



Final Recommendations to Reduce Wildfire Risk to Communities: Missoula County, Montana



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ABOUT

Community Planning Assistance for Wildfire Program

The Community Planning Assistance for Wildfire (CPAW) program works with communities to reduce wildfire risks through improved land use planning. The CPAW program is a partnership between Headwaters Economics and Wildfire Planning International. It is funded by grants from the USDA Forest Service and private foundations.

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Cover Image Credit

2013 Lolo Complex in Missoula County (Seidlitz, Meagher County Fire) – *image provided during previous CPAW work undertaken with Missoula County*

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OVERVIEW

Since its founding in 2015, the national Community Planning Assistance for Wildfire (CPAW, pronounced “SEE-PAW”) program has assisted dozens of communities across the U.S. in reducing wildfire risk by providing technical land use planning assistance. The program is funded by the U.S. Forest Service and private foundations, which allows communities to participate in the program and receive assistance at no direct cost. CPAW teams bring expertise in planning, forestry, wildfire hazard, and other related skills and provide a set of final recommendations for voluntary implementation by each jurisdiction receiving assistance.



In November 2019, Missoula County was selected as one of six communities to receive assistance by the CPAW program for the following calendar year (2020). The scope of CPAW’s assistance included:

- Reviewing and analyzing applicable land use and wildfire-related documents (e.g., subdivision regulations, current and proposed drafts of the zoning code, Montana state-adopted International Wildland-Urban Interface Code (IWUIC), staff memos and reports, Missoula Area Land Use Element).
- Hosting multiple conference calls with Missoula County staff, local experts, and other stakeholders, such as the Montana Department of Labor & Industry (Business Standards Division).
- Providing recommendations to address the wildland-urban interface (WUI) in the zoning code update, adopt the state IWUIC, and align the subdivision regulations with the future zoning code and IWUIC adoptions.

This report is a culmination of the CPAW process and provides a set of final recommendations to reduce wildfire risk to current and future development in Missoula County. While many agencies and organizations play a critical role in managing, preparing, and responding to wildfire, these recommendations are primarily intended for implementation by the Community and Planning Services Department, Building Division, Public Works Department, and Office of Emergency Management. However, collaboration with stakeholders and community members will be essential to their successful adoption and enforcement.

Participation in CPAW is voluntary, and implementation of any CPAW recommendations is fully under the authority of the local jurisdiction having responsibility for land use decisions. CPAW was co-founded by Wildfire Planning International and Headwaters Economics in 2015. To learn more about the CPAW program, visit: planningforwildfire.org.

SUMMARY OF FINDINGS

CPAW conducted an analysis of Missoula County's existing regulations at the building, lot, and subdivision scales to determine what is currently being regulated at each scale to address wildfire susceptibility. Based on our analysis, the majority of current regulations in Missoula County target the subdivision scale in terms of prohibiting development in fire chimneys, requiring fire suppression through improved access and water supply, requiring defensible space within 100 feet of roads and water supplies, and ensuring maintenance through developer agreements and Homeowner Association (HOA) covenants.

There are few, if any, requirements at the lot and building scale to ensure homeowners mitigate wildfire hazard during the construction and landscaping process. This results in significant vulnerabilities for properties, the public, and first responders across hazard-prone areas in the county. Similarly, there are no mitigation requirements for other land uses, such as commercial or industrial uses, that may pose a safety threat to themselves and occupants or adjacent properties in the event of a wildfire.

However, the Missoula County Growth Policy (2016), Missoula County Area Land Use Element (2019), and the Missoula County Community Wildfire Protection Plan (CWPP) (2018) all support regulatory strategies to mitigate development from wildfire hazard. In addition, a recent zoning code audit performed by third-party consultants recommended that wildland-urban interface (WUI) standards be included as part of the Missoula County Zoning Code update. The county has also been considering the implications and alignment of the Montana state-adopted International Wildland-Urban Interface Code (IWUIC), which is a state code that local governments can adopt to regulate wildfire susceptibility through building construction material and design requirements.

RECOMMENDATIONS

The following recommendations are designed to: address existing mitigation gaps at multiple scales identified by CPAW; leverage opportunities with the upcoming zoning code update and state-adopted IWUIC, and; implement county-adopted policies in support of wildfire risk reduction through effective regulatory strategies.

Relative Wildfire Hazard Assessment

We recommend the county adopt the Relative Wildfire Hazard Map in the current Missoula County CWPP to apply to lands within county jurisdiction as the official map used by the county to determine the legal extent where all existing and future development is subject to wildfire regulations. Further, we recommend that wildfire hazard ratings of moderate and above trigger mitigation requirements. The Relative Wildfire Hazard Map map shows the geographic extent of where the county can reasonably expect wildfire occurrence to result in unmitigated property loss or damage and is based on the results of a county-scale wildfire hazard assessment that was undertaken using a scientifically-based, defensible process.

This adoption will require an update to wildfire hazard map references or amendments in existing and future county documents:

- *Subdivision Regulations.* Hazard Areas Defined (§3.1.3.2.A.1.) references the WUI area as delineated in the CWPP. Although this WUI map is a helpful reference to show where existing structure densities and vegetation are located in Missoula County, it does not identify where future development may occur and affect the WUI. As a result, a more

appropriate map to reference is the Relative Wildfire Hazard Map moderate, high and very high hazard rated areas within county jurisdiction.

