



# **FINAL Recommendations to Reduce Wildfire Risk:**

## **Nederland, Colorado**

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**PREPARED BY:**  
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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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## *Acknowledgments*

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# CONTENTS

<b>ACRONYMS .....</b>	<b>1</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>PART 1. OVERVIEW .....</b>	<b>3</b>
COMMUNITY CONTEXT .....	4
<b>PART 2. RECOMMENDATIONS.....</b>	<b>8</b>
1. UPDATE WUI CODE AND ALIGN WITH COUNTY .....	8
2. IMPLEMENT FUEL BREAK / STRATEGIC WILDFIRE ACCESS .....	13
3. UPDATE PLANS TO INTEGRATE WILDFIRE RISK REDUCTION AND LAND USE PLANNING ACTIVITIES.....	17
<b>CONCLUSION .....</b>	<b>20</b>

# ACRONYMS

CPAW	Community Planning Assistance for Wildfire
CWPP	Community Wildfire Protection Plan
NFPA	National Fire Protection Association
NFPD	Nederland Fire Protection District
SIZ	Structure Ignition Zone
TFPD	Timberline Fire Protection District
TUFA	Time Unit Fire Arrival
USDA	United States Department of Agriculture
WUI	Wildland-Urban Interface

# EXECUTIVE SUMMARY

In 2020, Colorado experienced historic wildfire activity in terms of a record number of acres burned and fire activity that extended into November. Wildfires including the Pine Gulch Fire, East Troublesome Fire, Cameron Peak Fire, and CalWood Fire served as reminders of the wide-ranging social, economic, and environmental impacts that fires can bring, particularly in areas with human development. The East Troublesome Fire, for example, burned several hundred homes and grew more than 100,000 acres within a 24-hour period. In many cases, difficult terrain, higher than average summer and fall temperatures, extreme wind and drought conditions, and other factors such as beetle-ravaged forests combined to make suppression tactics unsafe or ineffective.

Firestorms in Colorado are predicted to continue given climate change trends and further human encroachment into wildland areas, resulting in conditions which allow for the spread of fire from wildland vegetation to development. This dynamic set of conditions, referred to as the wildland-urban interface (WUI), requires consideration of additional measures that can reduce wildfire damage and increase public and first responder safety.

Effective land use planning strategies can affect where and how development occurs, altering these conditions and disrupting the WUI disaster cycle.<sup>1</sup> To support the development and implementation of land use planning strategies that address wildfire, the Community Planning Assistance for Wildfire (CPAW) program provides technical assistance to communities across the country.

The Town of Nederland, Colorado was selected to receive CPAW assistance in 2020. Due to the geographic size, location, vegetation and other conditions, the entire Town of Nederland is considered to be in the WUI. Assistance from CPAW to the Town focused on analyzing local land use documents that have implications for the WUI and wildfire risk, working with local officials to understand challenges and opportunities related to wildfire risk, and providing recommendations for the Town and Nederland Fire Protection District (NFPD) to increase wildfire safety and resilience. These final recommendations are summarized in Table 1.

TABLE 1. SUMMARY OF RECOMMENDATIONS		
Recommendation	Why This Matters	Key Points
1. Update WUI Requirements and Align with County	Addressing existing gaps within the Town of Nederland's approach to regulating the WUI can increase the protection of property and public safety.	<ul style="list-style-type: none"><li>• Increase clarity of application of current and future WUI code requirements.</li><li>• Align Town requirements with Boulder County's WUI requirements to improve consistency and reduce confusion.</li><li>• Update to WUI Code requirements to reflect the latest science and best practices in wildfire structure mitigation.</li></ul>

<sup>1</sup> Mowery, M., A. Read, K. Johnston, and T. Wafaie. 2019. Planning the Wildland-Urban Interface. American Planning Association, PAS Report 594.

**TABLE 1. SUMMARY OF RECOMMENDATIONS**

Recommendation	Why This Matters	Key Points
2. Implement Fuel Break / Strategic Wildfire Access	The residents within the community of Big Springs are at significant risk of wildfire entrapment due to a single access route to the community. Potential secondary (emergency) access routes have been identified and mapped and provide opportunities for implementation.	<ul style="list-style-type: none"><li>• Establish a viable emergency egress route to ensure public and first responder safety during a wildfire event.</li><li>• Work with the community and partner land managers to implement future access-related project.</li><li>• Implement first steps by establishing a strategic control line and fire suppression resource access.</li></ul>
3. Update Plans to Integrate Wildfire Risk Reduction and Land Use Planning Activities	Plans provide important policy guidance and set forth priorities for implementation. Integrating land use planning and wildfire risk reduction and resiliency concepts into the appropriate plans ensure that growth and development decisions factor in appropriate wildfire risk information.	<ul style="list-style-type: none"><li>• During the next Comprehensive Plan update, include more information on wildfire goals and objectives related to risk reduction, landscape management, and multihazard planning.</li><li>• During the next Community Wildfire Protection Plan (CWPP) update, use the risk assessment to inform key planning policies, regulations, and voluntary activities that reduce risk to the built and natural environments.</li></ul>

# PART 1. OVERVIEW

Since its founding in 2015, the national Community Planning Assistance for Wildfire (CPAW) 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 final set of recommendations for voluntary implementation by each jurisdiction receiving assistance.

The Town of Nederland was selected as one of six communities to receive technical assistance by the CPAW program in 2020. The scope of CPAW's assistance included:

- Reviewing and analyzing applicable land use and wildfire-related documents and materials from local and state resources
- Conducting an in-person field visit to meet with staff from the fire district and Town to learn about development conditions and wildfire concerns
- Facilitating conference calls to discuss technical aspects of land use planning and wildfire
- Providing a ½ day virtual training *Wildfire Ignition Susceptibility Basics and Community Planning Tools*

This report provides a synthesis of the CPAW process and delivers recommendations for strengthening local land use planning measures that reduce wildfire risk to people and property. Part 1 provides an overview of the community context relevant to the CPAW process to better understand the Town's WUI, wildfire hazard, and development.

Part 2 provides three recommendations that are primarily intended for administration and implementation by NFPD and the Town of Nederland. Implementation considerations are provided in more detail under each recommendation. Although it is beyond the scope of CPAW's assistance, the team also recognizes the important role of public engagement in future implementation of land use planning activities that affect local residents.



Figure 1. As part of the CPAW process, team members met with staff from the Nederland Fire Protection District to learn about local conditions including fuels and fire behavior. (Image credit: Wildfire Planning International)



## Community Context

The Town of Nederland is located in Boulder County, 15 miles west of the City of Boulder. The Town limits are approximately 1.5 square miles in area, while NFPD serves an estimated 56-mile geographic area that encompasses the Town and surrounding areas.

