

# **Long Range Planning in the DRCOG Wildland Urban Interface (WUI)**

**WUI: The area where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels**

**Boulder County**











## High Fire Danger Right Now

- ✓ Fire Ban in place for foothills and mountains
- ✓ USFS has a shooting restrictions in place
- ✓ March was the Driest Month on Record
- ✓ Trees are in desperate need of moisture (9% fuel moisture)
- ✓ Potential for worst fire season since 2000 and 2002.

# Our Message to Residents: Be Prepared for a Wildfire Today

- Ignition-Resistant Construction
- Fire-Resistant Landscaping
- Replace Wood Roofs
- Evacuation Planning
- Insurance Updates
- Home Inventories
- Defensible Space
- Mow Grass
- Clean Gutters
- Water Supply
- Driveway Access
- Fire Bans



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**The questions I want to explore today:**

**Are local governments prepared  
for wildfires in 2035 and beyond?**

**Do our long range plans adequately address the  
threat of future wildfires?**

**Do we fully understand the costs, risks, and  
planning tools associated with future  
development in the WUI?**



# Why should we prepare for future wildfires?

- Wildfires have significant impacts on local governments, our residents, the environment, and our quality of life
- These impacts are increasing
- Local government policies and plans can mitigate these impacts



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### PUBLIC TREATMENTS WITHIN THE FOURMILE

What will it look like?

Claire DeLeo, Erica Christensen, Jennifer M  
Boulder County Parks and Open Space Plant E

#### AERIAL MULCHING

**For More Information**

The following information on the  
availability of aerial mulching  
is for informational purposes only.  
Aerial mulching is a cost-effective  
method of weed control that  
uses a specialized aircraft to  
apply mulch to targeted areas.  
This method is most effective  
for controlling weeds in  
open areas, such as roadsides,  
ditches, and utility corridors.  
Aerial mulching is not suitable  
for use in densely wooded areas  
or areas with steep slopes.

**DECISIONS**

• Consider the steepness  
of the slope.  
• Traffic may temporarily  
be disrupted on  
roadways by cover  
falls.


**STEP 1: LOCATING THE  
MULCHER**

• Locate in the steeping  
area.  
• Traffic may temporarily  
be disrupted on  
roadways by cover  
falls.

**STEP 2: AERIAL MULCHING**

• Apply 7-10" or depth  
of 1000 lbs/acre.



A dirt road curves through a forest. A green sign with white text is mounted on a wooden post. The sign reads: "ENTERING BURNED AREA", "FALLING ROCK AND DEBRIS", "FLASH FLOOD AREA", and "CLIMB TO SAFETY". The forest contains both green pine trees and bare, dead trees. The ground is covered in brown mulch or wood chips.

ENTERING  
BURNED AREA  
FALLING ROCK  
AND DEBRIS  
FLASH FLOOD AREA  
CLIMB TO SAFETY































# **A Common Assumption among Local Officials:**

**Federal and state government  
agencies will provide the necessary  
technical and financial support to  
help communities recover from a  
catastrophic wildfire**

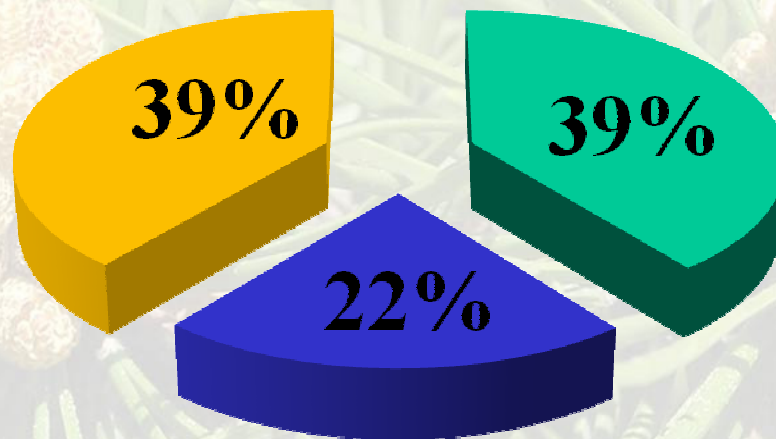




# Fourmile Fire Recovery Costs

Land Use Department: \$535,435

**Current Estimated Expenses: \$6,266,547**



■ Federal:  
\$2,467,213

■ State:  
\$1,356,139

■ County:  
\$2,443,195





# **Wildfires are a significant and growing issue**

With the warming of Earth's climate, fire frequency, extent, severity, and seasonality are expected to change profoundly in the future, with substantial increases in fire activity in many areas.





# Climate Change Impacts

Temperatures are increasing.

Rising average summer temperatures are strongly associated with an increase in the number of wildfires.

In Oregon, an increase in average summer temperature of 1° F is associated with an increase of 420 wildfires.

This is a large effect given that, on average, 1,800 wildfires burn in Oregon per year.





