred with increasing loss of homes and other infrastructure in eastern Wyoming over the past decades, with the summers of 1988, 2000, 2012 and 2020 being particularly notable for the numbers of fires and acres burned. In 2015 a grassland fire near Casper burned 13 homes in a matter of four hours. With the most notable wildland fire occurring in 2020, the Mullen Fire. The Mullen Fire began as a later season fire, September of 2020, destroying 66 structures and burning 176, 878 acres.

Nationally, the 2000 fire season prompted the USDA Forest Service and the USDI Bureau of Land Management to issue a joint report to the President entitled "*Managing the Impacts of Wildfire on Communities and the Environment: A Report to the President in Response to the Wildfires of 2000.*" This report evolved into the National Fire Plan (NFP) and also prompted Congress to enact the Healthy Forest Restoration Act of 2003 (NFRA). NFRA encouraged the States to establish minimum standards for the development of Community Wildfire Protection Plans (CWPP's). Wyoming has not adopted formal standards of its own but advises Counties and communities use the CWPP guidelines developed by Firewise (www.firewise.org).

The 2009 Federal Land Assistance, Management, and Enhancement Act (FLAME) directed the US Departments of Agriculture and Interior to develop a national cohesive wildland fire management strategy. The National Strategy and National Action Plan were released in April 2014, setting three primary national goals for wildland fire management:

1. *Restore and maintain landscapes*: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
2. *Fire adapted communities*: Human populations and infrastructure can withstand a wildfire without loss of life and property.
3. *Wildfire response*: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

The national goals require that four broad challenges be addressed and implemented:

1. *Managing vegetation and fuels*;
2. *Protecting homes, communities and other values at risk*;
3. *Managing human-caused ignitions*; and
4. *Safely, effectively and efficiently responding to wildfire*.

Governor Matt Mead established a Governor's Task Force on Wyoming Forests in 2013. The Task Force's Report was released in January 2015 and includes several recommendations on wildfire. The recommendations include:

- Recommendation 3. The State of Wyoming should proactively reduce the threat and occurrence of destructive wildfires by managing vegetation and fuels; protecting homes, communities, and other values at risk; and effectively and efficiently responding to wildfire.

Purpose and Objectives

This document has been prepared to assist Laramie County residents, local government, emergency responders and land management agencies in responding to national and state wildfire management direction and in achieving the following goals:

1. Protect the lives of residents and emergency personnel.
2. Protect property and critical infrastructure in the Wildland Urban Interface.
3. Protect key environmental values and quality of life.

To those ends, the objectives of the CWPP are to:

1. Provide a comprehensive review of the existing community risks of wildfire using best available data and current methodology to validate identified risk areas.
2. Recognize the mitigative actions that have been taken or are underway in the communities in the Plan area.
3. Achieve collaboration by bringing together diverse local, state and federal interests to identify essential community values; discuss mutual concerns for public safety, community sustainability; and natural resource protection.
4. Share information from the community assessments with private landowners, public land managers, the Fire Warden and Fire Protection Districts, and Public Safety Officers to reduce damage to the values identified as at risk.
5. Foster coordination between all the stakeholders in the Plan area.
6. Assist in obtaining eligibility for funding and other assistance from State and Federal agencies for wildfire mitigation, appropriate equipment and training.

Plan Area and Setting

The CWPP area is bounded on the south by the Colorado –Wyoming border, on the west by the Albany – Laramie County line, on the east by State Highway 222 and County Road 120 (Roundtop Road and Telephone Road), and on the north by a line from the intersection of County Roads 120 and 228 west to the LCFA Fire Station at Horse Creek and then west to the County line (CWPP Area Map, Appendix A). The Plan area includes much Laramie County Fire Authority Fire Protection District and all of Laramie County Fire District #10, totaling 347,873 acres. There are over thirty-four recognized subdivisions, a school, several churches, a church retreat, an agricultural research station, a business park, a city landfill, a two-wind generator “farm,” Curt Gowdy State Park with three municipal water reservoirs, and numerous individual residences and privately owned ranches in the Plan area. Two major railroad lines cross the area, one parallel to Interstate 80 from east to west across the southern portion of the area and the other running from the southeast corner to the northwest corner roughly parallel to State Highway 211.