- *Zoning Code (future adoption)*. Language in the Wildland Urban Interface (WUI) Standards of the Zoning Code specifically referencing the Relative Wildfire Hazard Map moderate, high and very high hazard rated areas within county jurisdiction will be required to display the lands where the Zoning Code WUI Standards apply.
- *IWUIC (future adoption)*. The Montana state-adopted version of the IWUIC requires the local authority to identify the areas within the jurisdiction where the WUI Code will apply. Again, the Relative Wildfire Hazard Map moderate, high and very high hazard rated areas that are located within mapped county jurisdiction land is the most appropriate approach for identifying where the IWUIC applies.
- *Missoula County Growth Policy*. This plan includes a wildfire risk assessment in the planning area, but the risk categories differ from the CWPP Relative Wildfire Hazard. For consistency, it's important that this plan and other county plans all reference the same Relative Wildfire Hazard Map.

Subdivision Regulations

1. Replace Appendix C Fire Hazard Assessment

If the county adopts the Montana state-adopted IWUIC (see recommendation below), Appendix C Fire Hazard Severity Form is part of the required adoption. This form is intended to be applied at the subdivision level. However, the IWUIC Appendix C conflicts with the county's Subdivision Regulations Appendix C Fire Hazard Assessment. While recognizing that the county has previously made modifications to the Subdivisions Regulations Appendix C, we still recommend that the county remove this appendix, and instead reference Appendix C of the IWUIC in anticipation of adopting the state's IWUIC. This will avoid significant confusion if there were two similar, but different, Fire Hazard Severity Forms.

2. Reconcile Conflicts Between the Subdivision Regulations and the Draft Zoning Code

The updated zoning code is expected to provide specific provisions for vegetation management, landscaping, setback and access requirements in wildfire hazard areas. There is a potential for conflicts, inconsistencies, or gaps between the updated zoning code and the subdivision regulations. For example, the current Subdivision Regulations identifies a requirement for 100 feet of defensible space along roads and surrounding fire water supplies. This requirement prescribes specific vegetation management requirements. This may create a conflict when defensible space areas overlap with Home Ignition Zone vegetation management requirements in the proposed Zoning Code WUI Standards.

We recommend that the subdivision regulations and updated zoning code are reviewed for conflicts, gaps and inconsistencies, and these are reconciled to provide a uniform and consistent approach to regulating wildfire mitigation in development across the county.

3. Add Mitigation Requirements for Phased Subdivision Development

If a subdivision is to be phased (§5.7.16.5.), the county should ensure that the phasing plan adequately addresses the current wildfire hazard by requiring appropriate wildfire mitigation during each phase of the development to ensure that ongoing mitigation of vegetation fire

hazards¹ on vacant or undeveloped parcels does not pose a threat to adjacent properties and that secondary emergency access is not contingent upon final completion of the subdivision. In addition, access requirements should be considered to ensure that sufficient access is met during the initial phases of subdivision and public safety is not dependent upon the full (and final) build-out.

Zoning Code

The Missoula County Zoning Code is currently undergoing a comprehensive update, which presents an opportunity to include wildfire mitigation requirements to protect public health, safety, and general welfare by reducing wildfire risk to structures, inhabitants, and emergency responders through appropriate regulation of uses, management of vegetation, siting of structures, and mitigation of other features that minimize wildfire risk. All references to the Zoning Code in this report are based on the draft provided to the CPAW team in May 2020; as a result, references in this section are subject to change based on the final Zoning Code update and should be reviewed by county staff.

1. Adopt Wildfire Hazard Mitigation Requirements in Chapter 7. Environmental Design Standards

For any development application within an area that has a wildfire hazard rating of moderate, high, or very high as delineated on the Missoula County Relative Wildfire Hazard Map, a wildfire mitigation plan developed by a qualified professional shall be submitted. Credentials for a qualified professional must demonstrate appropriate education, training, and relevant project experience in forestry, land management, landscape architecture, engineering, land use planning, wildfire response, and/or wildfire prevention and mitigation with a minimum of three years' professional experience in undertaking the preparation of similar wildfire/fire mitigation plans and/or similar activities.

The wildfire mitigation plan shall include:

A. Site Plan

A copy of the site plan shall be included with the wildfire mitigation plan to show the proposed land use as it relates to the general features of the parcel and surrounding area. The site plan shall conform with the requirements set forth in Chapter 12 of these [County Code] regulations and include the following considerations for structural susceptibility reduction in the Home Ignition Zone (HIZ) (Figure 1):

(1) Setbacks

- a. Establish minimum building setback distances from vegetation fire hazards that cannot otherwise be effectively mitigated due to ecological (e.g., riparian areas), environmental (e.g., slope stability, or topography), or land management constraints to provides for effective HIZ mitigation.
- b. Establish minimum building set-back distances from property lines where the presence of existing structures, or the siting of planned development on neighboring property will impede the effective HIZ mitigation.

¹ Vegetation is considered a fire hazard if the surface fuels, vertical continuity or tree crown conditions will support fire intensity that will generate radiant heat, convective heat, or embers that will negatively impact adjacent structures

(2) Terrain and slope

- a. Site the structure to avoid adverse terrain, such as “chimneys” or saddles, or adverse slope conditions, such as steep mid-slope, or slope-top sites.
 - i. Development shall be prohibited in narrow canyons, ravines or other topological features that constitute fire chimneys² and within 150 feet of the apex or top of a fire chimney.