Nederland is surrounded by the Roosevelt National Forest, Boulder County open space, and other privately-managed or public lands.

### Local Conditions and Trends

The current population of the Town of Nederland is approximately 1,541 people.<sup>2</sup> Nederland serves as the primary population, employment and community services center for the Town and surrounding region (10 mile radius around Town), although some area residents commute to Boulder for work and other services. Primary employment sectors are retail and tourism-oriented services.

When compared to Boulder County and the state as a whole, the Town and surrounding area display the following differences:<sup>3</sup>

- Higher and increasing median age
- Lower share of younger residents (under 25 years old)
- Faster growth rates among senior adult residents ages 65 and older
- Smaller household sizes
- Higher share of white residents
- Higher share of well-educated residents
- Lower share of residents living in poverty
- Higher share of one- and two-person households
- Lower share of large household formations (five-person+)
- Higher share of households earning more than \$60,000 annually
- Higher overall median household income

State Highways 119 (Peak to Peak Scenic Byway) and 72 connect Nederland with regional attractions, including Eldora Mountain Resort, Rocky Mountain National Park, Indian Peaks Wilderness and Brainard Lake Recreation Area, and Central City and Black Hawk. Other prominent features near the Town include the Barker Dam/Reservoir, which is owned and managed by the City of Boulder.

Despite its small geographic size, development patterns vary across the Town and surrounding area. The downtown commercial core rapidly grew during early economic activities such as



Figure 2. The Town of Nederland is 15 miles west of Boulder and 45 miles northwest of Denver.

<sup>2</sup> Statistics from city.data.com (2017); accessed September 2020.

<sup>3</sup> Bowen National Research. Housing Needs Assessment for Nederland, Colorado. (2017).



mining and the construction of infrastructure projects. However, many buildings in the historical commercial district were affected by fires or were torn down or moved at various stages in the Town's history. In addition, population fluctuations during periods of increased mining activity or busy summer tourist seasons, followed by shrinking populations during economic declines and winter months, left some buildings empty or in a deteriorating condition. More recent development has been irregular, resulting in a combination of historic properties, recently constructed buildings, and several vacant lots in the downtown and some neighborhoods. This development history is well-documented in the *Nederland Design Standards and Guidelines for the Town of Nederland* (Cathleen Norman, 2012).

Subdivisions in Town and the immediate surrounding areas vary in terms of their density, primarily consisting of small-lot, medium density single family homes with interspersed vegetation. Subdivisions further away from the downtown core are generally on larger lots, and in many cases, access is constrained to a single means of egress (i.e., one-way in/one-way out).

### ***Fire Environment***

The Town's location just east of the continental divide results in dramatic topographical and ecological influences that affect fire behavior and the fire environment. Elevation ranges from 7,000 to 13,000 feet above sea level. Strong winds are a predominant weather feature. As noted above, the area was heavily developed in the early 1900's due to mining interests and significant portions of the forest were harvested to build structures, infrastructure, and to feed steam-driven equipment. As a result, a majority of the local forest is 100 to 150-year-old lodgepole pine, with up to 800 trees per acre.

Boulder County has experienced numerous wildfires dating back to 1916, including notable fires near Nederland, such as a 1,600-acre fire in 1924 and the Cold Springs Fire which burned to 528 acres and destroyed eight homes in 2016 (Figure 3). The Town of Nederland is located in the High and Severe wildfire hazard classes of Boulder County.

NFPD is financially supported through property taxes collected by the district. The district has three fire stations (Main Station, Ridge Road, and Eldora). There are several paid career and administrative staff, but the district relies heavily on volunteers to respond to fire, medical, and other emergency calls.



# Boulder County Wildfire History

Map 1

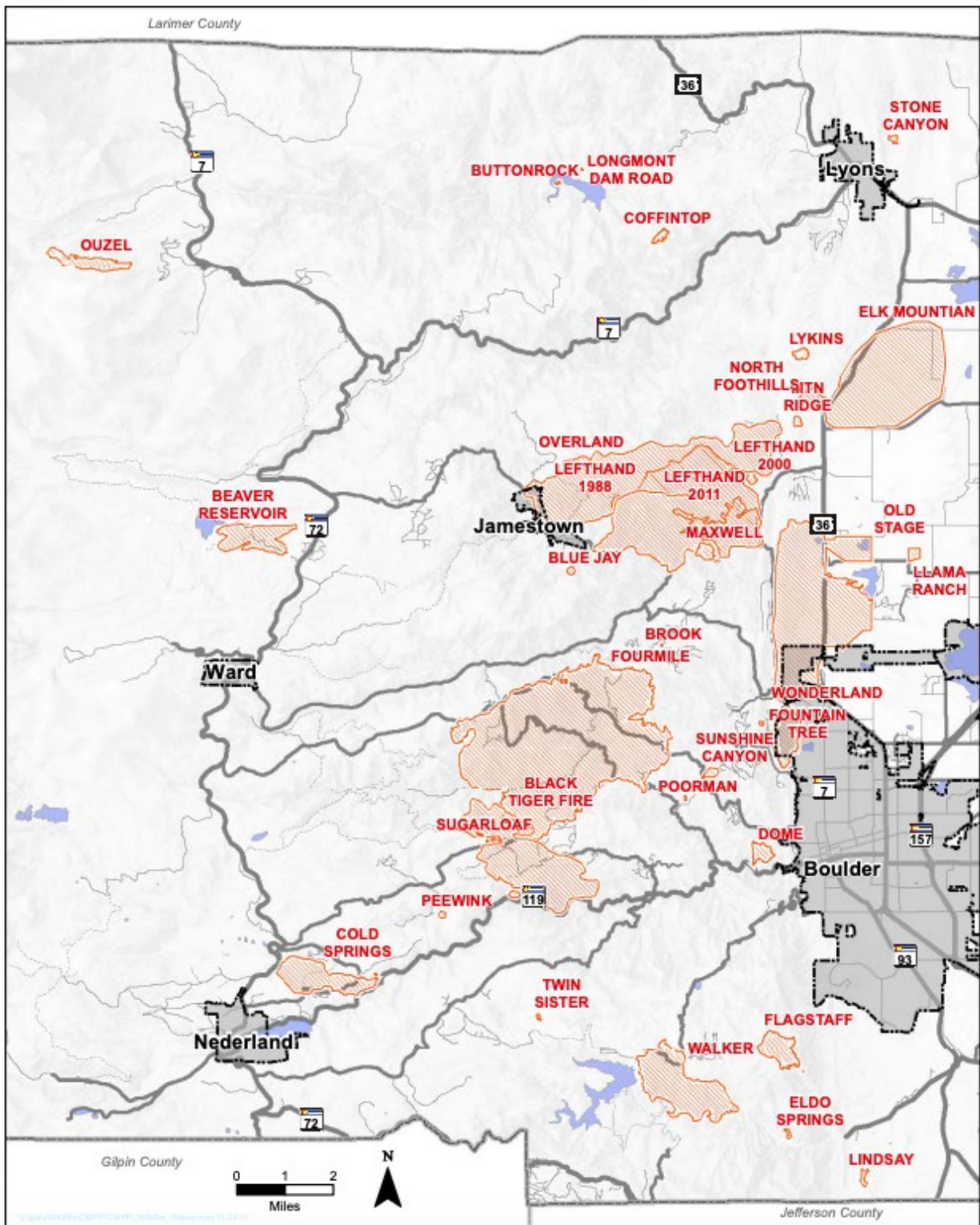


Figure 3. Boulder County Wildfire History Map

(source: <https://www.bouldercounty.org/disasters/wildfires/maps-and-videos/>)