# Climate Change Impacts

Our snowpack is melting earlier

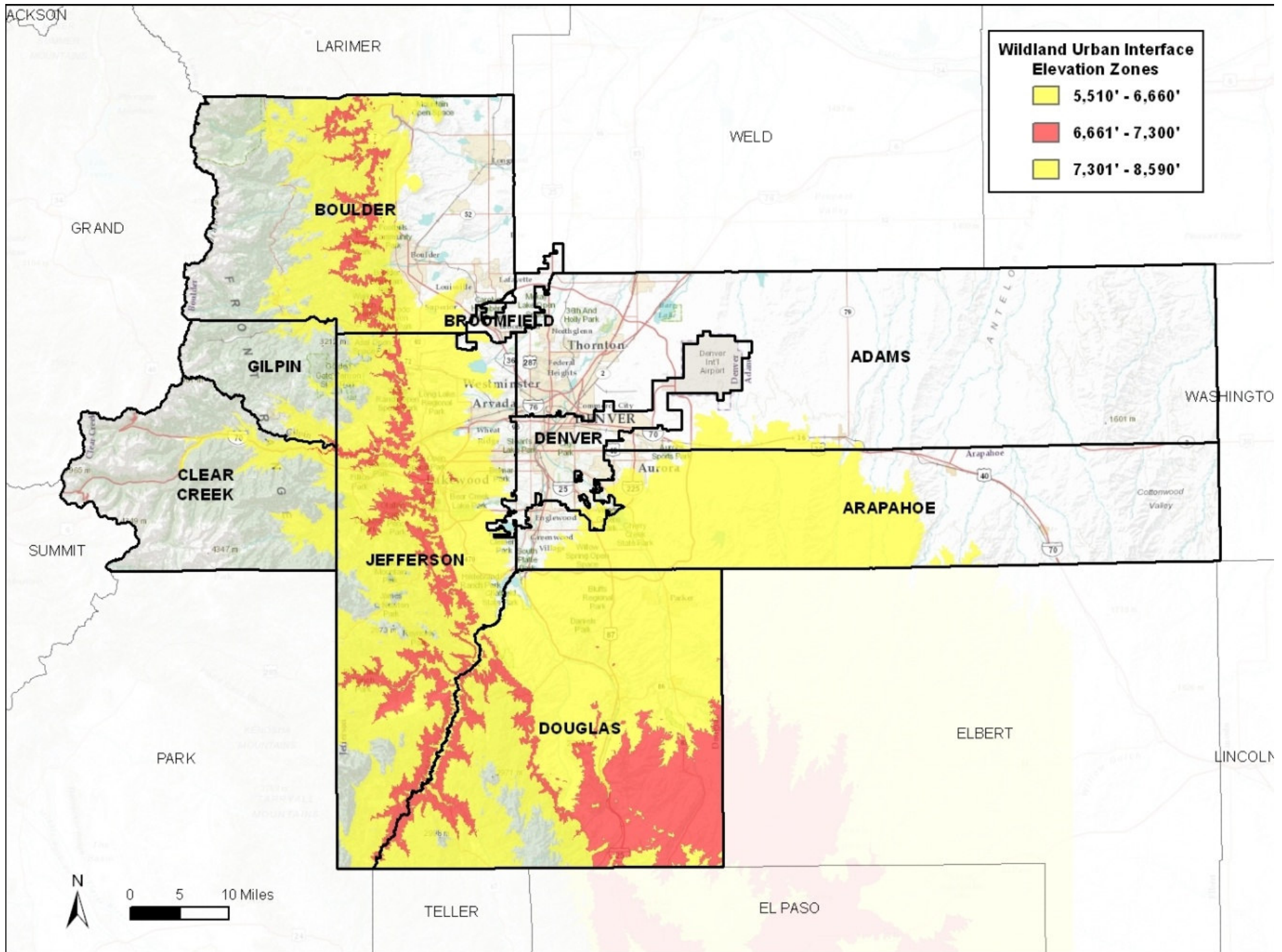
Earlier snowmelt dates correspond to increased wildfire frequency

Early snowmelt had its greatest impact on wildfire frequency between elevations of 1680 and 2590 m

Vulnerability in the Northern Rockies is highest around 2130 m, where the greatest increase in fires has occurred









# Climate Change Impacts

The fire season is expanding

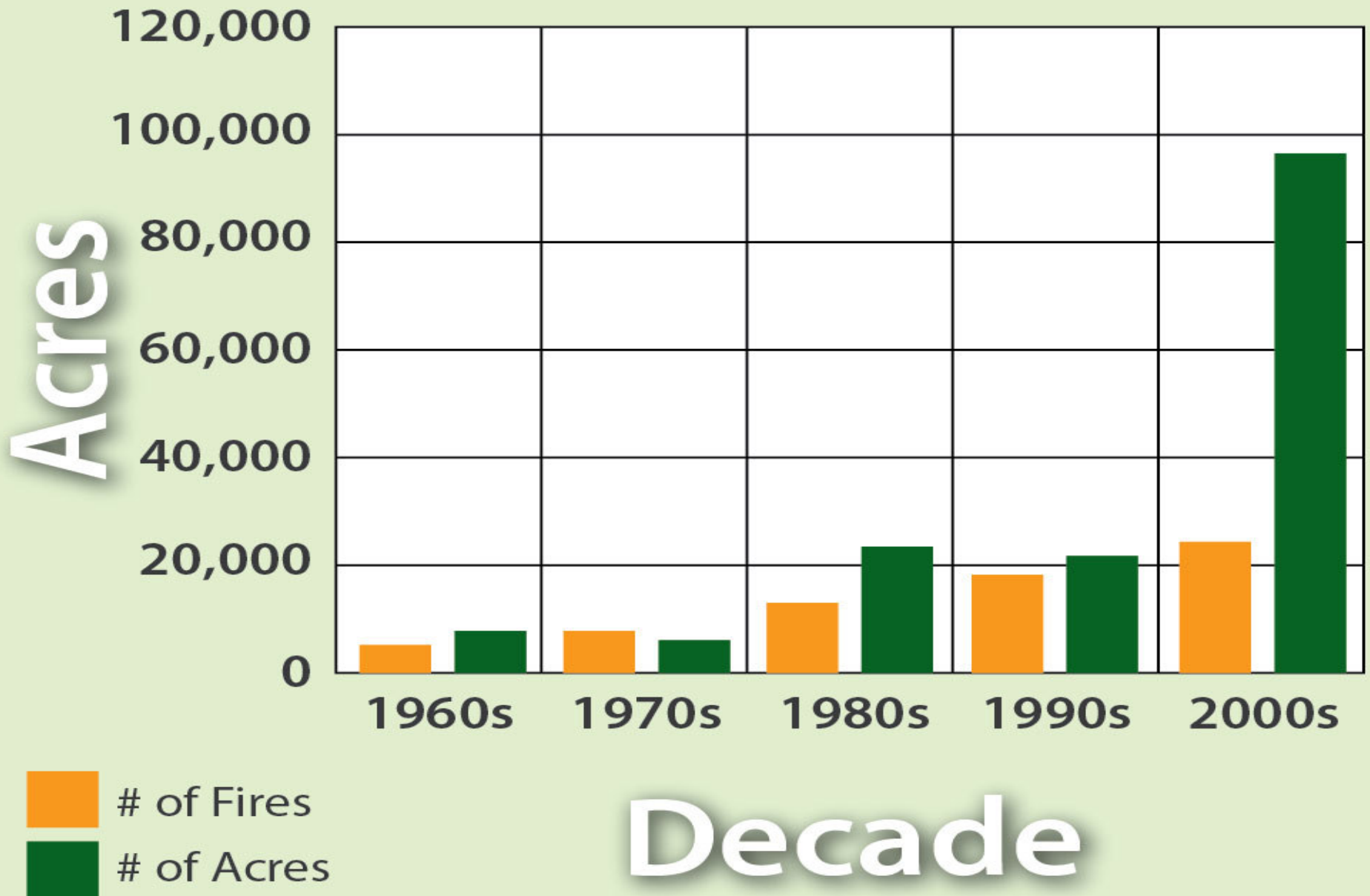
We experienced our driest March on record and local fire bans in March and April