The vegetation in the Plan area ranges from short-grass prairie dominated by blue gramma, buffalograss, and western wheatgrass with riparian willow and cottonwood on the east through mountain shrub/grass communities to ponderosa pine forestland on the western portions. Aspen, narrowleaf cottonwood and willows are present in the riparian areas in the higher elevations. Topography rises from rolling prairie at an elevation of 6420 feet on the east through rocky bluffs and foothills to low mountains at elevations of 7750 feet on the west.

Fire History

Fire has been an integral part of the ecosystems of Laramie County since the last ice age. Pre-settlement (pre-1880) fire frequency is estimated to be 10 to 35 years in the Great Plains grasslands (Brown and Smith 2000). Most pre-settlement fire is thought to be from natural starts like lightning. Native Americans used fire in many ways, including landscape-level fire to manage wildlife movement. Post-settlement land use activities like livestock grazing and construction of ranches and communities modified the fire occurrence pattern and frequency by suppressing fires that threatened infrastructure and livestock forage.

The ponderosa pine forestlands in the western part of the Plan area are believed to have had a high frequency, low intensity fire regime with fire frequencies of 10 to 30 years prior to 1890 (Brown and Smith 2000). Many of these fires may have moved into the forestland from the grasslands, although local lightning strikes were also likely ignition sources. Some forestland areas, particularly riparian zones dominated by aspens and willows and north-facing slopes associated with moist riparian areas, had longer periods between fires, possibly up to 100 years, and so could be considered mixed severity and higher intensity (Brown and Smith 2000; Arno and Fiedler 2005). This fire regime probably held sway until the late 1800’s. Fire suppression efforts after that time has increased fuel loads in these forests, leading to more intensity when they do burn and making stand-replacement fires more likely.

Prevailing winds are from the west, however, fires driven by thunderstorms or frontal boundaries can move in any direction.

Public Involvement

NRG personnel met with members of the Laramie County Joint Wildfire Task Force (JWTF), which included Emergency Management, Fire Marshal, Fire Chiefs, Board of County Commissioners, U.S. Forest Service, and State Park personnel. The purpose of the meeting was to discuss NRG's approach to the CWPP and discern any particular concerns from the JWTF group. Two primary concerns voiced by the JWTF included:

- Understanding actions needed to better protect homes
- Protection of the water resources associated with Curt Gowdy State Park.

The Task Force was also interested in some resources or tools that could help them move forward in working with their communities to reduce fire risk such as checklists, ideas for codes or ordinances, and funding opportunities.

NRG presented their idea about doing "Community Assessments" for the various subdivisions and stressed that the County or Fire Districts would still need to follow up with residents for individual home assessments. It was agreed to proceed with this approach and send in two draft assessments for the JWTF.

The first round of public meetings occurred the second week of June. NRG held a meeting in each of the fire districts: District 2 now known as Laramie County Fire Authority on June 9, District 8 now known as Laramie County Fire Authority on June 10 and District 10 on June 11. NRG also had a meeting with six agency partners including Wyoming State Forestry, Curt Gowdy State Park, and the Cheyenne Board of Public Utilities on June 11. Approximately 8-10 people attended the District 2(LCFA) and 10 meetings and about 30 people attended the District 8(LCFA) meeting.

One key point that came out of these meetings was that over the past decade the railroad has closed several railroad crossings, resulting in longer travel times for fire departments to reach some fires.

The second set of public meetings was held January 19 in District 8(LCFA), January 20 in District 2(LCFA) and January 21, 2016 in District 10. Approximately 20 people attended the District 8(LCFA) and 10 meetings and 15 people attended the meeting in District 2(LCFA). A "sand table" demonstration was a part of the meetings to display the effects of mitigation measures, response times, wind and topography on wildfire growth and speed. Defensible space and fire resistant home construction were consistent topics at the three meetings.

Vegetation Cover Types and Fuel Models

Cover types and fuel models for the Plan area were developed from LANDFIRE 2012 mapping together with field reconnaissance. The fuel models are from the publication *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*, Rocky Mountain Research Station General Technical Report 153, 2005. The models are dynamic due to the high amounts of fine herbaceous fuels present, meaning the fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of moisture content on spread rate and intensity is strong (Scott and Burgan 2005).

The area the respective grass models cover in western Laramie County is very dependent on annual precipitation. For example, areas that may function as GR1 in a dry year may function as GR2 in the fall or spring following a wetter year. For that reason the grass model acreages have been lumped together. Total GR1/2/4 area is 238,316 acres, or 68 percent of the plan area. The grass fuel model specifics are shown below.