## Challenges and Opportunities

As part of the CPAW process, the team discussed challenges and opportunities with the steering group. Identifying these topics helps inform how land use planning has been influenced by historical development patterns and how CPAW recommendations can support future improvements to codes, policies, and other land use activities to increase wildfire risk reduction.

### Challenges

- A majority of the Town's subdivisions were built without consideration for wildfire risk, resulting in a significant portion of existing development that has combustible construction features, limited egress, is sited on steep terrain and lies in proximity to hazardous vegetation.
- Many buildable lots on flat ground or with other accessible site features (e.g., driveways) have been developed, resulting in new development occurring on steeper slopes and terrain that is more difficult to access. Although new development is typically built with more ignition-resistant construction materials, accessibility can be a challenge during evacuations. Further, new homes are sometimes in close proximity to older structures that are not yet mitigated to the same standards, creating a patchwork of mitigation.
- Due to their proximity to the forest and/or historical use, many homes use wood as their primary heating source. However, improper ash disposal typically leads to several structure losses per year in the immediate area, with a potential to spread into the WUI and community. It is common for these local structure fires to require joint structure fire and wildland firefighter response to prevent spread to additional structures.

### Opportunities

- Boulder County has a robust regulatory and voluntary approach towards wildfire mitigation. Alignment with the County's codes and Wildfire Partners program can improve consistency and increase wildfire resiliency efforts. **Recommendation 1** provides more suggestions on ways to align regulatory and outreach activities.
- The Town maintains a communitywide designation as a Firewise USA® site. Residents are also interested in local forest management, trail maintenance, and other measures to that support outdoor recreation and resilience. **Recommendation 2** focuses on how to combine a fuel break for vegetation management while also addressing future challenges associated with fire response.
- The Town and NFPD have several plan updates on the horizon, including the Comprehensive Plan, Community Wildfire Protection Plan (CWPP), participation in Boulder County's Hazard Mitigation Plan. In addition, periodic updates to the Building Code occur on regular cycle—including revisions that are currently under consideration. These updates can serve as catalysts for incorporating wildfire hazard and/or land use planning policies to advance approaches for supporting wildfire risk reduction. **Recommendation 3** provides suggestions specific to several plan updates.



## PART 2. RECOMMENDATIONS

The following recommendations address key aspects of wildfire risk reduction that were expressed as areas of interest by the Town and NFPD during the CPAW process.

### 1. Update WUI Requirements to Align with County

Life safety, building, land use, and other development codes and standards are based on proven methodologies to increase public and first responder safety and welfare. This includes regulations focused on the WUI that reduce risk and loss from wildland fires that transition into developed areas. This recommendation addresses existing gaps within the Town of Nederland's approach to regulating the WUI by recommending the updating of regulations to align with the Boulder County requirements.

#### Current Regulations and Codes

The WUI is currently being regulated directly and indirectly through specific sections of the Town of Nederland Municipal Code. The primary mechanism for regulating the Town's WUI is through its Building Regulations (Chapter 18). In Chapter 18, the Town of Nederland has adopted the Boulder County Wildfire Zone Map, and currently refers to Section 722, which identifies Wildfire Zones 1 and 2 (722.1.1). This reference is latent from previous versions and new code language is being worked on by the NFPD Fire Marshal. Although the Municipal Code