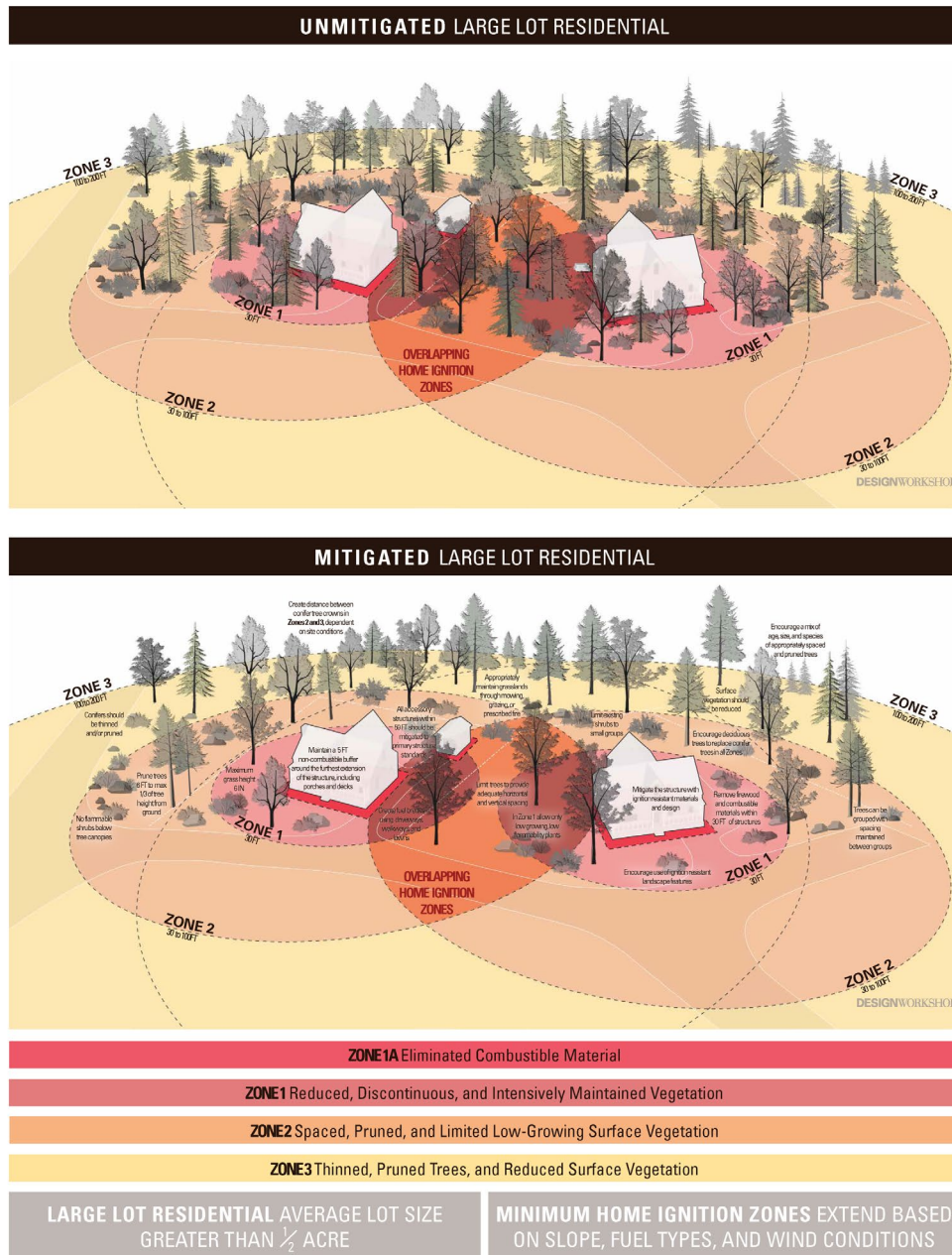


Figure 1. The Home Ignition Zone (HIZ), also referred to as the Structure Ignition Zone, is defined as the area around a specific structure and associated accessory structures, including all vegetation that contains potential ignition sources and fuels. (Also referred to as home ignition zone). This graphic shows the HIZ with typical mitigation considerations and the implications to neighboring properties in the context of large lot residential. This and other graphics will be delivered separately to the county as part of CPAW assistance.

² A chimney is a topographic feature having three walls that form a steep, narrow chute. Normal upslope air flow is funneled to the chimney's shape and increases in speed. Upslope preheating and cross-canyon radiation allow chimneys to draft a fire, much like a wood stove chimney. (NWCG S290 Intermediate Fire Behavior training manual)

B. Vegetation Management Plan

A Vegetation Management Plan is a plan that meets the information requirements of the IWUIC Appendix B that will apply to the legal parcel(s) for which the development application has been applied. The Vegetation Management Plan will include the methods and timetables for controlling, changing, or modifying areas on the property. Elements of the plan shall include removal of slash, snags, vegetation that may grow into overhead electrical lines, other ground fuels, ladder fuels and dead trees, and the thinning of live trees. The Vegetation Management Plan shall also include a plan to maintain the proposed fuel reduction measures.