Model GR1 Short, Sparse Dry Climate Grass



Model GR1

This model is found in prairie dog town areas, the recently grazed and mowed areas, and some of the recently burned (less than 12 months recovery) areas. The primary carrier is sparse and/or discontinuous grass less than one foot in height. Isolated small shrubs and yucca may be present but do not affect fire behavior. Fine fuel load is 0.4 tons/acre. Extinction moisture content is 15%. Rates of spread are less than 1300 feet per hour at any wind speed over 5 mph. Flame lengths are under 2.5 feet, allowing direct attack in any conditions.

Model GR2 Low Load, Dry Climate Grass



Model GR2

This fuel model covers the vast majority of the Plan area. The primary carrier is grass. Fuel load is greater than GR1 and grass is more continuous and taller. Scattered live shrubs and yucca may be present but do not affect fire behavior. Fine fuel load is 1.1 tons/acre. Extinction moisture content is 15%. Rates of spread can be 3000 to 8000 feet per hour at wind speeds over 10 mph. Flame lengths can be over 4 feet at wind speeds above 8 miles per hour, requiring indirect attack. Wind is the most significant factor for both rate of spread and flame length.

Model GR4 Moderate Load, Dry Climate Grass



Model GR4 Foreground

This model is found in the riparian areas along Crow Creek, Lodgepole Creek and Horse Creek. However, some of the moister sites of the GR2 Model may move into this model in years with greater than average moisture. The primary carrier is grass. Fuel load is more than double GR2 with grass continuous and taller. Scattered live shrubs may be present but do not affect fire behavior. Fine fuel load is 2.15 tons/acre. Extinction moisture content is 15%. Rates of spread can be 6000 to 12,000 feet per hour at wind speeds over 10 mph. Flame lengths can be 6 to 10 feet at wind speeds above 8

miles per hour, requiring indirect attack. Wind is the most significant factor for both rate of spread and flame length.

Model GS1 Low Load, Dry Climate Grass-Shrub



Model GS1 Middleground

Direct attack is possible in most conditions.

Model GS2 Moderate Load, Dry Climate Grass-Shrub



Model GS2

It is associated with Blue Gramma Grassland/Sagebrush cover types.

Model GS1 covers 39,752 acres, or 11% of the planning area. The primary carriers are grass and shrubs combined. Shrubs, primarily bitterbrush and sagebrush, are widely scattered 1 foot high. The grass load is low, similar to GR1. Fine fuel load is 1.35 tons/acre. Extinction moisture content is 15%. Rates of spread can be 2500 to 5000 feet per hour at wind speeds over 10 mph with low or very low dead fuel moisture, but less than 300 feet per hour at moderate or higher fuel moisture. Flame lengths can be 5 to 6 feet at wind speeds above 10 miles per hour, but top out at approximately 8 feet.

Model GS2 covers 49,076 acres or 14% of the planning area. The primary carriers are grass and shrubs combined. Shrubs, primarily bitterbrush, mountain mahogany and sagebrush, are 1 to 3 feet high. The grass load is moderate, similar to GR2. Fine fuel load is 2.1 tons/acre. Extinction moisture content is 15%. Rates of spread can be 2500 to 7000 feet per hour at wind speeds over 10 mph with moderate or lower dead fuel moisture. Flame lengths can be 6 to 10 feet at wind speeds above 8 miles per hour, requiring indirect attack. Fire residence times are longer than Model GR2 due to larger fuels from the shrubs.

Model SH2 Moderate Load, Dry Climate Shrub



Models SH2 Background, GR1 Foreground

Model SH2 covers 1,535 acres, or 0.4% of the planning area. The primary carriers are woody shrubs and shrub litter.

Shrubs, primarily bitterbrush, mountain mahogany and sagebrush, are 1 to 3 feet high. Grass is absent under the shrubs.

Fine fuel load is 5.2 tons/acre. Extinction moisture content is 15%. Rates of spread can be 1200 feet per hour at wind speeds over 10 mph with low or very low dead fuel moisture. Flame lengths can be 6 to 10 feet at wind speeds above 8 miles per hour, requiring indirect attack.

There are less than 465 acres of other shrub models in the planning area, totaling approximately 0.15% of the area. In general, eye-level windspeeds of more than 8 miles per hour will require indirect attack in any of the shrub models.