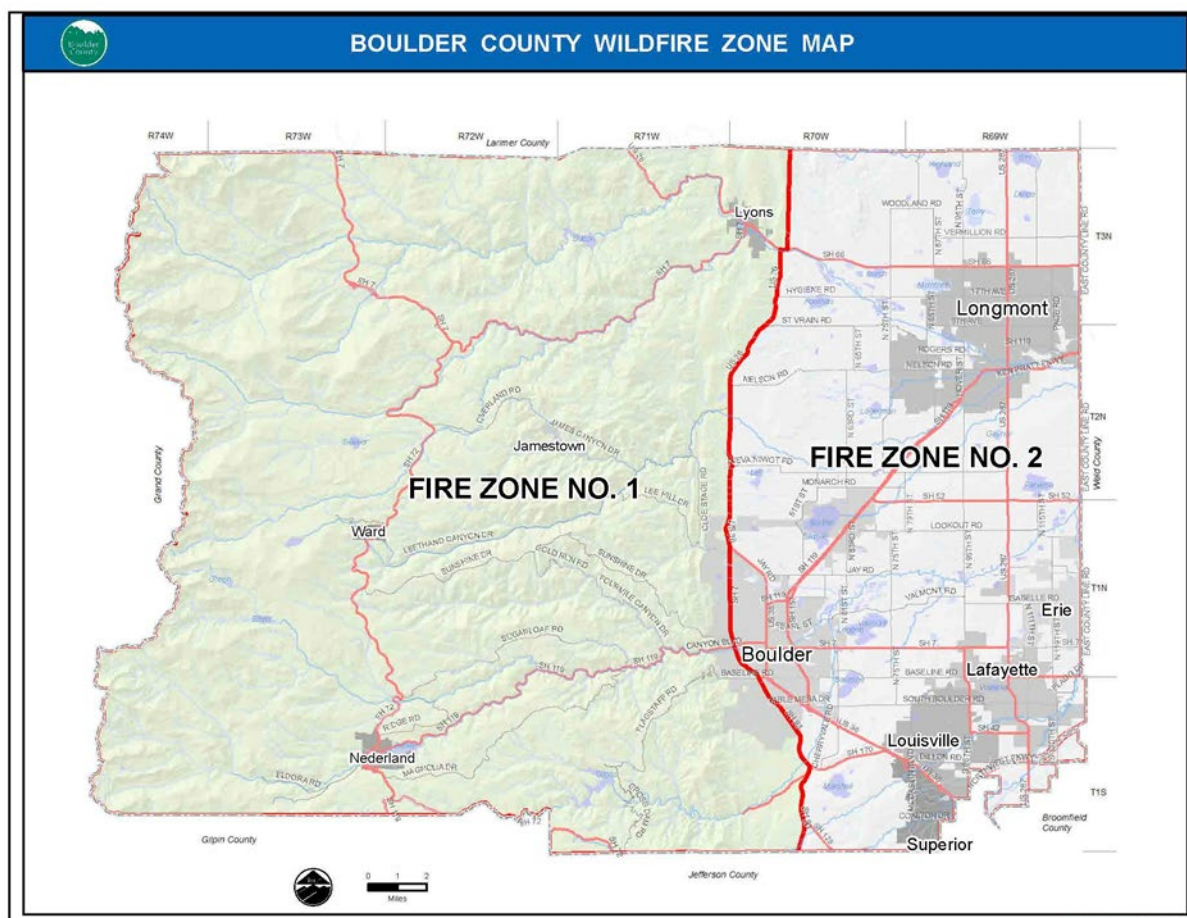


Figure 4. Boulder County Wildfire Zones map that is referenced in the Town of Nederland Municipal Code

references both Zones 1 and 2, the Town of Nederland is located completely within Wildfire Zone 1 (Figure 4).

Building Regulations (Chapter 18) also identifies requirements based on a building's location within the unincorporated portions of Boulder County Wildfire Zones 1 or 2. Table 2 outlines these requirements. Subdivisions (Chapter 17) provides robust requirements for fire water supply. NFPD reports that the Town is sufficiently covered by fire water supply.

<b>TABLE 2. Town of Nederland Section 722 Wildfire Requirements</b>	
<b>Section</b>	<b>Requirements</b>
722.1.3 Moved Buildings	Any building or structure moved within or into any wildfire zone shall be made to comply with all the requirements for new buildings in that wildfire zone.
722.1.2 Buildings Located in More Than One Wildfire Zone	A building or structure that is located partly in one wildfire zone and partly in another shall be considered to be in the wildfire zone in which the more restrictive conditions apply.
722.1.4 Center Lines of Streets	For the purposes of this chapter, the centerline of an adjoining street or alley may be considered an adjacent property line. Distance shall be measured at right angles to the street or alley.
Wildfire Zone 1	
722.2 Restrictions in Wildfire Zone No. 1	
722.2.1 General	Buildings hereafter erected, constructed, enlarged, altered, repaired or moved into Wildfire Zone No. 1 shall comply with the following requirements (below).
722.2.2 Location on property	
722.2.2.1 Exterior wall construction	Except where Table 602 requires greater protection, exterior walls of buildings or structures shall be not less than Class 1 Ignition-Resistant Construction (Section 504.5) as described in the International Urban-Wildland Interface Code when less than 10 feet from property line and shall be not less than Class 2 Ignition-Resistant Construction (Section 505.5) when less than 25 feet from the property line.
722.2.2.2 Openings in walls	Openings in exterior walls shall conform to the requirements of Sections 504.8 and 504.9.
722.2.3 Roof coverings	Roofs shall have a Class A roof covering or a Class A roof assembly. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be fire stopped to preclude entry of flames or embers.
722.2.4 Vents	Attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m <sup>2</sup> ) each. Such vents shall

TABLE 2. Town of Nederland Section 722 Wildfire Requirements	
Section	Requirements
	<p>be covered with noncombustible corrosion-resistant mesh with openings not to exceed ¼ inch (6.4 mm).</p> <p>Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet (3048 mm) from property lines. Underfloor ventilation openings shall be located as close to grade as practical.</p>
722.2.5 Protection of eaves	Eaves and soffits shall be protected on the exposed underside by materials approved for a minimum 1-hour fire-resistance-rated construction. Fascias are required and must be protected on the back side by materials approved for a minimum 1-hour fire-resistance-rated construction or 2-inch (51 mm) nominal dimension lumber.
722.2.6 Spark arrestors	Chimneys serving fireplaces, barbecues, incinerators or decorative heating appliances in which solid or liquid fuel is used, shall be protected with a spark arrester. Spark arresters shall be constructed of woven or welded wire screening of 12 USA standard gage wire (0.1046 inch) (2.66 mm) having openings not exceeding ½ inch (12.7 mm).
Wildfire Zone 2	
722.3 Restrictions in Wildfire Zone No. 2	Buildings or structures hereafter erected, constructed, enlarged, altered, repaired, re-roofed or moved within or into Wildfire Zone No. 2 shall have roof coverings in accordance with Sec. 722.4.1.
722.3.1 Roof coverings.	<p>Except where Section 1505 and Table 1505.1 require greater protection, roof coverings for new buildings or structures or additions thereto or roof coverings utilized for re-roofing shall be Class A, Class B or Class C in accordance with Sec. 1505.</p> <p>Fire-retardant shakes and shingles as determined by Section 1505.6 may be used in Wildfire Zone 2.</p>

### ***Wildfire Mitigation Plan Requirement***

The Town's Municipal Code references a requirement for a wildfire mitigation plan that is "approved by the Town and the Nederland Fire Protection District for all areas outside the of the Nederland Urban Fire Mitigation Area." The requirements also state that "this requirement shall not apply until the boundaries of the Nederland Urban Fire Mitigation Area and the requirements for the fire mitigation are adopted by ordinance." To date, the Nederland Urban Fire Mitigation Area has *not* been adopted. As a result, no wildfire mitigation plans have been implemented.

### ***Findings***

The Town's current regulations appear to have inconsistencies in geographic application and specificity related to the WUI. There are Structure Ignition Zone (SIZ) requirements; however, references to the Boulder County Wildfire Zone map and the absence of an ordinance that defines the Nederland Urban Fire Mitigation Area can lead to a lack of clarity as to where, or if, these regulations apply. Furthermore, the Boulder County wildfire regulations are currently



much more robust and comprehensive than the Town of Nederland's regulations. The result of these differences between the County and Town's level of wildfire building construction requirements appears to inadvertently result in more unmitigated structures within the Town boundaries (due to the less restrictive requirements).

Additional potential challenges associated with aligning with the county WUI requirements include:

- Limited staff capacity to administer and enforce additional requirements;
- Uncertainty about any additional costs to the home-building market;
- Potential public resistance to regulation.

Discussions with the local steering group revealed many important benefits to adopting the WUI requirements that align with the 2017 Amended Boulder County Building Code, such as:

- Requiring construction standards increases the resilience of structures to withstand wildfire.
- Ensuring future development is built to a consistent mitigation standard which provides a measurable way to address the Town's highest prioritized hazards.
- Adopting a comprehensive code establishes a long-term strategy to address challenges associated with rising insurance premiums and reduced coverage. As more states across the West experience property losses from wildfire, some insurance companies have already begun adjusting their rates or dropping customers.
- Adopting codes that improve response and suppression capabilities, such as increased access and water supplies in a subdivision, could also improve Insurance Services Offices (ISO) ratings for participating fire districts. Improved ratings can result in lower premiums for residents.