The fire season increased by 78 days from 1970-1986 to 1987-2003 (date of first large fire—greater than 400ha—to date the last large fire was controlled)



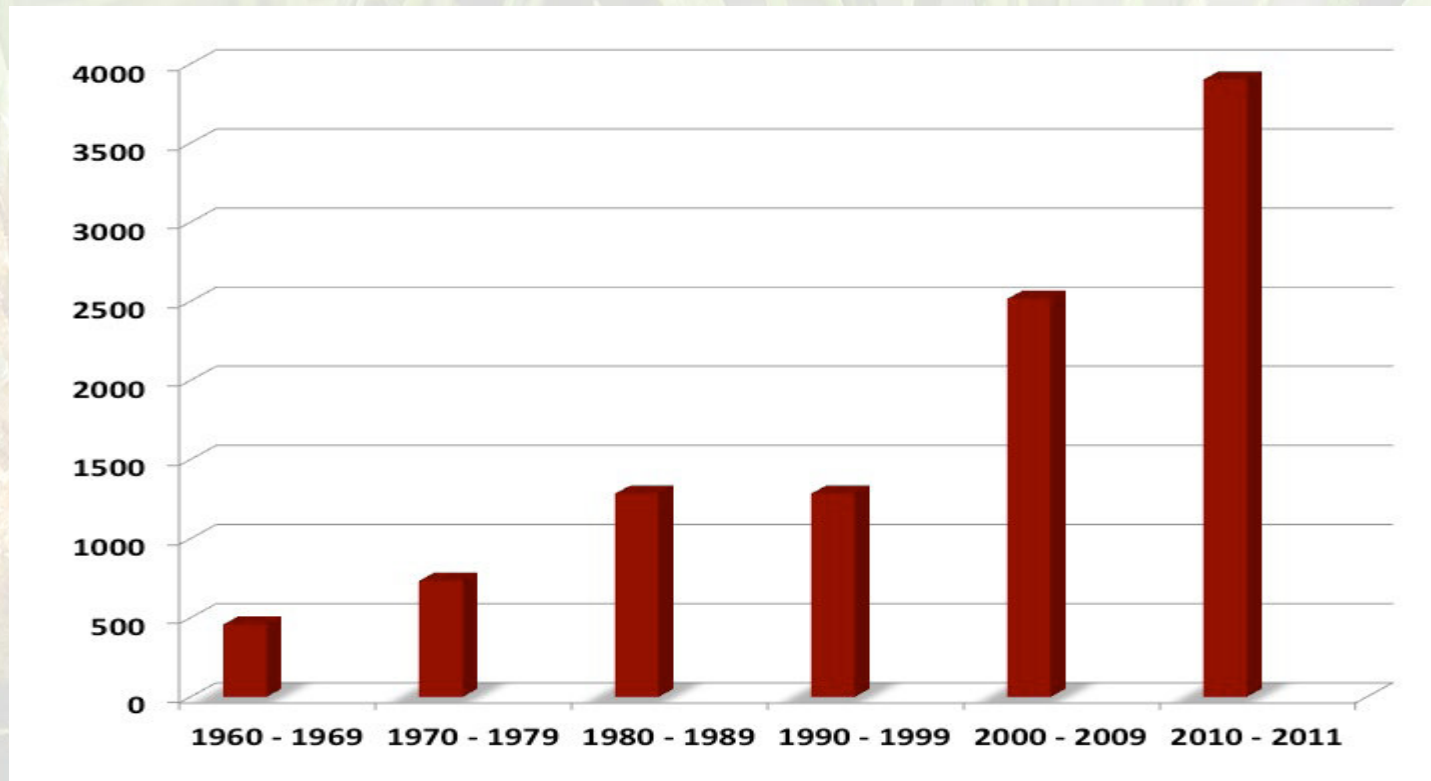


# State and Private Fires by Decade





# Numbers of wildfires in Colorado



We had 55% more wildfires in 2 years (2010-2011) than we did in the 10 years from 2000-2009, and we have experienced a tragic start to 2012.

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Land Use Department





# What can we do?

I am going to discuss three areas of local government activity:

1. Forests
2. Homes
3. People



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# Forests

## Existing Programs:

- Boulder County's FEMA Grant for Wildfire Mitigation
- Active Forest Management Program
- Landscape-scale Partnerships

## Many Challenges:

- An enormous amount of land requires treatment
- Funding is limited
- The future of prescribed fire





# Homes

## Existing Programs:

- Site Plan Review (SPR) Requirements: Ignition-Resistant Construction, Defensible Space, Water, Access
- Education and Outreach
- Community Forestry Sort Yards
- Community Chipping Program

## Many Challenges:

- Improving the existing housing stock
- Maintaining defensible space
- Who is responsible: What is the role of local government?