C. Landscape Management Plan

A Landscape Management Plan is a plan that addresses vegetation and other combustible materials in the HIZ, and shall be completed by a qualified professional to address specific mitigation measures to manage these features. Mitigation measures shall include:

(1) Zone 1A (0 to 5 feet)

Management of vegetation and exclusion of combustibles in *Zone 1A* (0 to 5 feet) from the exterior walls, appendages, and other projections of all permitted buildings, and any building or structures within 50 feet of any permitted building.

- a. Require a non-combustible surface extending 5 feet from the furthest projection of a structure (Zone 1A) including under appendages and other projections, such as elevated floor areas, decks, or overhangs.
- b. Restrictions on vegetation species, structure, and size, relative to the construction characteristics (materials, design, the presence and design of windows and openings) of the exterior walls, appendages, and other projections of all permitted buildings). Furthermore, the plants will be selected based on the following criteria (IWUIC 2018):
 - Growth with little or no accumulation of dead vegetation (either on the ground or standing upright)
 - Non-resinous plants (willow, poplar or tulip trees)
 - Low volume of total vegetation (such as a grass area as opposed to a forest or shrub-covered land)
 - Plants with high live fuel moisture (plants that contain a large amount of water in comparison to their dry weight)
 - Drought-tolerant plants (deeply rooted plants with thick, heavy leaves)

Reader's Note:

Adoption of the IWUIC includes the submittal of a vegetation management plan (Appendix B), which requires applicants to address "all actions that will be taken to prevent a fire from being carried toward or away from the building." However, the plan requirements do not explicitly regulate the home ignition zone. Because the county cannot make local amendments to the state-adopted IWUIC to require specific actions, we have recommended in this section that the county require two complementary plans: A more detailed Landscape Management Plan with the IWUIC Vegetation Management Plan requirements nested within the Landscape Management Plan).

- Stands without ladder fuels (plants without small, fine branches and limbs between the ground and the canopy of overtopping shrubs and trees)
 - Plants requiring little maintenance (slow growing plants that, when maintained, require little care)
 - Plants with woody stems and branches that require prolonged heating to ignite
- c. Exclusion of all stored combustible materials (lumber, firewood, personal items, deck furniture) within *Zone 1A*, and under appendages and other projections of all permitted buildings, such as elevated habitable floor areas, decks, or overhangs.
 - d. Require fences or gates attached to the permitted building or extending within 5 feet of the building, to be constructed of non-combustible material.

(2) *Zone 1* (5 to 30 feet)

Management of vegetation, fencing, and other combustibles in *Zone 1* (5 to 30 feet, slope adjusted distance³) from the exterior walls and attachments of the permitted structures and any buildings or structures within 50 feet of any permitted buildings. On smaller lots, management of this zone may require the cooperation of neighboring landowners. If this zone cannot be appropriately managed, the IWUIC requires increased stringency with regards to Ignition Resistant Construction. Increased stringency in *Zone 1A* shall consider the following mitigation factors, to the maximum extent practicable:

- a. Restrictions on combustible ground surface material (e.g., wood mulch), location, and horizontal continuity relative to the construction characteristics (materials, design, the presence and design of windows and openings) of the exterior walls, appendages, and other projections of all permitted buildings.
- b. Restrictions on vegetation species, structure and size, horizontal continuity, vertical continuity, and density relative to the construction characteristics (materials, design, the presence and design of windows and openings) of the exterior walls, appendages, and other projections of all permitted buildings.
- c. Removal of the storage of firewood, or other combustible items (lumber, accumulations vegetative debris, construction material), unless they are stored within a structure that prevents protects them from radiant heat and ember exposure from a wildfire.
- d. Mitigation of accessory structures that are not subject to the IWUIC in relation to surrounding permitted buildings, extensions and attachments and to the same standards as the permitted structures.
- e. Establish a non-combustible surface below propane tanks and extending out to 5 feet horizontally in all directions from the tank and a minimum 10

³ Slopes greater than ten percent can extend the convective heat influence of a burning fire further uphill and closer to structures in comparison to flat ground. The distance of the HIZ zones on sloped ground should be extended to account for this influence.

feet of vegetation and combustible material clearance in all directions from the propane tank.

(3) Zone 2 (30 to 100 feet)

Management of vegetation in *Zone 2* (30 to 100 feet, slope adjusted distance) from the exterior walls and attachments of the permitted building extensions, attachments, and any buildings within 50 feet of the permitted building. Appropriate management within *Zone 2* may require the cooperation of neighboring landowners. If this zone cannot be appropriately managed, the IWUIC will require increased stringency with regards to Ignition Resistant Construction; additionally, increased stringency is recommended for Zone 1A and Zone 1 management. The appropriate management of this zone should be detailed in the landscape management plan that is produced by a qualified professional. The landscape plan should address the following factors:

- a. Reduce ground fuels and surface vegetation loading by managing the loading and spatial distribution of ground fuels, surface fuels (conifer needles, fine and coarse woody debris) and high fire hazard species (e.g., junipers). The objective is to reduce the potential surface fire intensity.
- b. Separate the vertical continuity of fuels by removing of shrubs, dead standing and suppressed trees, and pruning or “lifting” lower tree limbs and crowns to create a 6-8 foot vertical distance between surface fuels and tree crown bases. This approach should consider forest health, ecological and environmental constraints by encouraging tree species size, age and species diversity. The objective is to decrease the potential of vertical fire spread from surface fuels to tree crowns.
- c. Separation of horizontal continuity of tree crowns by prioritizing the removal of dead standing, suppressed and damaged trees. Where necessary strategically selecting live conifer trees to create a minimum of 10 feet between tree crowns, or groups of tree crowns while considering associated ecological, environmental or land management constraints where appropriate. Encourage size, age and species diversity of healthy retained conifer trees and encourage the growth of healthy deciduous trees. The objective is to increase effectiveness of aerial fire suppression operations and reduce overall fuel loading and resulting fire intensity in the overstory tree crowns.