### ***Opportunity to Updated Wildland-Urban Interface Requirements***

To adequately plan for and address wildfire in the built environment, CPAW recommends that the Town adopt the Wildland-Urban Interface requirements of the Boulder County 2017 Amended Building Code. Adopting these code requirements can provide the Town of Nederland with a *minimum* set of special regulations for the "safeguarding of life and property from the intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to prevent structure fires from spreading to wildland fuels, even in the absence of fire department intervention."

## **Implementation Guidance**

To fully realize the potential benefits of WUI requirements through a successful adoption process, the CPAW team provides the following implementation guidance.

### ***1. Determine the Applicability of the WUI Requirements***

**CPAW recommends that the Town amend the updated WUI requirements of the Municipal Code to apply to the same requirements as the Boulder County 2017 Amended Building Code.**

Following are the basics of this approach:

- Although this will not address existing construction, it will reduce the required staff capacity to initially administer and enforce the code. It may also make it easier to adopt WUI requirements because it does not penalize existing building owners and residents and will be perceived as a fairer standard.
- The focus is on new construction, which is defined as construction that requires a building permit. It is intended to include residential and commercial buildings, accessory structures which require a building permit, and site improvements.
- All new construction on an undeveloped lot would be required to meet the WUI requirements. This will cover new construction on infill lots as well as new subdivisions.
- New freestanding buildings, accessory structures, and site improvements over 120 square feet on existing developed lots would be required to meet the WUI requirements. This would cover barns, freestanding garages, and site improvements separate from the existing building.
- If the project is totally within the existing building envelope of an existing structure, it is exempted from WUI requirements. This is intended to exclude interior remodels, water heater replacement, fireplaces, furnace replacement, etc.
- Any addition to an existing building that enlarges or changes the exterior building envelope would be required to meet the WUI requirements for the new construction portion only. This includes new roofs, siding, decks, windows, vents, and other exterior fenestration that are critical to improving wildfire resilience.
- Substantial upgrades to an existing building can trigger application of the WUI requirements to the site as a whole. The Boulder County Building Code provided parameters and exceptions for WUI requirements.

## ***2. Amend the Current Municipal Code Building Requirements to Align with the Boulder County Building Code WUI Requirements***

Boulder County already has robust wildfire regulation embedded with the 2017 Amended Boulder County Building Code. To provide a smooth transition for property owners and developers who operate across county/town boundaries, aligning the updated Nederland WUI requirements will minimize confusion and simplify the transition across boundaries for builders.

**CPAW recommends that the Town of Nederland adopt Section R327 of the Boulder County (2017) Building Code by reference.**

## ***3. Define the Wildland-Urban Interface***

In order to determine the geographic extent of where the WUI regulations apply, the Town will have to define the boundaries of this within the code. Boulder County already identifies the WUI using the Wildfire Zone Maps, which encompasses the Town of Nederland. However, R327.2 of the Boulder County Building Code, specifically refers to “unincorporated areas”.

**CPAW recommends that the Town amend the Municipal Code to adopt the Boulder County Wildfire Zone Map by reference with amendments.** Due to the size and composition of Nederland, the CPAW team recommends that Wildfire Zone Map be adopted with an Amendment to extend Wildfire Zone 1 to apply as the WUI area for the entire town.

#### ***4. Designate Administration and Enforcement of WUI Requirements through the Town and Defensible Space through the Nederland Fire Protection District***

Administration and enforcement of Nederland's Building Code is already the responsibility of a Town designated building official, while administration and enforcement of the Fire Code is already delegated to the Nederland Fire Protection District Fire Marshal.

**CPAW recommends that the administration and enforcement of the defensible space portion of the WUI requirements be under the purview of the Nederland Fire Protection District Fire Marshal, while the enforcement of the building portion of the code is undertaken by the Town designated building official. This would provide consistency with the administration and enforcement of other Town codes.**

#### ***5. Reconcile Other Requirements of the Municipal Code with the WUI Requirements***

Upon adoption of the updated WUI requirements, the town should consider the best approach to linking these requirements with the Municipal Code to reconcile any potential conflicts and add appropriate references.

**CPAW recommends adopting conflict language for the adoption of the updated WUI requirements to ensure there is a clear process for resolving conflicts.**

#### ***6. Supplement Administration Capacity with Approved Qualified Professionals for Completing Wildfire Mitigation Plans***

On-site assessments and Wildfire Mitigation Plans are not currently required as part of the town's application and development process. Implementation of the updated WUI requirements to align with the Boulder County requirements, however, will require Wildfire Mitigation Plans, and the alternative to use the Wildfire Partners program to achieve this. Either route will require on-site assessment to verify local hazard conditions. It is expected that the review of these requirements would fall under the authority of the NFPD Fire Marshal, which could be delegated to Wildfire Partners Mitigation Specialists on an as needed basis, due to current staff capacity limitations.

**CPAW recommends working with Boulder County to align the Wildfire Partners Program with the updated WUI requirements implementation to offer an alternative approach in using the expertise of the Wildfire Partners Mitigation Specialists for the development of a Wildfire Mitigation Plan.**

## ***2. Implement Fuel Break / Strategic Wildfire Access***

The Town of Nederland and NFPD have identified the need for at least one secondary egress route for the community of Big Springs. The identified need for secondary egress routes is based on the length of the primary access to the furthest extent of the community, combined with the number of expected residents that will require evacuation and the access requirements and safety concerns of fire suppression resources.



## ***Wildfire Egress Efficacy Analysis***

Fire analysis conducted by the Anchor Point Group LLC (Anchor Point)<sup>4</sup> recommended that two egress routes be established, based on the reports Time Unit Fire Arrival (TUFA) report and fire rate of spread modeling. The two egress routes that Anchor Point recommended are the Doe Trail and Wildewood Routes. According to the Anchor Point analysis, each of these routes have both benefits and constraints, depending on the potential ignition location of a wildfire.

Both access routes can also serve as secondary access for fire suppression resources. The Doe Trail route provides the greatest margin of safety along the entire route and is also strategically located to serve as an effective control line during wildfire response operations.

## ***Findings***

Based on the Anchor Point analysis, the Town and NFPD began activities to plan and pursue implementation of a secondary egress route option. However, local resistance has previously been encountered with the potential implementation of either route, which has resulted in putting these activities on hold.