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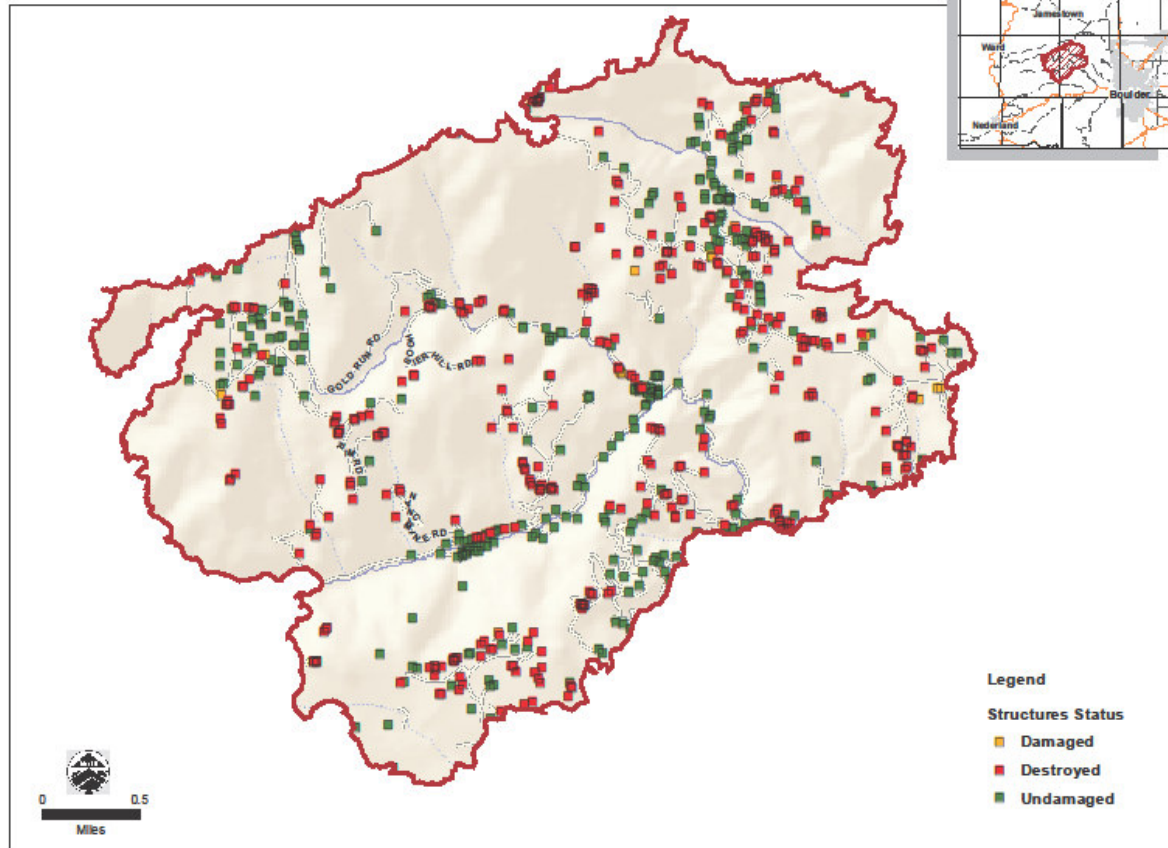




# Home Survival during the Fourmile Fire

Four Mile Canyon Fire Structure Status

Map 43



**65% of all  
the homes in  
the Fourmile  
Fire burn  
perimeter  
survived, 306  
out of 474  
homes**

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# How do we increase this percentage?

**Sample Wildfire Mitigation Plan**

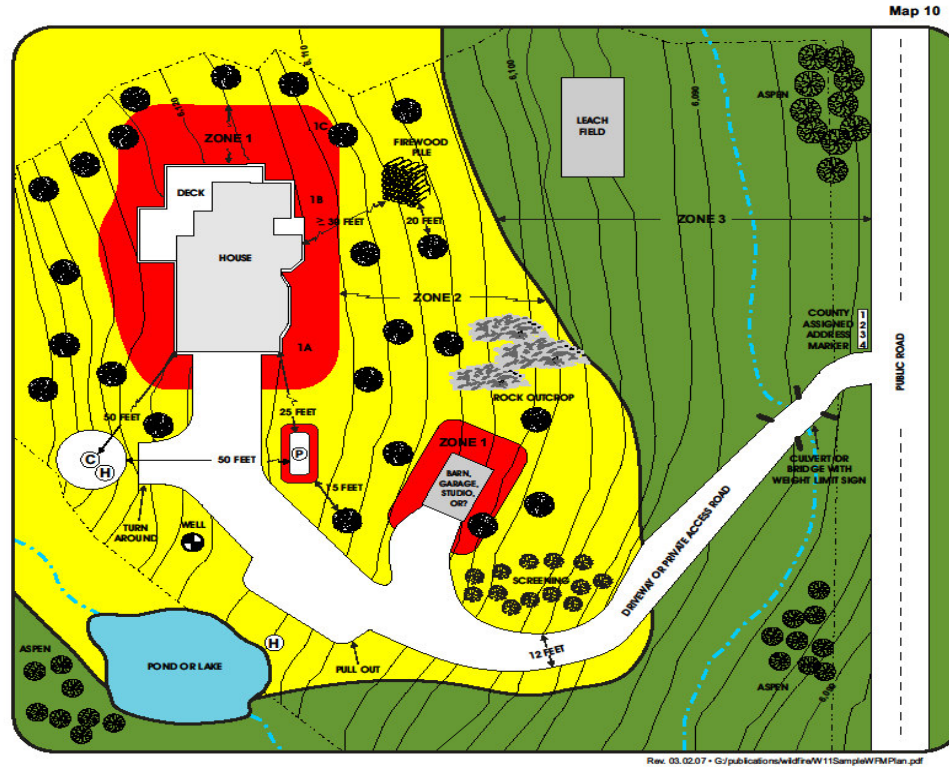
**Legend:**

- Zone 1 - The Safety Zone**  
15 to 30 Feet Around Structure(s)  
1A - 3 to 5 feet from the structure(s)  
- All flammable vegetation removed  
- Weed Barrier covered with crushed rock or gravel  
1B - Green Space  
- Grasses mowed 4 to 6 inches  
1C - Remaining Area  
- Mature trees pruned up to 10 feet
- Zone 2 - The Transition Zone**  
From Zone 1 out 75 to 125 feet from the structure(s)  
- All ladder fuel and woody debris removed  
- Trees thinned so crowns are widely spaced 10 feet crown spacing  
- Limb trees 6 to 8 feet from ground
- Zone 3 - The Management Zone**  
From Zone 2 to edge of property  
- Thin trees for forest health  
- Remove diseased or weakened trees

- Well
- Cistern (for firefighting min. of 1,800 to 2,400 gallons)
- Dry Hydrant (with 6 inch cap)
- Propane Tank
- Save Tree (in Zone 1 or 2)
- Pocket of Trees (left for screening)
- Aspen Stand (or other Deciduous Trees)
- Rock Outcrop
- Firewood Pile
- Pond or Lake
- Drainage or Stream
- Property Line