D. Emergency Vehicle Access – Individual Lots

The following minimum standards shall be required for emergency vehicle access to individual lots that are developed and are not otherwise subject to the Missoula County Subdivision Regulations.

(1) Minimum Width

The minimum drivable width of 16 feet shall be provided for driveways longer than 150 feet (NFPA 1141, 2017). However, if the driveway contains straight segments with clear lines of sight, the width may be reduced to 12 feet. Pull outs separate from the travel lane may be required when necessary to allow fire apparatus to pass vehicles.

(2) Vertical, Horizontal Clearance

In addition to the drivable width, accesses to individual lots shall provide an unobstructed vertical clearance of 13.5 feet and horizontal clearance of 20 feet.

(3) Fire Apparatus

The individual lot access shall allow fire apparatus to park within 150 feet of all parts of the buildings on the lot. If the driveway to a lot is longer than 150 feet, a turn-around for fire apparatus shall be provided on the lot. The turn-around shall be a cul-de-sac, T-type, or branch design. The dimensions of the turn-around shall comply with designs in the Missoula County Public Works Manual, Appendix A, Exhibit MSCD #200, as amended.

(4) Sub-grade

Drivable surfaces and shoulders shall include a stabilized sub-grade with all-weather surface sufficient to support emergency vehicles.

E. Emergency Vehicle Access - Vegetation Management

Defensible space shall be created within 100 feet of all driveways and water supplies and water facilities that are designated for fire suppression in areas where the Missoula County Subdivision Code and the Home Ignition Zone requirements of the Zoning Code does not otherwise apply. Within the defensible space required above:

- (1) Reduce ground fuels and surface vegetation loading by managing the loading and spatial distribution of ground fuels, surface fuels (conifer needles, fine and coarse woody debris) and high fire hazard species (e.g., junipers). The objective is to reduce the potential surface fire intensity.
- (2) Separate the vertical continuity of fuels by removing of shrubs, dead standing and suppressed trees, and pruning or "lifting" lower tree limbs and crowns to create a 6-8 foot vertical distance between surface fuels and tree crown bases. This approach should consider forest health, ecological and environmental constraints by encouraging tree species size, age and species diversity. The objective is to decrease the potential of vertical fire spread from surface fuels to tree crowns.
- (3) Separation of horizontal continuity of tree crowns by prioritizing the removal of dead standing, suppressed and damaged trees. Where necessary strategically selecting live conifer trees to create a minimum of 10 feet between tree crowns, or groups of tree crowns while considering associated ecological, environmental or land management constraints where appropriate. Encourage size, age and species diversity of healthy retained conifer trees and encourage the growth of healthy deciduous trees. The objective is to increase effectiveness of aerial fire suppression operations and reduce overall fuel loading and resulting fire intensity in the overstory tree crowns.

F. Water Source Requirements

(1) Water Sources

A single lot that is developed in an area that is not otherwise subject to the Missoula County Subdivision Regulations shall contain at least one of the following water sources for fire suppression:

a. Municipal System

A connection to a municipal or community water system that provides the minimum fire flow per National Fire Protection Association (NFPA) is the most desirable option.

b. Storage and Hydrants

If the county determines that a Municipal System is not reasonably feasible then a water storage tank or cistern with attached fire hydrants is acceptable, provided the tank/cistern is the minimum size for the proposed use per NFPA 1142.

c. Rivers and Ponds

If the county determines that a Storage and Hydrant System is not reasonably feasible, then ponds, rivers, or streams with accessible hydrants that can produce an uninterrupted minimum flow as specified by NFPA 1142 is acceptable. The water source shall provide the minimum flow on a year-round basis as determined by a professional engineer, hydrologist, or similarly qualified person licensed or registered to practice in Montana.

(2) Access to Water Source (Width, Pull Outs)

Access to the fire-fighting water source shall be no less than 24 feet in width to allow fire apparatus to pass vehicles or pull outs separate from travel lanes that provide a total 24-foot width shall be required to allow vehicles to pull out of the way of fire apparatus.