## **Wildewood Egress Route**

The Wildewood Egress route (Figure 5) is proposed to extend from the end of Wildewood Lane and follow an abandoned jeep trail following a drainage to connect with Magnolia Drive. The construction of this route will require significant additional fill and cut, as well as significant and extensive fuel modification to ensure the route offers safe passage for passenger vehicles. This route follows terrain features that are conducive to potential of wildfire entrapment without significant vegetation modification. Furthermore, potential ongoing maintenance will be required for the mitigation of road surface erosion and slope stability challenges to maintain a passable road. There may be adjustments to the Wildewood route that can be made to potentially reduce some of the route construction impacts, fuel modification, and public safety challenges noted above.

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<sup>4</sup> Analysis of efficacy of proposed emergency egress routes for Big Springs, Nederland CO (2016)

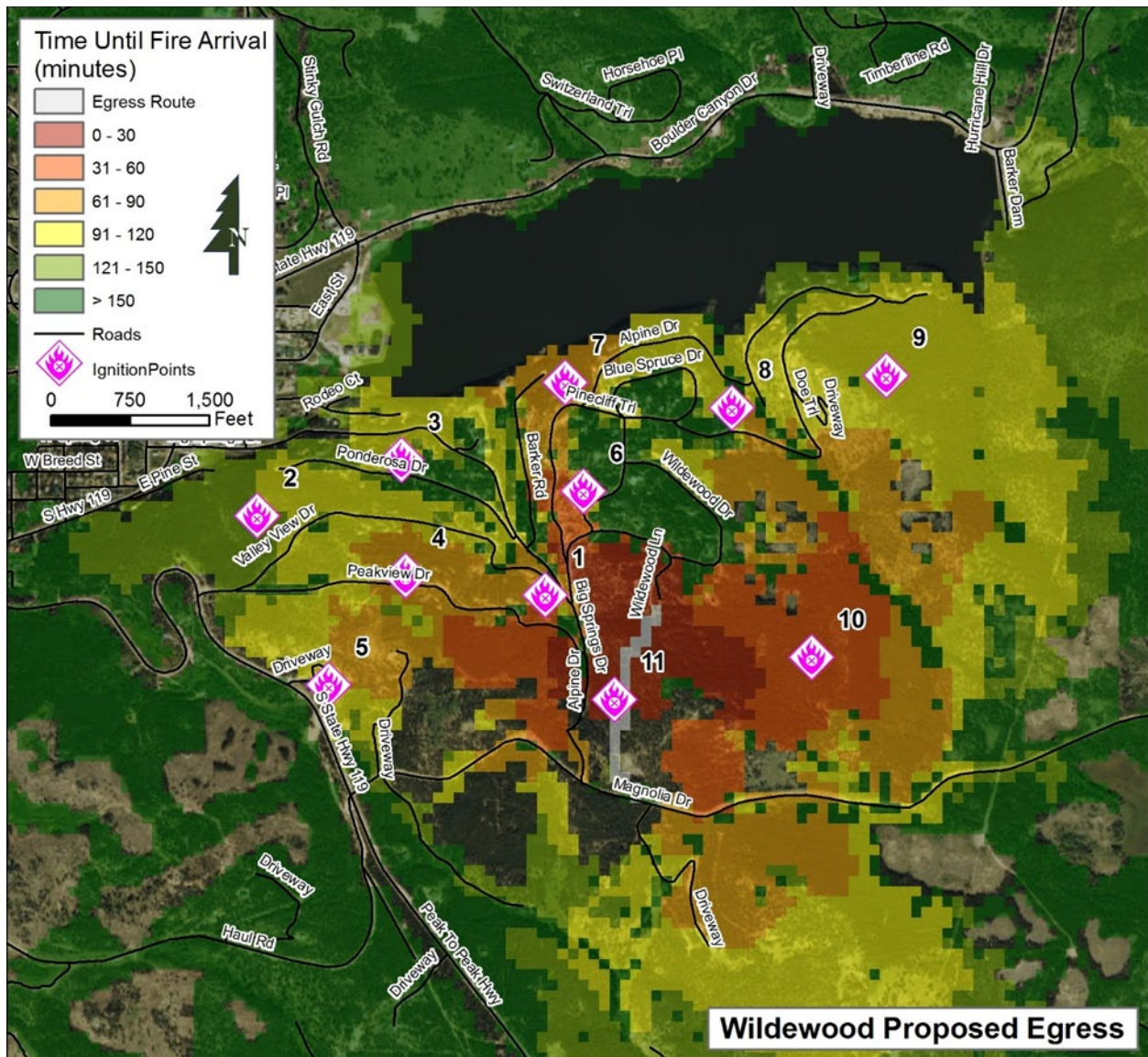


Figure 5. Wildewood egress route Time Unit Arrival analysis map developed by the Anchor Point Group.

### Doe Trail Egress Route

The proposed Doe Trail Egress Route (Figure 6) includes a preferred access and an alternate access from Doe Trail, which will connect to an established fuel break that is on Boulder County Open Space land and National Forest land. From the perspective of safety and minimal ecological disturbance, the best access for the Doe Trail requires a connection through private land and Boulder County Open Space land. There are potential co-benefits for establishing access through the Boulder County Open Space and the Town and NFPD are continuing to work with private landowners and residents on exploring viable options.

The alternative access for the Doe Trail Egress Route commences at a riparian area and then negotiates a steep slope to access the ridge and established fuel break on National Forest land. Mitigation of the riparian area will be required, which will likely require the construction of a bridge, to establish a viable access from Doe Trail road. Additionally, significant engineering and cut and fill road building to achieve a connection with the National Forest land is likely.



