

# Lessons Learned from Waldo Canyon

## FIRE ADAPTED COMMUNITIES MITIGATION ASSESSMENT TEAM FINDINGS

# EXECUTIVE SUMMARY

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## INTRODUCTION & BACKGROUND

The Waldo Canyon Fire ignited June 23, 2012, near Colorado Springs, Colorado. Considered the worst fire in Colorado state history, Waldo Canyon forced more than 30,000 people

to flee their homes, destroyed 346 homes, scorched 18,247 acres, killed two residents, and took firefighters 18 days to fully contain. The fire burned through brush, mountain

shrub, grass, and trees including oak, Pinyon-juniper, ponderosa pine, Douglas-fir, spruce and limber pine. In addition

to disrupting thousands of lives and destroying hundreds

of properties, the wildfire left the scarred landscapes vulnerable to flooding and/or debris slides that will pose long-term problems in this area.

The Waldo Canyon fire presented the first opportunity for partners in the national Fire Adapted Communities (FAC) Coalition to collectively evaluate the performance of mitigation

practices in Colorado Springs in a post-fire environment, and to compare the results to the mitigation strategy

recommended by the Fire Adapted Communities program. The assessment was conducted July 18-20, 2012, by a FAC Wildfire Mitigation Assessment Team, which included two sets of researchers – one set was made up of structural assessment experts and the other was made up of social science and public education experts. In addition, the team was accompanied by staff from the Colorado Springs Division of the Fire Marshal and the State of Colorado.

The structural and forestry experts in the assessment team surveyed 40 homes that were damaged, undamaged or destroyed

during the fire, toured fuels management projects, and examined a variety of mitigation initiatives including creation of defensible space. The social science and public

education experts examined Wildland Urban Interface (WUI) codes and ordinances, wildfire preparedness information

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mation and awareness efforts in place in Colorado Springs,  
talked with local officials, homeowners and communi

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ty leaders and also toured the damaged areas. The FAC  
Mitigation Assessment Team included representatives from  
the USDA Forest Service, Insurance Institute for Business &  
Home Safety (IBHS), International Association of Fire Chiefs  
(IAFC), National Fire Protection Association (NFPA) and The  
Nature Conservancy (TNC).

## WHAT IS A FIRE ADAPTED COMMUNITY?

The USDA Forest Service developed the Fire Adapted  
Communities program in 2009, based on the Quadrennial  
Fire Review's recommendation that creating fire adapted  
communities is the best alternative to escalating wildfire  
in the Wildland Urban Interface. The strategy promotes  
multi-jurisdictional use of a suite of mitigation tools fo

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cused on helping communities live successfully with wild

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fire through mitigation and preparation, rather than de

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pending upon suppression and protection resources that  
are not always available.

Primary Elements of a Fire Adapted Community

1.

An informed and active community that shares  
responsibility for mitigation practices.

2.

A collaboratively developed and implemented  
Community Wildfire Protection Plan (CWPP).

3.

Structures hardened to fire and including ade

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quate defensible space practices; advocated by  
Firewise Communities, IBHS and others.

4.

Local response organizations with the capability  
to help the community prepare and can respond  
to wildfire; advocated by Ready, Set, Go!

5.

Local response organizations with up-to-date  
agreements with other stakeholders who play a  
role in mitigation and response.

6.

WUI Codes, Standards or Ordinances, where ap

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propriate, which guide development.

7.

A visible wildfire reduction and prevention pro

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gram that educates the public about the importance of a communitywide approach and the role of individual homeowners.

8. Adequate fuels treatments conducted in and near the community, including development and maintenance of a fuels buffer around the community.

9. Established and well-known evacuation procedures and routes.

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## OVERVIEW OF COLORADO SPRINGS WILDFIRE MITIGATION EFFORTS

The Colorado Springs metropolitan area has approximately

650,000 people living in an area roughly 195 square miles. About 24 percent of the metro area's population re

sides in the 28,000 acres of WUI, which runs from the Air Force Academy south to the Cheyenne Mountain Air Force Station. Much of the WUI is in forested/vegetated foothills on alluvial fans along narrow drainages and ridgelines with slopes up to 45 percent. Average annual precipitation is about 17 inches and summer temperatures can reach 100 degrees.

The Colorado Springs Fire Department Wildfire Mitigation Section has developed a strong community education effort and has built on its success. Outreach included de

velopment of the "Sharing the Responsibility" campaign that has involved residents in numerous mitigation activ

ities and has resulted in the development of educational tools. With 36,485 addresses and 28,800 acres identified in the Colorado Springs WUI, the fire department is ac

tively engaged with 87 neighborhoods. In addition, the Colorado Springs Firewise program, patterned after the national Firewise Communities Program, became part of homeowner mitigation and outreach messaging in 2001. It should be noted that the Colorado Springs Wildfire Mitigation Firewise program is substantially different from the national Firewise program in regards to scope, regula

tion and size.

# SUMMARY AND CONCLUSIONS

The FAC Mitigation Assessment Team found that Colorado Springs' post-fire mitigation work closely mirrors recom-

mendations of the Fire Adapted Community strategy in most aspects.