2. Reconcile Potential Wildfire Mitigation Conflicts in Zoning Code

According to county planning staff, public safety requirements (including wildfire mitigation requirements) will be prioritized over all other zoning requirements, followed by ecological requirements (e.g., riparian areas) and finally aesthetic requirements (e.g., ridgeline requirements) in order of priority. However, there may be situations where ecological values will be prioritized over wildfire mitigation and may result in limiting development. To further support this and reduce confusion, we recommend including cross-references to wildfire mitigation in sections of the draft zoning code that may result in potential conflict. These sections include:

- Landscape and Buffering Standards (§6.5) shall comply with hazardous wildfire vegetation management when located in a moderate or higher wildfire hazard area, as required by Chapter 7.
- Fences and Screening (§6.6) shall comply with hazardous wildfire vegetation management when located in a moderate or higher wildfire hazard area, as required by Chapter 7.
- Hillside and Ridgeline Development, General Standards of Development (§7.1), Buildable Area and Slope Limitations shall allow for adequate implementation of mitigation requirements which may require adjustments to the building envelope; accessory structures shall not pose a wildfire risk to primary structure (i.e., accessory structures should be located more than 30 feet from the primary structure [slope adjusted], or accessory structures should be mitigated to the same standards as the primary structure per Chapter 7 and the IWUIC).

- Riparian and Wetland Protection (§7.4) may include exemptions for hazardous wildfire vegetation management and setbacks as required by Chapter 7 on a case specific basis and upon review of a vegetation management plan that has been developed by a qualified professional.
- Tree Conservation (§7.6) may include exemptions for hazardous wildfire vegetation management as required by Chapter 7 on a case specific basis and upon review of a vegetation management plan that has been developed by a qualified professional.

3. Mitigate Vulnerable, Hazardous, and Temporary Land Uses

Missoula County should review the final chapter update of the Use Standards and Conditions to ensure that development activity deemed hazardous, temporary, or which serves vulnerable populations incorporates safety features that minimize the threat of wildfire to people, property, and adjacent land uses. For example:

- Vulnerable land uses, in this context, are those land uses where occupants may be less able to prepare for and/or take appropriate evacuation actions during a wildfire emergency without additional consideration or support. Examples include nursing homes, hospitals, centers for individuals with disabilities, and schools. These uses should be assessed to determine whether persons may be less able to respond in a wildfire emergency. Conditions of approval on zoning compliance/Land Use Permit may require additional mitigation measures, such as an evacuation plan, siting considerations, or additional access requirements.
- Hazardous land uses, in this context, are those land uses that may potentially ignite a wildfire, prolong its duration, or increase its intensity. Examples include power-generation land uses, lumberyards, sawmills, warehouses with hazardous materials, and shooting ranges. These uses may also require different forms of mitigation or siting considerations as a condition of approval on zoning compliance/Land Use Permit to ensure they do not result in a wildfire ignition, prolong a wildfire's duration, or increase its intensity.
- Temporary uses (e.g., fireworks display, outdoor mass gathering) may require conditions based on the location's hazard and exposure level, type of activity, number of persons, and other factors.

4. Consider Alternatives to Applicability and Ensure Appropriate Reviews

These recommendations specifically target the Missoula County Zoning Code update. Recognizing that the current zoning code update will not apply to development across the entire county, staff may consider whether some requirements can be applied through an alternative process in other areas of the county, such as a Land Use Permit, or through an additional zoning code update that applies to the rest of the county. In addition, planning staff will have to consider the appropriate agencies that can review wildfire mitigation plans in their entirety or portions thereof. We recommend this discussion occurs in close coordination with fire districts to determine the capacity and expertise available from local fire districts.

Montana State-Adopted IWUIC

In 2019, the State of Montana adopted the 2018 IWUIC with amendments. The amended state code specifically applies to the building envelope requirements. The state also adopted the IWUIC to include Appendices B (Vegetation Management Plan) and C (Fire Hazard Severity Form). The Montana state-adopted version of the IWUIC is the only option available to local

governments considering the implementation of WUI regulations that apply to the building envelope. The state code can only be adopted by local jurisdictions in whole, without any local amendments.

1. Adopt the Montana State-Adopted IWUIC

The CPAW team recommends that Missoula County adopt the Montana state-adopted IWUIC. This will provide the county with the opportunity to require wildfire mitigation on new building construction and alteration, movement, repair, addition, change-of-use or remodeling of any existing building, structure, or premises within the designated wildland-urban interface of the county's jurisdiction.

Effective mitigation of structure and community vulnerability to wildfire requires management of the entire HIZ (Figure 2), which includes the building, or structure itself. The IWUIC is the only legal option that Missoula County has for regulating WUI building requirements. Based on CPAW's professional expertise, failure to adopt the IWUIC would reduce the effectiveness of overall community wildfire resiliency by resulting in significant structural susceptibility in new development that cannot be otherwise regulated through the state's current legal framework.

The IWUIC does not apply to mobile or manufactured homes, which are regulated by separate state or federal regulations. As a result, the county should pursue possible solutions to address this gap, starting with additional support through the Missoula County HIZ program (see below).

2. Use the Montana County CWPP Relative Wildfire Hazard Mapping to Designate the Wildland-Urban Interface

The Montana state-adopted IWUIC requires the local "governmental body or some other official state or local agency" to declare the wildland-urban interface areas within its jurisdiction. "Such declaration or designation shall be based on findings of fact or some other process already completed such as mapping, boundary designations, or other informative processes such as wildland fire plans..."