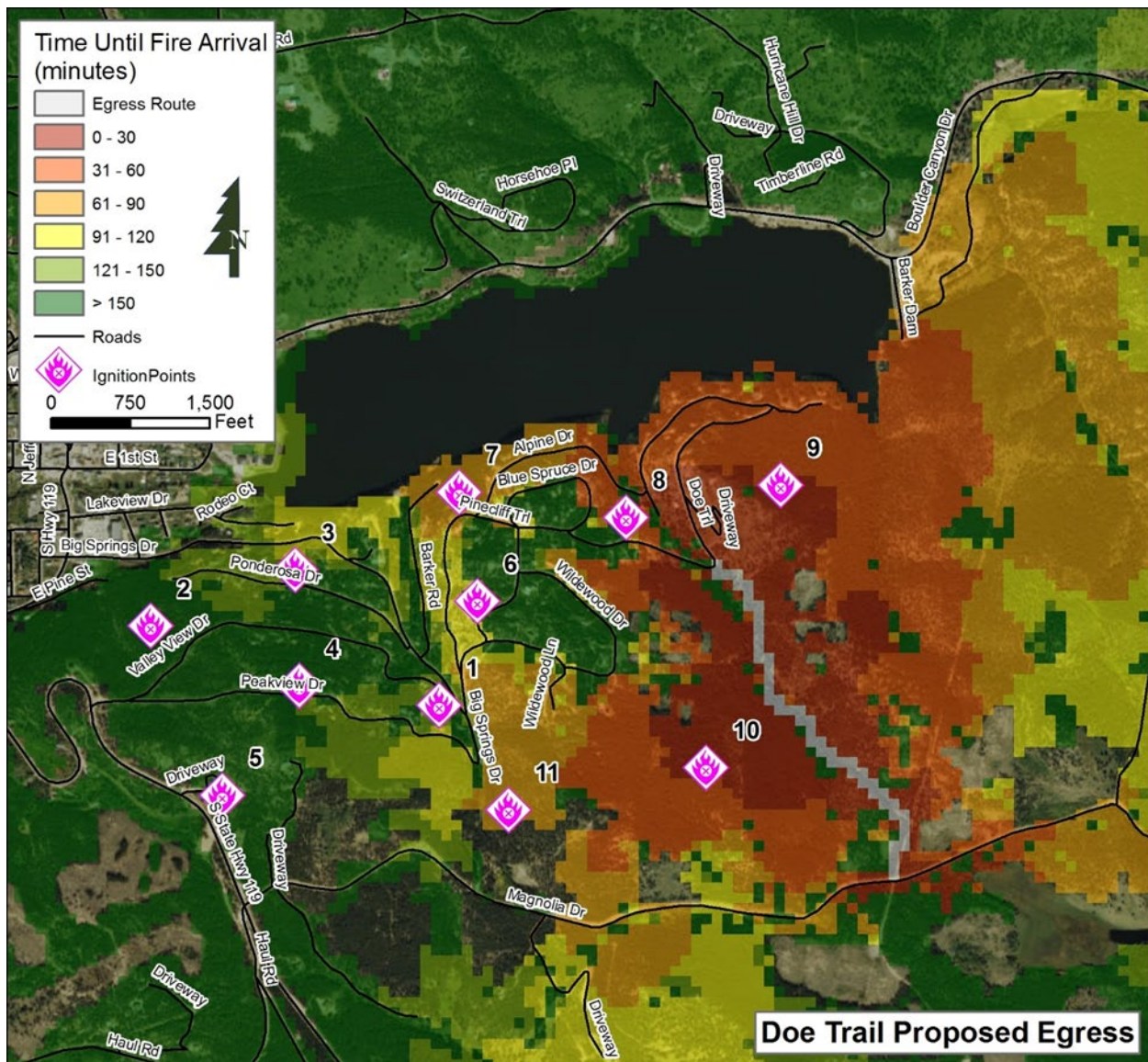


Figure 6. Doe Trail egress route Time Unit Arrival analysis map developed by the Anchor Point Group.

## Implementation Guidance

Based on the potentially high risk to public safety, establishing a secondary access to the Big Springs subdivision should be a high priority. The Town and NFPD should strive to achieve solutions in resolving the barriers that are preventing the implementation of both accesses. In the meantime, actions can be taken to improve the current situation.

### *1. Work with land management partners to develop the Doe Trail Route into an effective fire break and fire suppression resource access*

**CPAW recommends that the Town and NFPD prioritize working with the Arapahoe and Roosevelt National Forest staff and Boulder County Parks and Open Space staff to enhance the Doe Trail access route from Magnolia Rd. This will establish an effective**



strategic fire suppression access and control line that can extend to and provide safe fire suppression access to behind the Doe Trail properties.

## ***2. Work with the community and qualified professionals to establish a safe access to the Doe Trail Egress Route***

**CPAW recommends that the Town and NFPD continue to work with community members, property owners and qualified professionals and land management partners to find solutions for a safe and viable access to the Doe Trail Egress route.** This will provide a connection to the Doe Trail strategic fuel break and fire access and allow an alternative for safe resident evacuation during a wildfire event.

## ***3. Work with land management partners to develop the Wildewood Lane Egress Route***

**CPAW recommends that the Town's third priority is to work with the Arapahoe and Roosevelt National Forest staff, residents and private land owners to explore alternate connections between Wildwood Lane and Magnolia Rd, and appropriately engineer and implement fuel treatment along the route.** This will ensure a safe alternative route for resident egress and fire suppression resource access.

## ***3. Update Plans to Integrate Wildfire Risk Reduction and Land Use Planning Activities***

The Town of Nederland and NFPD have several plan updates on the horizon, including the Comprehensive Plan, Community Wildfire Protection Plan (CWPP), and participation in Boulder County's Hazard Mitigation Plan. These plan updates can serve as catalysts for incorporating wildfire hazard and/or land use planning policies to advance approaches for supporting wildfire risk reduction. To support this effort, CPAW recommends the following considerations for the plan update process.

### ***Comprehensive Plan***

The Town of Nederland Comprehensive Plan was last updated in 2013. The Town is seeking funds to update the Comprehensive Plan within the next few years and is currently working on an Envision process to establish overarching goals for the Town's long-range planning needs. Town planning staff have also expressed interest in integrating resiliency concepts into various aspects of the Town's vision for growth.

Although there are several references to wildfire-related plans (Boulder County and Nederland Fire Protection District CWPPs), there are no specific policies that address wildfire. New wildfire policies that align with an updated plan structure should include the following considerations:

- **Focus on new and existing development.** Policies for new development should address where and how structures are built through the use of ignition-resistant materials, fire-resistant landscapes, and appropriate siting standards. Existing development can focus on the support of retrofit programs and incentives to redevelop and revitalize areas of the community with fire-resistant development concepts. Both new and existing development can be supported by the promotion of the Boulder County's Wildfire Partners program and continued participation in the Firewise/USA® program.

- **Strengthen the multihazard connection.** Flood policies are addressed under Community Facilities and Land Use. Other hazards, such as drought, are not mentioned in the Comprehensive Plan. A multi-hazard planning approach that recognizes the relationship between fire and other hazards, including flood and drought, can strengthen the Town's overall approach for resilient planning to development and the environment. Multihazard planning should consider: environmental stressors that exacerbate hazards, such as beetle infestations and climate change; hazards that cause secondary hazards (e.g., post-fire erosion resulting in floods); and hazards that have cascading effects (drought impacts on fire). The American Planning Association's *Multihazard Planning Framework for the Wildland-Urban Interface*<sup>5</sup> shares best practices for wildfire hazard planning in conjunction with other hazards through land use planning strategies and tools.
- **Promote land management policies that integrate wildfire risk reduction with other ecological objectives.** While the Town is already collaborating with land management partners such as Boulder County Open Space and the USDA Forest Service, ecosystem-based forest and fire management policies are absent in the Comprehensive Plan. Integrating hazardous vegetation management for wildfire risk reduction into other land management activities, such as the maintenance of trails and open space, or protection of community watersheds and sensitive areas, reinforces a comprehensive approach toward ecological health. Policies should ensure that wildfire risk aligns with ecosystem-based fire management to safeguard natural areas and natural resources upon which the Town relies for economic and environmental interests.