Scale: 1" = 10'

**Land Use Department**  
Courthouse Annex Building  
2045 13th Street • PO Box 471 • Boulder, CO 80302  
**Wildfire Mitigation:**  
Phone: 720-564-2625 • Fax: 303-441-4856  
Email: ephillips@bouldercounty.org • <http://www.bouldercounty.org/lu/>  
Office Hours: Monday—Friday 8:00 AM to 4:30 PM



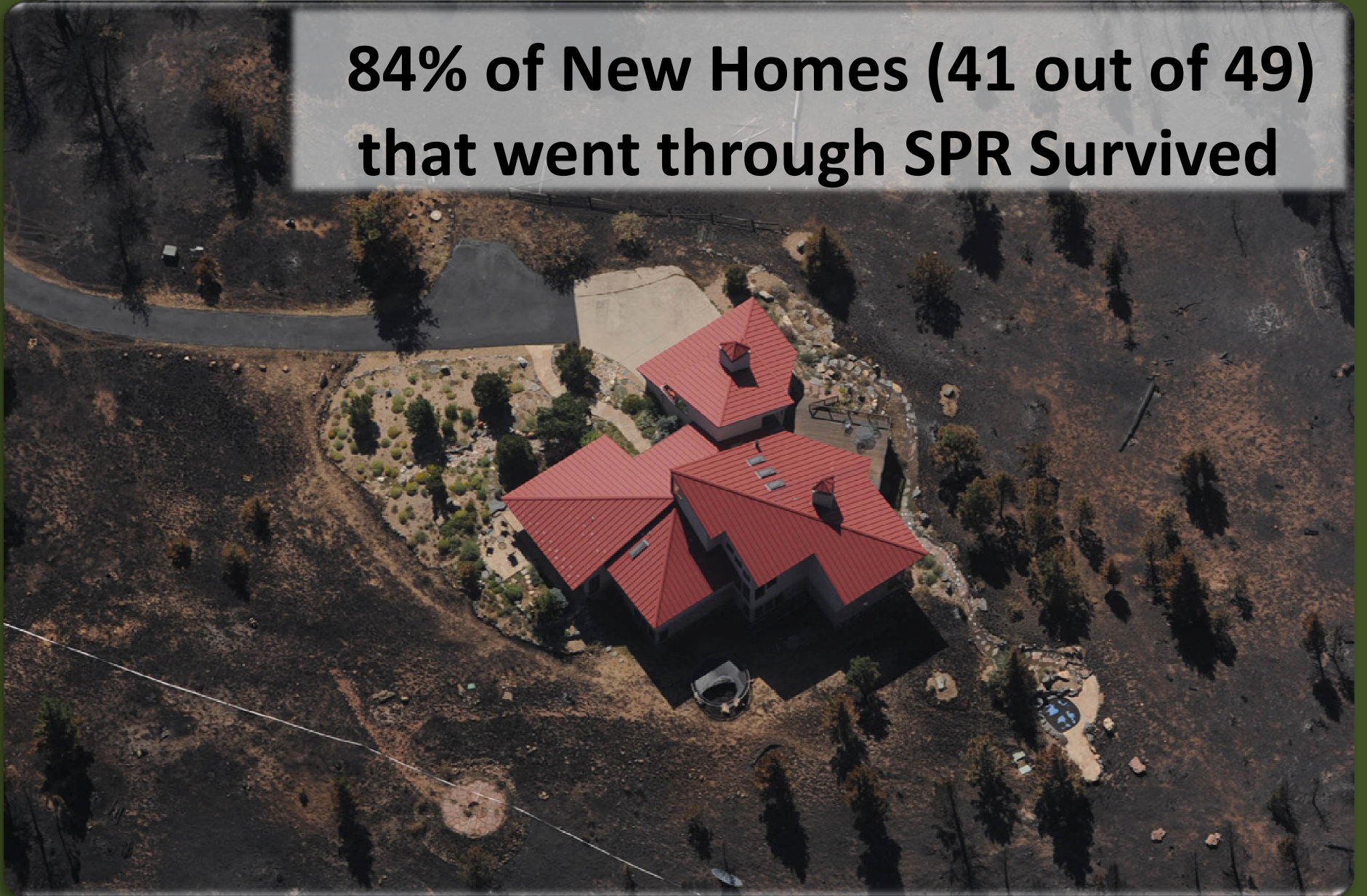
- What happened to new homes that went through SPR????

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**84% of New Homes (41 out of 49)  
that went through SPR Survived**