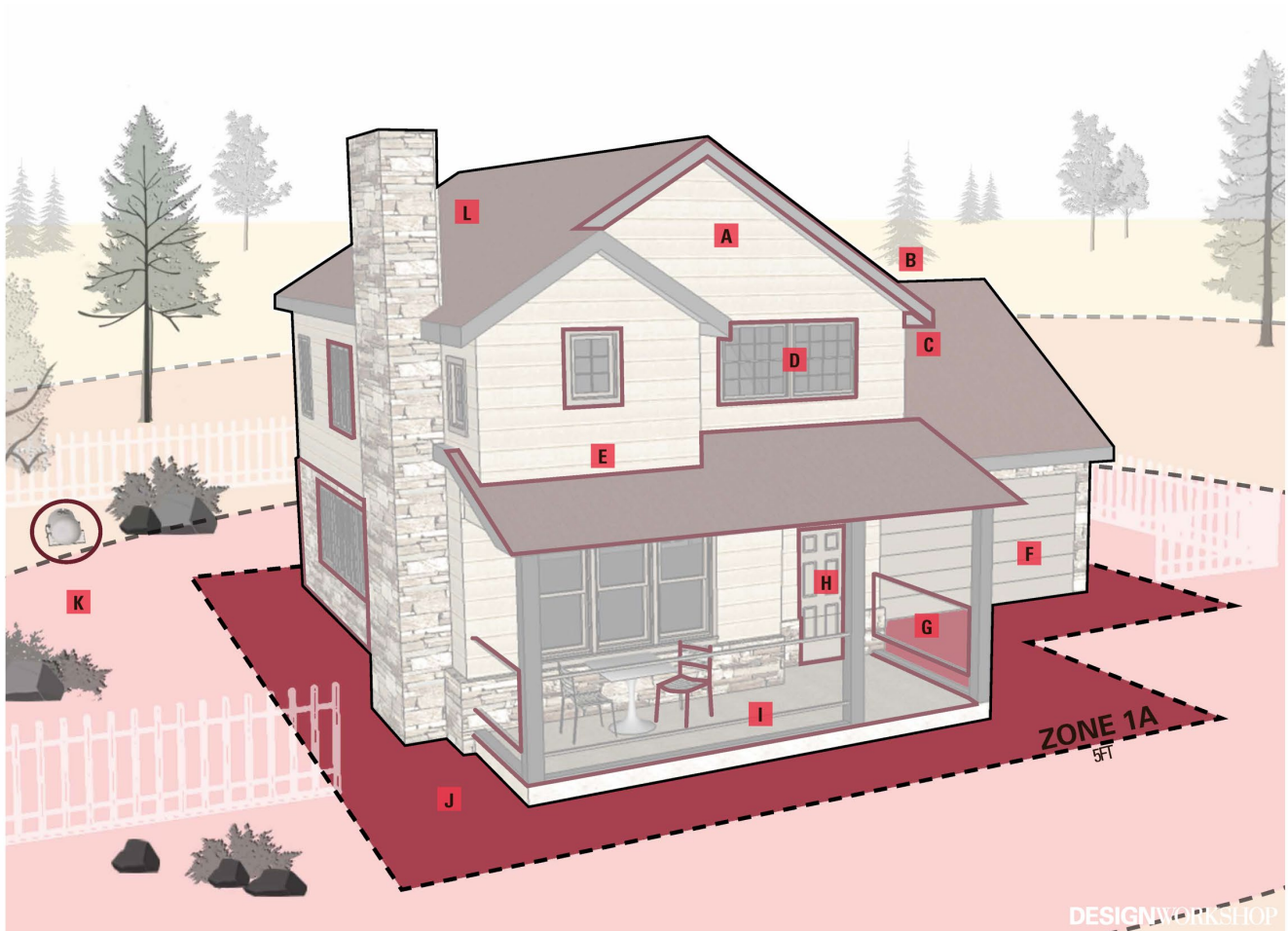
As noted above, the CPAW team recommends that the Relative Wildfire Hazard Map developed as part of the 2018 Missoula County CWPP update should be used to designate the WUI for which the adopted WUI code will apply. Specifically, we recommend that the IWUIC applies to all existing and future developable lands that fall within the moderate or above wildfire hazard ratings.

3. Support Appendix B of the State-Adopted IWUIC through Landscape Management Plan Requirements in the Zoning Code

Appendix B (Vegetation Management Plan) provides a general statement that requires a vegetation management plan for any new developments to be developed and submitted to the local authority for review and approval. Specifically, the appendix requires that the vegetation management plan to "describe all actions that will be taken to prevent a fire from being carried toward or away from the building". The code also requires the vegetation management plan to include a copy of the site plan and the methods and timetables for vegetation modification, with specific reference to ground fuels, ladder fuels, dead trees and thinning of live trees. Finally, the code has requirement for a maintenance plan. The code does stop short of providing specific vegetation management guidance. This presents a gap that should be addressed.

The CPAW Team recommends that the vegetation management requirements of the Montana state adopted IWUIC be integrated into the landscape management plan requirements of the updated Missoula County Zoning Code (see Zoning Code recommendations).