### ***Community Wildfire Protection Plan***

The NFPD CWPP covers areas served by the Nederland Fire Protection District and along upper Magnolia Road, which is covered by Timberline Fire Protection District (TFPD). The CWPP was last updated in 2011. The CWPP provides a significant level of detail in terms of assessed neighborhood risks and recommendations. CWPP recommendations include suggestions for improvements to buildings and development, such as increasing access for emergency apparatus on roads and driveways, implementing uniform standards for road signage and property addressing, creating defensible space through appropriate selection and maintenance of landscaping, and discouraging the use of combustible building materials.

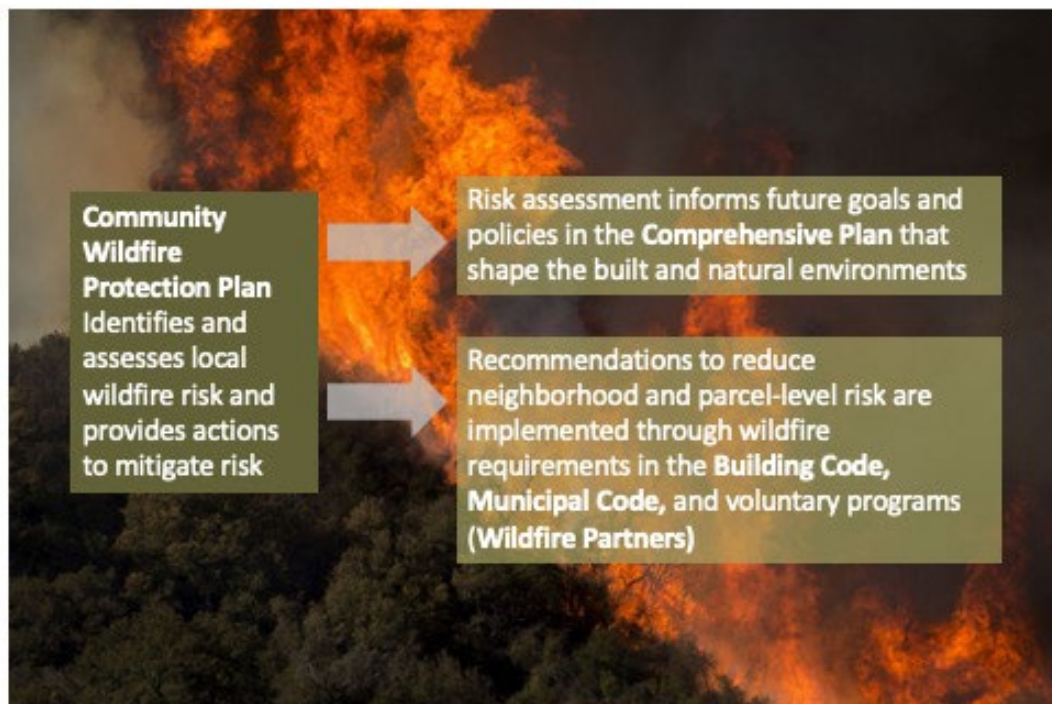
Many of these recommendations are suitable for implementation through Comprehensive Plan policies and the Nederland Municipal Code, however there are limited connections between NFPD's and the Town's planning and regulatory efforts. In addition, there have been changes to the natural and built environments in the past decade that have impacted local wildfire risk, such as changes to vegetation from treatments, beetle infestations, impacts from the 2013 Floods and the 2016 Cold Springs Fire, and new development or redevelopment. These dynamic processes are constantly reshaping wildfire risk at the parcel and neighborhood scale.

CPAW recommends that NFPD undertakes a CWPP update, in collaboration with other partners including the Town. As noted in the CWPP itself, the plan is intended to be a working document and should be updated annually, and/or after a major event such as a wildfire or significant home development. CPAW has developed a list of potential funding sources to support wildfire planning and implementation activities, including CWPP updates. This information has been provided as a separate resource to the Town and NFPD as part of this assistance.

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<sup>5</sup> Accessible for APA members at <https://www.planning.org/publications/document/9155699/>

During the next CWPP update, we recommend establishing a stronger linkage between the CWPP risk assessment, CWPP recommendations and actions, Comprehensive Plan policies, and implementation within Town and County regulatory frameworks and other activities. Information in the CWPP related to wildfire risk should inform where development is or is not appropriate and under which conditions, including the capacity to mitigate the risk. In addition, wildfire risk in the CWPP can support policies and regulations implemented through the land use planning process. Figure 7 shows the general relationship between the CWPP and other planning activities that are informed by the risk assessment and recommendations. This integration is key to prioritizing wildfire risk reduction through a collaborative and long-term approach.



*Figure 7. Integrated relationship between the CWPP and other plans, regulations and activities provides an integrated approach to risk management. (Image credit: Wildfire Planning International)*

### **Additional Plans**

To further support an integrated hazard planning approach that connects wildfire risk reduction and resilience across different topics, CPAW recommends that the Town and NFPD ensure that future plans reflect the goals of the Comprehensive Plan and CWPP. For example, the Boulder County Hazard Mitigation Plan has an annex dedicated to the Town of Nederland. This information can be used to support future updates to the CWPP and Comprehensive Plan. Planning priorities from the CWPP and Comprehensive Plan should also inform appropriate mitigation goals and actions to increase opportunities to fund implementation. Future updates to other local plans, such as the Downtown Master Plan, can reference the CWPP risk assessment to ensure revitalization activities incorporate considerations for wildfire risk reduction.

# CONCLUSION

This report provides a synthesis of the CPAW process and delivers three recommendations for strengthening local land use planning measures that reduce wildfire risk to people and property:

1. Update WUI Code and Align with County
2. Implement Fuel Break / Strategic Wildfire Access
3. Update Plans to Integrate Wildfire Risk Reduction and Land Use Planning Activities

These recommendations are intended for administration and implementation by NFPD and the Town of Nederland. Public engagement will play an important role in the further consideration and implementation of these and other land use measures that affect the WUI. Current opportunities, such as County partnerships and the timing of potential plan and building code updates, also align well with the implementation of recommended wildfire activities. These efforts are critical for a comprehensive, fire-adapted approach that will support the Town of Nederland, NFPD, and its partners in long-term outcomes that reduce wildfire risk to local residents.