Model TU1 Low Load Dry Climate Timber-Grass-Shrub



Model TU1

Model TU1 covers 2,188 acres, or 0.6% of the planning area. The primary carriers of fire are low loads of grass and/or shrubs with litter under a tree overstory.

Fine fuel load is low at 1.3 tons/acre. Extinction moisture content is 20%.

Spread rate is low at less than 500 feet per hour with flame lengths of 3 feet even at midflame wind speeds of 10 miles per hour. Direct attack is feasible in this fuel model under most conditions.

This is the fuel model objective in the ponderosa pine forestlands around residences.

Model TL3 Moderate Load Conifer Litter



Model TL3

Model TL3 covers 3,546 acres, or 1% of the planning area. The primary carriers of fire are moderate loads of conifer litter and light load of coarse fuels under a tree overstory. Fine fuel load is low at 0.5 tons/acre. Extinction moisture content is 20%. Spread rate is low at less than 400 feet per hour with flame lengths of 2 feet even at midflame wind speeds of 10 miles per hour. Direct attack is feasible in this fuel model under most conditions, but production rates can be slow.

There are approximately 950 acres of other timber models in the planning area, totaling approximately 0.3% of the area. In general, direct attack is possible in any of the Timber models at eye-level windspeeds of less than 10 miles per hour. Spread rates may be as much as 1320 feet per hour in stands with moderate to heavy litter and coarse fuel loads.

Wildfire Mitigation

Wildfire mitigation can be defined as those actions taken to reduce the likelihood of loss of life and property from a wildfire. Wildfire mitigation will not completely eliminate the risk of loss nor does it reduce the risk of a wildfire occurring. Effective wildfire mitigation enables residents to evacuate safely, increases a home's ability to withstand the impacts of a wildfire, and allows firefighters to safely defend structures and suppress fires where possible. Mitigation can be accomplished through a variety of methods, including hazardous fuels reduction and creating defensible space around individual homes and auxiliary buildings. In support of forest fuels reduction the use of fire-resistant building materials, enhancing emergency preparedness and response capabilities, improving or upgrading current infrastructure, and developing programs that provide community education, foster awareness and actively engaging neighborhoods in wildfire preparation. Once implemented, these actions can significantly reduce the risk of loss from wildfire to an individual home, and on a larger implementation scale, for an entire subdivision or even a community.

Specific mitigation treatment recommendations for Laramie County CWPP planning area were adopted using best practices and recommendations such as those found in the National Fire Protection Association Standard 1144, *Standards for Protection of Life and Property from Wildfire*, Firewise Communities USA, the Fourmile Canyon Fire Report (Graham et al 2012) and other related reports and publications. These recommendations are also based on parameters such as wildland fuels, predicted fire behavior, infrastructure, emergency response resources, and structure ignitability. Recommendations have been reviewed and approved by the core team.

Recommended actions and project prioritization was based on public input, practicality of implementation, and local capability to implement these recommendations. Communities should seek out and take advantage of opportunities to partner with local and state agencies or organizations to plan and fund mitigation projects. Working cooperatively and on a landscape scale level can provide communities with adequate funding, a higher level of technical support and project management.

Public Outreach and Education

The most effective means of initiating local action is through community education and public outreach. Public activities have taken place in varying levels in all three Fire Districts and most local residents are aware of the inherent fire risk in the area, however as more people move to the area, it is necessary to maintain and improve the community knowledge of the basic principles behind wildland fire, actions they can implement to increase their personal safety and that of their home as well as potential funding opportunities. Through education, homeowners are empowered to take action on their own properties, and coordinate efforts with their neighbors to maximize the efficiency of individual treatments.

Through the public education and outreach process discussion and dialogue should begin and support gained for the adoption of a county wildfire ordinance. The development of a working group or task force representing a cross section of stakeholders including elected officials, fire districts, emergency management, home builders, insurance company representation and local community members should be established to take and provide input to proposed ordinance

content and language.

Action Item:

Conduct at a minimum one annual meeting within each fire district, each spring. Community meetings held in the spring, just prior to the main fire season, can spur action by individuals and neighborhoods and allow for coordination of pre fire season preparation and community cleanup efforts within communities in the respective fire district. This can also serve as a forum for presentations by experts in the field who can answer questions, provide technical guidance, and inform community members of available resources.



Firewise Program

The national Firewise program can assist the County, the Fire Districts and the individual homeowners in obtaining information on fire resistant home construction, defensible space creation, assistance in grant development for funding fuels mitigation as well as providing materials and expertise for general public outreach.