MITIGATED HOME



ZONE 1A 5FT NON-COMBUSTIBLE BUFFER AROUND THE FURTHEST EXTENSION OF THE STRUCTURE

- A** Use non-combustible or ignition resistant siding and trim
- B** Clear debris from roofs and gutters regularly
 - Install non-combustible gutters and downspouts
- C** Install Class A fire-resistant roof assembly and enclosed non-combustible eaves with appropriately screened vents
- D** Install multi-pane windows or ideally tempered glass with:
 - 1/8 IN metal window screens
 - Window frames constructed with non-combustible materials
- E** Ensure 6IN vertical non-combustible surface on all gables above roof surfaces
- F** Conditions may require 1HR fire rated garage door; all gaps should be sealed
- G** Avoid use of combustible lattice, trellis, or other decorative features
- H** Conditions may require 1HR fire rated door (as opposed to non-combustible or solid wood) where conditions warrant
- I** Construct deck with heavy timber or UL/ASTM fire rated materials, and ensure:
 - Crawl spaces are enclosed and regularly cleaned, or left open and regularly cleaned
 - A non-combustible surface is maintained and no combustibles are stored under the deck
 - No combustible patio furniture or accessories are on the deck
- J** Establish and maintain a 5 FT non-combustible buffer around the structure including:
 - All vegetation material
 - Firewood
- K** In Zone 1, allow:
 - Only low growing, low flammability plants
 - Only accessory structures (or adjacent structures) mitigated to primary structure standards
 - No propane storage within 30FT of the building
 - No storage of firewood or combustibles within 30FT
- L** Ensure any skylights present are glass

Figure 2. Common wildfire mitigation concepts that apply to the structure and Zone 1A to ensure the overall effectiveness of the Home Ignition Zone.

Implementation Support

Due to the significant number of regulatory changes that are being recommended in this report, it is anticipated that: a) the county will require a transition period to consider and adopt these measures, particularly with respect to the multiple updates required across different regulatory documents and departments; b) commitments will be required to increase local capacity for implementation and enforcement of additional WUI regulations, and; c) any efforts undertaken will be greatly supported by outreach and education activities to ensure residents, elected officials, businesses, contractors, and other community stakeholders understand the purpose and intent of these regulatory updates.

Strategies to support local adoption include conducting public workshops and open houses and providing other opportunities for engagement and interaction. The county can also create educational materials that explain regulatory requirements through illustrations and guidance. For example, Colorado Springs maintains an Ignition Resistant Construction Design Manual⁴ that discusses structure ignition concepts (e.g., potential vulnerabilities from embers and other wildfire exposure) and provides explanations and illustrations to help residents comply with the various sections of their local WUI ordinance. Missoula County may also choose to provide supplementary information within their updated Zoning Code to help users understand the rationale for new WUI requirements.

Finally, the county can increase the robustness of current mechanisms that support voluntary compliance for existing properties interested in wildfire mitigation but not subject to subdivision regulations, zoning code requirements, or IWUIC wildfire requirements. This can be accomplished through an expansion of the Missoula County Home Ignition Zone (HIZ) Pilot Program, which was recently implemented by the Missoula County Office of Emergency Management. To engage in this program, a homeowner voluntarily requests a free parcel-level wildfire risk assessment. These assessments are conducted by an NFPA-certified mitigation specialist and/or fire professional who has successfully completed the “Assessing Structure Ignition Potential” training course. Once completed, assessments are recorded and uploaded on the Situational Analyst Montana (SAM) web-based platform hosted by the Intterra Group. This software automatically generates a wildfire mitigation report and a risk rating based on the data inputs. Risk ratings are delineated into Low, Moderate or High risk categories. A mitigation report is emailed to the homeowner and the risk rating is also populated into a WUI map that can be accessed by local fire departments.

Once a homeowner receives their report, they have the option of hiring a crew to perform the mitigation work under the Missoula County HIZ program. This is a 50/50 cost-share program where the homeowner must contribute a 50% hard (cash) match. Crews are trained by professional sawyers and other professionals on identifying ignition vulnerabilities and can perform tasks including creating non-combustible zones around structures, removing Zone 1A flammable vegetation, removing flammable debris in gutters/roofs, and forest thinning. After work is completed, a follow-up inspection occurs to reflect the changes in the property condition.

CPAW recommends that Missoula County increase support for its HIZ program so that it can transition from the pilot phase into a fully operational program. Specifically, the program should be integrated into the Zoning Code subdivision requirements and IWUIC requirements to create a standardized and comprehensive HIZ assessment tool that can support the development review process while also addressing the wildfire vulnerabilities of existing development.

⁴ Available at: https://coloradosprings.gov/sites/default/files/2020_ignition_resistant_design_manual_march_2020.pdf

CONCLUSION

This report provides multiple recommendations to improve Missoula County's policy and regulatory approach toward wildfire. Recommendations include:

- Adoption of a Relative Wildfire Hazard Map as a consistent reference across multiple plans and codes.
- Updates to Subdivision Regulations to reconcile conflicts and add mitigation requirements for phased subdivision development.
- Wildfire hazard mitigation requirements in the forthcoming revised Zoning Code.
- Adoption of Montana's state-adopted IWUIC by the county to regulate wildfire susceptibility through building construction material and design requirements.

These recommendations were based on CPAW's engagement with Missoula County staff and elected officials, and an internal analysis of current city plans and codes. Recommendations present both immediate and long-term opportunities for change to address wildfire risk reduction at multiple scales.

Stakeholder collaboration, education, and proactive outreach will be essential as the county considers additional regulatory measures to address wildfire risk. Ongoing partnerships, momentum from the adoption of the updated Community Wildfire Protection Plan, and public engagement will assist the county as it moves forward with these important public safety efforts.