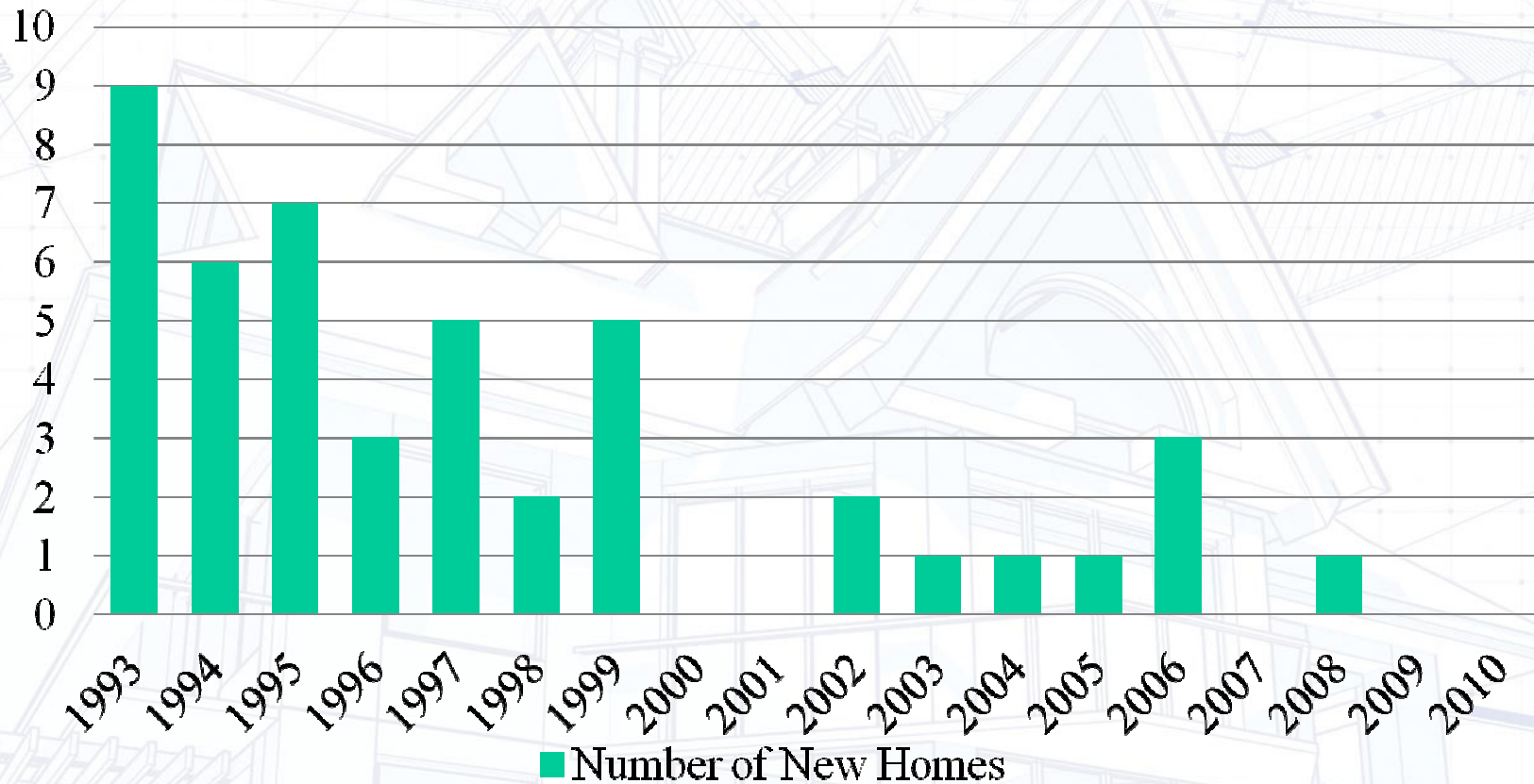


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## The 49 new homes that went through our Site Plan Review process in the Fourmile Fire burn perimeter by year

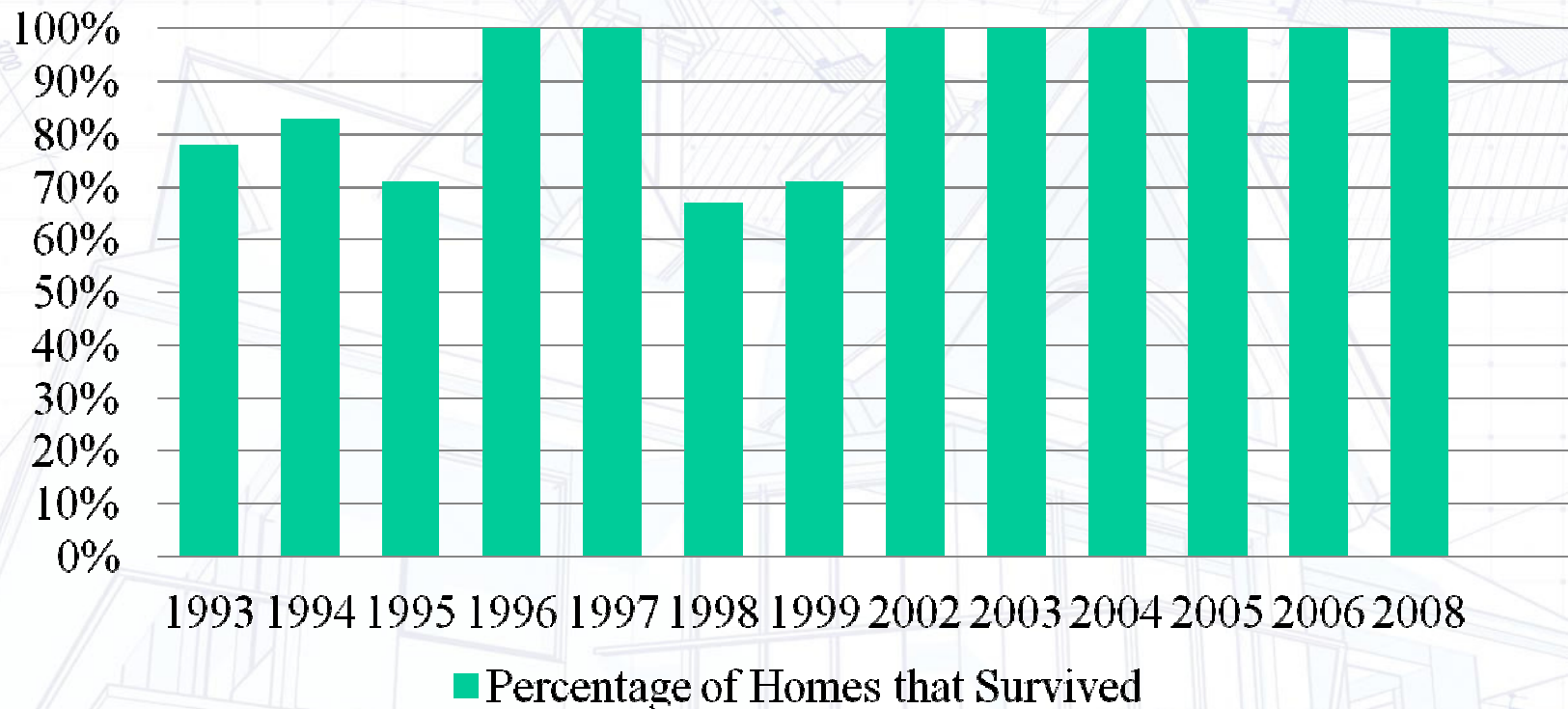


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## Survival Rates for new homes that went through our Site Plan Review process by year



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# Findings from Fourmile Fire Analysis

62% of homes that did not go through Site Plan Review survived (264 out of 424 homes)

Site Plan Review increased the percentage of homes surviving the Fourmile Fire from 62% to 84%, a 35% increase