Firewise activities in the planning area have primarily been coordinated by a single person out of Fire District 10. These activities have yielded good results and the effort has clearly been recognized and appreciated.

Action Item:

There is a clear need to increase public involvement, secure and manage additional grant funding and coordinate work on large areas of the planning area as well as other areas within the county.

Based on the scale and the effort required we submit the following recommendations for the management of Firewise Activities within Laramie County;

- Laramie County Emergency Management/Fire Warden becomes the central point of contact in the County for Firewise activities. This includes supporting local fire districts and initiating subdivision Fire Ambassador programs that can individually be supported by fire districts.
- Laramie County should continue to be the clearinghouse for grant funds including but not limited to receiving and managing grant funds, awarding funds based on priority need and merit to projects within the county and assumes responsibility for accounting and distribution of funds
- Works with each fire district to coordinate annual Firewise activities, identify and prioritize potential mitigation projects, recruit Firewise Ambassadors, set up subdivision

level Firewise Ambassador Training and supports those efforts as needed including training and public presentations.

Action Item:

Firewise materials and Wyoming State Forestry publications like *Living with Wildfire in Wyoming* (Miller and Thompson 2013) should be made available to the public at each fire station, post office, HOA meetings, and other public gathering places on a regular basis.

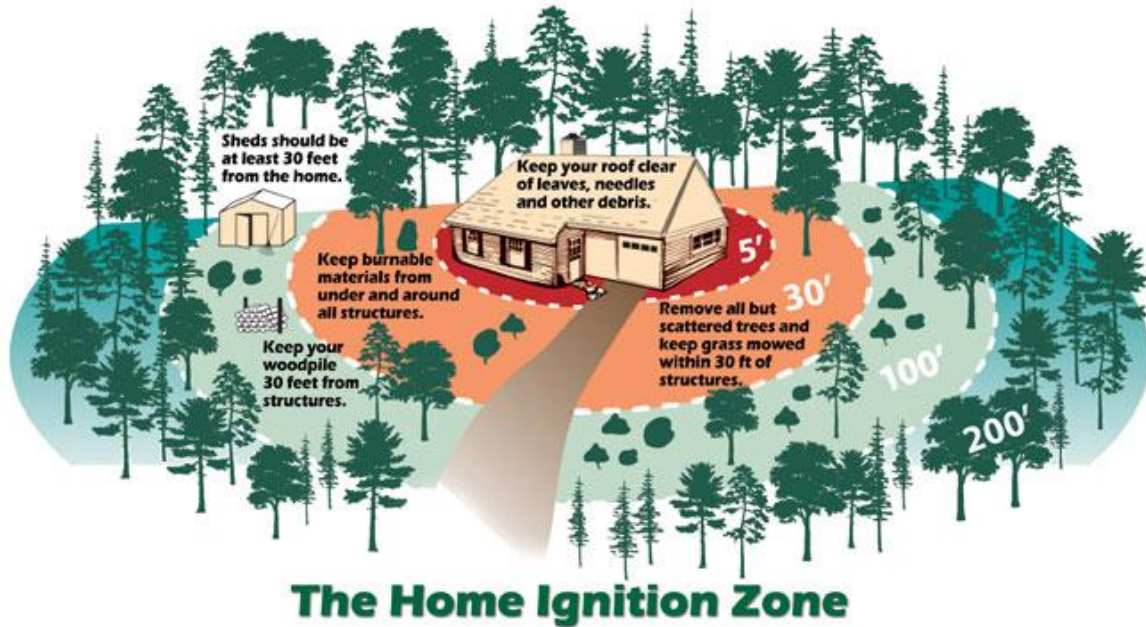
Building Improvements

The purpose of building improvements is to reduce the ignitability of surface building material and minimize the opportunities for embers from an approaching wildfire to cause an ignition. Structural ignitability can be defined as the flammability of the home and its immediate surroundings. This separates the problem of WUI structure fire loss from other landscape-scale fire management issues, because highly ignitable homes can be destroyed during low intensity wildfires, whereas homes with low structural ignitability can survive high intensity wildfires.

Structural ignitability, rather than wildland fuels, is the principal cause of structural losses during wildland/urban interface fires. Reducing hazardous fuels around a structure is very important to prevent fire loss, however recent studies indicate that building materials have a significant influence on whether a structure will survive a wildfire.