The mitigation work conducted in the high risk areas of the community was credited with helping the fire department achieve an 82 percent save rate. According to estimates provided by the Colorado Springs Mitigation Section and FEMA, the cost benefit ratio for the mitigation efforts for the Cedar Heights neighborhood was 1/257; \$300,000 was spent on mitigation work and \$77,248,301 in losses were avoided. Combined cost benefit ratio was 1/ 517 for the three neighborhoods with the highest impacts. However, it should be noted that changes in fire weather behavior such as wind shifts could have resulted in significantly higher fire losses.

This field survey has confirmed findings of other post-fire surveys in terms of the basic mechanisms whereby build-

ings can ignite, particularly by exposure to wind-blown embers. Construction details were identified that can make buildings vulnerable to wildfire and solutions to mitigate these vulnerable features were offered. This survey con-

firmed that effective pre-fire mitigation efforts must be conducted at both the individual and community levels in order to create fire-adapted and fire-safe neighborhoods in wildfire-prone areas. Wildfires will continue to occur and homes and communities in wildfire prone areas must be prepared to resist the associated wildfire exposures.

By addressing the vulnerabilities identified in this report, coupled with the outlined mitigation strategies, residents with existing homes can significantly reduce their risk of wildfire-related property losses. However, regular mainte-

nance of homes and properties located in wildfire-prone areas is also a critical component of this process. By incor-

porating mitigation strategies when rebuilding or repair-

ing properties post-fire, communities will take an import-

ant step toward becoming more fire-adapted.

## MAJOR FINDINGS FROM THE FAC MITIGATION ASSESSMENT TEAM:

Building Design and Materials Improvements and Maintenance Could Have Reduced Losses

- Ember ignition via ignition of combustible materials on, in or near the home was confirmed by the surveys. This reaffirms the serious risk posed by ember ignitions to properties during wildfires. This reinforces the importance of maintaining an effective defensible space and regularly removing debris from areas on and near the home.

- Home-to-home fire spread was again a major issue, as it has been in previous WUI fires. When it occurred, it was dependent on at least one wildland fire-to-home ignition and then home spacing and slope / terrain. Home-to-home fire spread was attributed to a relatively large number of home losses in this survey.

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- Wildland fire-to-home ignition was influenced by location of the home on a slope and fuels treatment(s), or lack of, on the slope leading to the home.

- A building can be hardened with noncombustible materials, for example, but it is also necessary to incorporate appropriate construction details, which will help ensure that the protections offered by those materials is not by-passed.

- Individual homeowners must take responsibility for fortifying their property against wildfire damage by taking appropriate measures to incorporate noncombustible building materials and construction details.

#### A Communitywide Approach is Best

- Community leaders must recognize the value of communitywide collaboration, an essential component to home survival and creation of fire adapted communities.

- While creating ember resistance, defensi

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ble space, and ignition-resistant construction  
are key wildfire mitigation features, equal

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ly important are mitigation efforts conduct

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ed neighborhood-by-neighborhood and  
community-by-community.

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A small dedicated/motivated organization or  
group can have a big impact.

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Homes located closer than 15 feet apart can be  
vulnerable if a neighboring home has not been  
well prepared and ignites.

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The community tax base is significantly impact

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ed by the widespread damage and destruction of  
homes and businesses during wildfires. This has  
economic consequences for all residents.

Fuels Reduction is Important

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Hazardous fuels reduction should continue both  
around neighborhoods and in more remote areas  
containing flammable vegetation; treatments  
should have explicit, specific objectives.

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While the Waldo Canyon Fire caused widespread  
damage, it also left behind a healthier landscape  
by reducing the amount of fuel for future fires.

The FAC site visit underscored the importance of  
prescribed fire as a fuels reduction tool.

Partners in Preparedness can Equal Success

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The preparedness message is most effective  
when carried by a variety of partners. Public pol

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icymakers, officials and local community and  
business leaders should echo best practices pro

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vided by the Fire Adapted Communities Coalition  
to reinforce the need for wildfire mitigation ef

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forts at every level.

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Partnerships are critical in building support and  
extending the area of influence for wildfire pre

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paredness efforts.

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The Colorado Springs Mitigation Section inte

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grated a variety of methods that mirrored, to a large extent, the Fire Adapted Communities effort and were able to accomplish significant mitigation, even with a relatively small staff and budget. This was the result of collaborative efforts with important partners.

- There is a need to create WUI messages that work for different neighborhoods, different audiences, and different contexts. This is particularly true for rural and urban communities. People may not identify with their risk if they don't see their neighborhood as being in the traditional WUI.

- Contractors and design professionals, along with code/ordinance development bodies, have an important role to play in wildfire preparedness. By incorporating best practices to reduce wildfire vulnerabilities into building design and construction techniques and ordinances, the risks to properties can be reduced.

Download a copy of the full report, "Lessons Learned from Waldo Canyon," at [fireadapted.org](http://fireadapted.org).

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