The percentage of homes that survived increased over time as the Site Plan Review process was improved

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**This Homes Building Materials  
Probably Saved it!**







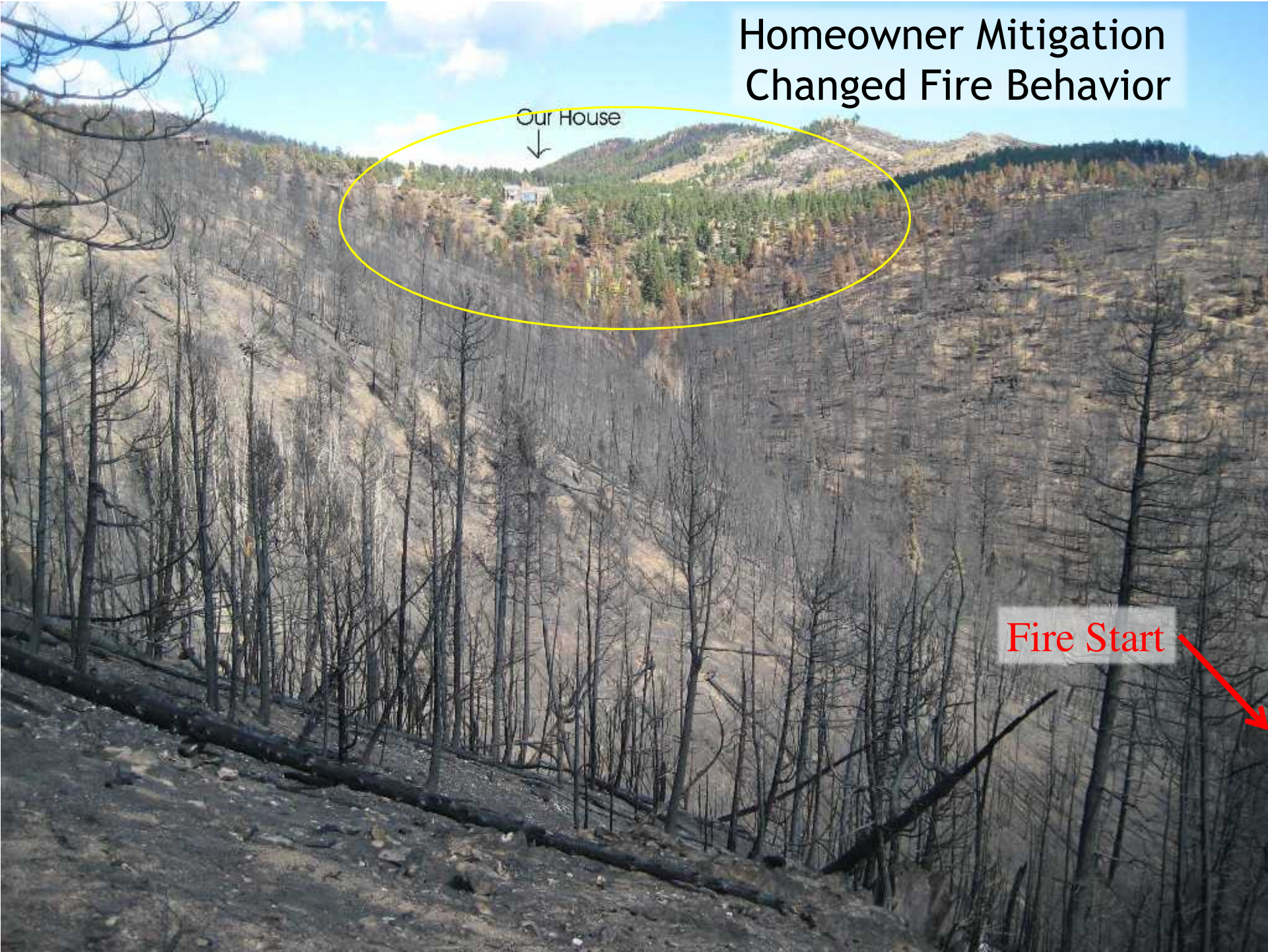


# Homeowner Mitigation Changed Fire Behavior

Our House



Fire Start

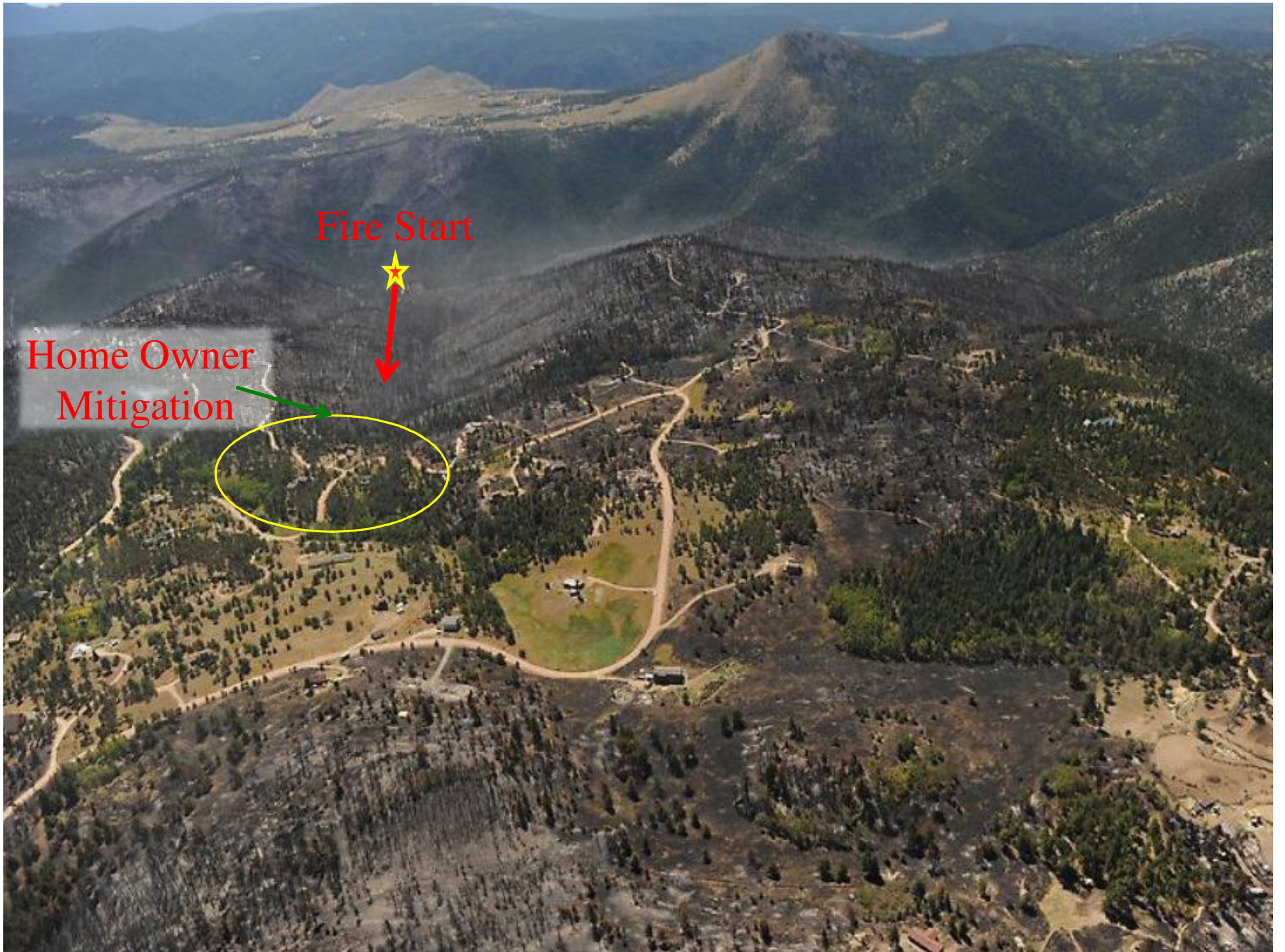






Well mitigated homes help protect neighbors





Fire Start

Home Owner  
Mitigation





A Model for Defensible Space



# Protecting Homes is a Focus of our CWPP

122 Contributors  
10 Videos  
45 Maps  
4 Work Groups

Stories from Engaged Residents  
Model Community Initiatives  
Dozens of Projects and Programs  
Wildfire Awareness Month

Available at:

[www.BoulderCountyCWPP.org](http://www.BoulderCountyCWPP.org)

Boulder County Community Wildfire Protection Plan



*Wildfire* + *Unprepared* = *Disaster*



*Management* + *Community* = *Protection*

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# People

Nation-wide 2.2 million homes are expected to be in the WUI by 2030, a 40% increase from 2001

Wildland firefighting costs the federal government more than \$3 billion per year, double the amount from a decade ago

Because of homes in the way, only 2% of naturally ignited wildfires are allowed to burn, exacerbating fuel build-up



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## How many people will be living in the DRCOG WUI in 2035?

We have the 2007 analysis (Iain)

However, we need more data and better research on this question

The number of homes in the WUI is an key indicator that should be tracked as a DRCOG regional performance measure

The background of the slide features a series of orange and yellow rays emanating from the top center. At the bottom, there is a green silhouette of a landscape with houses and trees. In the foreground, there are several white silhouettes: a family (man, woman, child), a person on a bicycle, a central shield with two crossed axes, a firefighter, a dog, and another family (man, child).

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# Headwaters Economics Study of the WUI

## Private Land 500 Meters from Forested Public Land

County	Homes	Developed Square Miles	Undeveloped Square Miles	Percent Developed
Boulder	5,409	57.1	37.8	60%
Jefferson	4,526	14.3	20.2	42%
Clear Creek	3,529	22.6	36.6	38%
Gilpin	2,268	20.0	20.4	50%
Douglas	875	10.5	10.9	49%

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# Boulder County Comprehensive Plan

## Design of the Region (A.1)

Future urban development should be located within or adjacent to existing urban areas in order to eliminate sprawl and strip development, to assure the provision of adequate services, to preserve agriculture, forestry and open space land uses, and to maximize the utility of funds invested in public facilities and services.