Key structural components that can increase ignitability are flammable roofing materials such as cedar shingles, flammable decks and/or siding, and the presence of readily ignitable and ember receptive vegetation and material such as ornamental trees and shrubs, wood piles and natural bark that is immediately adjacent to homes.

The area immediately around the home, 30, 100, and 200 feet from the home, is called the home ignition zone and is the most critical area to prepare and maintain to prevent loss from fire.



Studies of home survivability in wildfire incidents also indicate that homes with noncombustible roofs and a minimum of 30 feet of defensible space had an 85 percent survival rate. Conversely, homes with wood shake roofs and less than 30 feet of defensible space had a 15 percent survival rate. This evidence suggests that investing in building improvements and ignition resistant construction to decrease the structural ignitability of the home is just as important as forest management and fuels thinning on the property. In areas where tree removal is not possible, homeowners can still reduce the hazard in this way.

Action Item:

All homeowners should continually keep roofs and gutters clear of leaves and pine needles. Embers from a wildfire can become windborne and travel long distances before settling and even small amounts fine fuels on a structure can ignite and put a home at risk. Defensible space becomes inconsequential if embers cause ignition on the roof, deck, or in eaves. Clear combustible material such as firewood, trash, or woody debris from the side of the home and underneath exposed decks

Action Item:

Cover openings around the home, such as gutters, attic vents, chimneys, and areas under decks with screens to prevent the accumulation of fuels where embers can ignite the structure.

Defensible Space

Precautionary action taken before a wildfire strikes often makes the difference between saving and losing a home. Creating a defensible space around a home is a vital component in wildfire hazard reduction. These efforts are typically concentrated within 0 to 100 feet, with studies showing efforts within 30 feet of the home increase the chance for structure survival. This also creates a safe area for firefighters to work safely to protect a home during a wildfire.



Fuels Mitigation and Defensible Space Creation during Home Construction

Facts presented from post fire studies of the Fourmile Canyon Fire (Graham, et al 2012) which occurred just south of this planning area in Colorado in 2010 revealed several important facts;

- 83% of the 168 homes lost were destroyed from spread of surface fire and fire brand ignition,
- Only 29 of the 168 homes destroyed were attributed to high intensity crown fire,
- 162 of the 168 homes destroyed occurred within the first 12 hours of the fire.

During the early stages of a wildfire when there are limited firefighting resources, homes and neighborhoods with defensible space are much more likely to be assigned structure defense crews than those without. In general, structures that do not have defensible space do not provide adequate area for firefighters and firefighting apparatus to work safely. The risk to human life outweighs any possible benefit of trying to defend an unsafe property.

Action Item:

Implement defensible space around all homes and structures in the assessment area. Create a fuel-free zone 5- 15 feet wide directly adjacent to the structure, which reduces structural ignitability and reduces direct flame impingement on the structure. Fuel cut as a result of mitigation efforts should be removed as soon as possible.

Homes in Timber Fuel Type

In a secondary zone, approximately 30' out from the structure depending on topography, thin trees to provide adequate crown spacing to break aerial fuel continuity and not allow fire to spread in the crowns of trees. Remove standing dead, dying or diseased trees, limb lower branches 6'-10' of the ground to reduce ladder fuels and opportunity for fire to spread from surface fuels into the tree crowns. Remove brush and other continuous fuels to minimize surface

fuel spread and lessen the chance for fire to communicate vertically into trees. Where possible, extend forest treatments out to property line to reduce fuel loading and enhance overall forest health.

Homes in Grass Fuel Type

Recent events during the Station Fire in Natrona County have again proven homes in grass fuel types are vulnerable to ignition. Homeowners in grass fuel types should mow and maintain mowing before and during fires season to reduce the impact of a fast moving intense wildfire on homes and outbuildings. A minimum of a 100' mow strip around homes and building will reduce the intensity of an approaching fire. If possible mowing should be extended and/or can be done on property lines or extended to subdivision perimeters. In many cases homeowners have planted trees and shrubs for windbreaks or for shade. This vegetation when impacted by fire will result in a significant increase in fire intensity near the structure. Tree and shrub rows should not be located within the 30' ignition zone. Dead and dying should be removed, grass, needles and other fuels on the ground should be removed to prevent spread of surface fire.

Homes in located in this fuel model should pay special attention to areas near the structure, 5'-15' out, to insure fuels, debris and structural components receptive to embers are removed and/or maintained.

Create Shaded Fuel Breaks

Shaded fuel breaks, typically used in timber and brush fuel types, should be strategically located where fuel can be reduced in a prescribed manner in locations that can affect fire behavior or create a defensible location to stop a fire, slow fire spread or reduce intensity along roads within a subdivision or community that could be key for egress and ingress. Shaded fuel breaks can also be located on the perimeter of a subdivision or community to slow the advance of a wildfire. Shaded fuel breaks should be thinned to create sufficient canopy opening and crown



Shaded Fuelbreak - Black Forest Fire, Colorado

spacing to reduce crown fire potential. All cut vegetation should be removed from the fuel break area. Prescribed thinning standards are available from the Wyoming State Forestry Division and should be made available through the Laramie County Fire Marshal and local fire districts

Action item:

Roads flanked by heavy vegetation in planning area subdivisions and communities should be targeted for thinning or in the case of subdivisions in grass fuel types, seasonal mowing. These treatments may be coordinated with property owners along private roads and with county and

state transportation departments for public roads. See Appendix E, *Creating Fuelbreaks for Forested Subdivisions* (Dennis 2002) for specific techniques.

Treatment Options

Each of the recommended fuel mitigation projects can be achieved by a variety of methods. Selecting the most appropriate, cost effective option is an important planning step. A description of project considerations and approximate cost of various treatment options and cost estimates is provided to assist in this process. Cost estimates for treatments should be considered as general guidelines. Costs can vary tremendously based on a variety of factors, including but not limited to:

- Size of the project
- Type and Density of the Vegetation
- Steep Slope or other Topographical Factors
- Accessibility to the Project
- Proximity to Structures and other Improvements
- Type of Equipment and Techniques Used

Various Treatment Methods and Approximate Costs

- Mowing – Grass fuel types, flat ground. \$100- \$200 Per Acre
- Brush Mastication – Brush small trees. \$400 - \$800 Per Acre
- Manual Thinning – Brush, small and large trees. \$1000 - \$3000 Per Acre

Costs per acre are based upon various area contractor rates

Prescribed Fire

Whenever possible prescribe fire should be considered to support hazard fuel reduction projects. Fire is a natural part of forest and prairie ecosystems and for the most part has been removed with aggressive fire suppression. The benefits of prescribed fire are well documented and include, natural reduction in forest and grasslands fuel build up, preparing the land for new growth, promoting the germination of certain plants and trees and improving wildlife habitat.



Prescribed fires are conducted by trained fire management professionals using special fire ignition and control techniques to ensure the safety of the burn crews and nearby residents and properties.

We strongly recommend that whenever possible prescribed fire be considered the final step in the hazardous fuel reduction process.

Access & Egress Improvements

It is essential for communities to have adequate access and egress. This allows emergency personnel to access properties as well as provides escape routes during a wildfire. It also gives residents the ability to evacuate quickly and safely when necessary during a wildfire event.

Many of the subdivisions in the planning area have driveways, dead-ends, and switchbacks that lack adequate turnaround space for fire trucks, which compromises emergency response and responder safety Code language and specifications such that found in the International Fire Code, details specifications for driveways, turnouts, turnarounds, and access roads.

Improved signage for roads and addresses should be considered a high priority throughout the planning area. During a wildfire event responders from other districts, counties or even states may be assigned to protect homes or subdivisions. Clear signage would enable firefighters to navigate through communities they may not be familiar with, or when visibility is compromised.

Primary access roads should also be identified allowing responder or others not familiar with intricate road systems the ability to locate primary roads that lead out of the subdivision. Signs indicating “Loop” or other nomenclature could save valuable time during an active wildfire event.

Two major railroad lines with heavy rail traffic running through the planning area together with few grade-level crossings can delay response times as much as 20 to 30 minutes. Alternatives are needed to improve initial response and resource reinforcement times.



Action Item:

Street signs and address numbers should be clearly marked and visible from the road, preferably with reflective, durable, fire-resistant materials, not wood. Through discussions with various subdivisions there has been a number of signs erected that address this action item. As more subdivisions are created the Laramie County Land Use regulations will play a vital role in accomplishing this action item.

Action Item:

Where needed and feasible, construct or improve turnarounds on dead-end roads and on long driveways. Minimum requirements for private roads and driveway access are should become part of a local ordinance, permitted and enforced to obtain safe and reasonable access for every day vehicle use and ingress/egress of emergency vehicles. To accomplish this action item the county should relay on the Laramie County Land Use regulations, referencing Title 3 – Public Infrastructure.