**The last subdivision approved in the mountains was  
Pride of the West—16 lots on 48 acres—in 1973**

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# Boulder County Comprehensive Plan

## **Natural Hazard Goals (L.1)**

Inappropriate development in natural hazard areas should be reduced as much as possible or eliminated in order to prevent potential harm to life, health and property.

## **Wildfire Policy (NH.5.03)**

Development/site plan reviews in areas identified to be at risk of wildfires should address site location, building construction and design, landscaping/defensible space/fuel management, access, and water availability.

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# Long range planners are heavily involved in the follow issues:

- Transportation
- Water Supply
- Open Space
- Sustainability/Energy

We are preparing for alternative future scenarios in these areas



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# What about the long-term plans for wildfire and the wildland urban interface?

- We are lagging behind these other issues (no scenario planning; limited research).
- Emergency managers and policymakers are consumed with the crises of the day. Who is planning for the long-term?
- Most Community Wildfire Protection Plans do not address the long-term.
- DRCOG's Metro Vision 2035 Plan currently does not include the word "wildfire;" to address this omission, Boulder County has submitted an amendment to the plan.



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## **In the past 23 years, we had a number of large wildfires:**

- 1989 Black Tiger Fire (Boulder County)
- 1996 Buffalo Creek Fire (Jefferson County)
- 2000 High Meadow Fire (Jefferson County)
- 2002 Hayman Fire (Jefferson and Douglas Counties)
- 2010 Fourmile Canyon Fire (Boulder County)
- 2012 Lower North Fork Fire (Jefferson County)

**What will happen in the next 23 years?**

**A similar number of large fires, twice as many, more?**

**How much more destructive and costly will these future fires be?**



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**We proposed an amendment to Metro Vision and participated in this idea exchange to raise awareness on this issue and initiate a more in-depth discussion:**

- What do we want our WUI to look like in 2035?
- How can planners, and all of their tools, help us realize this vision?
- Can planners bring together foresters, emergency managers, building officials, firefighters, and climate scientists to effectively address these issues?

A central graphic featuring a brown shield with two crossed white axes. To the left of the shield are silhouettes of a family (a man, a woman, and a child) and a person riding a bicycle. To the right are silhouettes of a firefighter, a dog, a man pointing, and a child. The background shows a house and trees.

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