Action Item:

Establish a Working Group with the railroad to address ways that emergency response delays can be shortened.

County Ordinance, Regulatory Support

Currently there is no specific code or ordinance that addresses home, road or driveway construction in Laramie County. Going forward it would be essential to address this for future construction of subdivisions and homes as well as establishing benchmarks for remodeling projects on existing structures. Model code and code language exists, however blanket adoption of said code could be restrictive and/or overbearing to property owners or future investors. Natrona County has adopted fuel reduction requirements for building permits in the Casper Mountain Zoning Area.

Specific code language at a minimum should address and include the following;

- Divide the county into hazard groups, areas or zones that identify high, moderate and low risk WUI areas. This could be an elevation contour, a fuel type change or other geographic identifier. Each of these areas may have slightly different code requirements.
- A minimum of 30' of defensible space should be required around homes built in the WUI area. This distance could increase based on local topography.
- Use of fire resistive construction materials used in high and moderate risk WUI areas
- Minimum road and driveway widths, turnaround and secondary egress
- Installation of road signs and clear address signs



Two-Track Driveway Accessing Two Summer Homes
District 8

There are numerous publications, facts and other documentation that support an ordinance such as this. A robust public and stakeholder process, possibly facilitated will be required to achieve necessary support for this type of ordinance

Action Item:

Establish a County Task Force with the intention and direction to facilitate the adoption of a county wildland urban interface ordinance with the focus on future development. The Task Force should include Laramie County elected official(s), fire district representatives, County Emergency Management, homebuilders association, insurance industry professionals and interested members of the public. Timeline from formation of the task force to code adoption should be set for one year. Rural Water Regulations are planned for adoption early 2022.

CWPP Implementation Plan and Timelines

The approval of the CWPP initiates implementation of the recommendations in the Plan. Implementation is expected to take place over the coming decade, and some activities will require indefinite periods to fully implement. The following list of activities is recommended but also is expected to be modified as situations and conditions, including funding, change over the coming years:

- Recruit and train Firewise Neighborhood Ambassadors.
- Establish County task force for development of WUI ordinance(s) and/or WUI fuel reduction requirements.
- Establish County/Railroad task force for rail ROW access and crossing issues.
- Modify CWPP to include eastern Laramie County.
- Road signage improvement on County roads.
- Develop individual home assessments and community / subdivision wildfire mitigation action plans with Ambassadors.
- Develop individual community / subdivision evacuation plans with communities and Fire District Chiefs.

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Appendices

Appendix A: Planning Area Map

Appendix B: Community Assessments

Appendix C: National Cohesive Strategy Action Plan

Appendix D: Fourmile Canyon Fire (Colorado) Report

Appendix E: Defensive Space and Fuelbreaks

- **Creating Wildfire Defensible Space Zones – Colorado State Forest Service Publication FIRE2012-1**
- **Fuelbreaks for Forested Subdivisions**
- **Jefferson County Colorado Defensible Space Guidelines**
- **Boulder County, Colorado Defensible Space Checklist**
- **Short Forestry Homeowner Defensible Space and Long-Term Maintenance Guidelines**

Appendix F: CWPP Template

Appendix A – Planning Area Map

Appendix B – Community Assessments

[See Separate Community Assessment Notebook](#)

Appendix C – National Cohesive Strategy Action Plan

Appendix D – Fourmile Canyon Fire (Colorado) Findings

This appendix contains key findings from the Fourmile Canyon Fire Report as well as a list of frequently asked questions and answers. The fire occurred in 2010 near Boulder, Colorado in similar ecosystem as exist in Laramie County and burned 162 homes in a 12-hour timespan. The full report can be found at:

www.fs.fed.us/rm/pubs/rmrs_gtr289.pdf

Appendix E – Defensible Space and Fuelbreaks

- **Creating Wildfire Defensible Space Zones – Colorado State Forest Service Publication FIRE2012-1**
- **Fuelbreaks for Forested Subdivisions**
- **Defensible Space Checklists**
 - **Boulder County Colorado Defensible Space Checklist**
 - **Jefferson County Colorado Defensible Space Guidelines**
 - **Short Forestry Homeowner Defensible Space Guidelines**
- **Community Assessment Template**

Appendix F – Laramie County CWPP Framework