The Colorado State Forest Service

The mission of the CSFS is to achieve stewardship of Colorado’s diverse forest environments for the benefit of present and future generations.

- Housed in the Warner College of Natural Resources at Colorado State University
- Assist private landowners by providing forest management and fuels mitigation education and technical assistance
- The CSFS is the state liaison for the Firewise Communities/USA® program
Colorado’s Wildland Urban Interface (WUI)

- More than two million Coloradans live in the wildland-urban interface (WUI) encompassing over 6.6 million acres
- The WUI is any area where man-made improvements are built close to, or within, natural terrain and flammable vegetation, and where high potential for wildland fire exists
- Parcels owned are becoming smaller and smaller
- Grazing and fire suppression for the past 100 years has created very dense lands
Colorado’s Wildland Urban Interface (WUI)
Fire-Adapted Ecosystems
A Fire Adapted Community (FAC) incorporates people, buildings, businesses, infrastructure, cultural resources, and natural areas into the effort to prepare for the effects of wildland fire.

FAC leaders and residents accept responsibility for living in an area with wildfire hazards.

Communities can become fire adapted in a variety of ways.

Protecting a home and community from wildfire is not a one-time effort; it is a process and requires ongoing participation and maintenance.

More info at www.fireadapted.org
Fire Adapted Communities History

- 2005 Quadrennial Fire Review promoted ‘Fire Adapted Human Communities’ as a solution to decreasing suppression costs, structure losses and fatalities
- 2009 Quadrennial Fire Review further defined FAC as a way for communities to take responsibility and action
- 2009 Federal Land Assistance, Management and Enhancement (FLAME) Act
  - National Cohesive Wildland Fire Management Strategy
    - Create Fire Adapted Communities
    - Create Resilient Landscapes
    - Improve Response and Suppression
  - More info at: http://www.forestsandrangelands.gov/
FAC Learning Network encourages the development and sharing of best practices and innovations

- 8 pilot hub communities in 2013 in the US
- 17 total hub communities in 2015 in the US
- Colorado has 2 hubs
  - Coalition for the Upper South Platte
  - Firewise of Southwest Colorado
- Tool to exchange information
- [www.facnetwork.org](http://www.facnetwork.org)
Colorado FAC History

- Forest Action Plan
- Colorado Statewide Forest Resource Strategy
  - Theme: Protect Forests from Harm
  - Threat: Wildfire Outside the WUI
  - Page 15: Strategy: Encourage creation of fire-adapted communities through implementation of forest management to increase forest resiliency
CSFS Wildfire Mitigation Resources

• Technical assistance and education to landowners and communities
• Fire Adapted Communities® programs
• Community Wildfire Protection Plan (CWPP) development and implementation assistance
• Publications for homeowners
• Colorado Wildfire Risk Assessment Portal (CO-WRAP) www.coloradowildfirerisk.com
• Ready, Set, GO! http://www.wildlandfirersg.org/
• Natural Resource Grants & Assistance Database http://nrdb.csfs.colostate.edu/
Fire Adapted Colorado

• Mission: A collective voice and representative organization for Colorado that provides educational and networking opportunities for communities, groups and individual stakeholders focused on reducing the negative impacts of wildfires in the state.

• Vision: Fire Adapted Colorado (FACO) provides a statewide platform for information sharing and forward thinking discussion as related to wildfire issues. FACO acts as a connecting force that works with a collective voice, aimed at creating safer and more resilient communities living with the threat of wildfire.
Community Wildfire Protection Plans

Healthy Forest Restoration Act (HFRA) 2003

- Authorized and defined in Title I of the HFRA
- Renewed emphasis on community planning
- Opportunity for communities to work with federal agencies and other stakeholders to identify fuels reduction projects
- Requires the CSFS to provide minimum standards

SB09-001 – Community Wildfire Protection Plans (CWPPs)

- Requires counties to identify wildfire hazard areas in unincorporated (non-municipality) areas by January 1, 2011
- Within 180 days of identification, counties must develop a CWPP
- To date, there are 47 county-wide CWPPs
Colorado’s CWPPs

The CSFS website has all 232 CWPPs ready to download!

http://csfs.colostate.edu/pages/CommunityWildfireProtectionPlans.html

CWPP Development Template on CO-WRAP

https://www.coloradowildfirerisk.com/Help/CwppTemplate
**CWPP Minimum Requirements**

**Required Participants:** At a minimum, the CSFS, the local government and fire authority

**Plan Components:**
- The wildland-urban interface boundary
- Narrative of community values and fuel hazards
- The communities plan for when a wildfire occurs
- An implementation plan identifying high priority fuels treatments

**Level of Specificity:** Should be appropriate for the community (County, FPD, HOA)

Don’t forget education and outreach to neighbors!
CWPP Inventory Project

• Purpose of project to determine:
  – Challenges and successes of CWPP process
  – If CWPPs are being implemented
  – Whether they are effective in bringing together communities to reduce wildfire risk
  – Whether they are helping communities receive grant funding
  – How the CSFS can more effectively provide assistance with future CWPPs
**CWPP Inventory Project - Methods**

- **Survey**
  - Aimed at all CWPP’s in CO
  - Conducted in Spring 2014
  - Approximately 60% response rate
    (128 of the 212 CWPPs at time of study)

- **Personal interviews**
  - Key participants in the CWPP
  - 18 interviews conducted Aug. 2014 to Jan. 2015
  - Interviewees were selected based on CWPP scale, location, and year of development
CWPP Inventory Project - Results

- **Challenges** – lack of awareness; misconceptions about mitigation; lack of guidance
- **Successes** – communities take responsibility; creates sense of place; educational tool for neighbors/newcomers to the WUI
- **Implementation** – obstacles include: lack of funding (65%); lack of time (47%); community involvement (41%); lack of political support (20%)
- **Community Engagement** – “One of the things that the CWPP process really stresses is the community involvement. Yet it's one of the hardest things to really get.” – District Forester
- **Grant Funding** – the more detail and specific projects outlined, the better
- **Lessons Learned** – include post-fire information, planning for evacuations, and lessons learned from recent wildfires in CWPPs; need mechanism for tracking CWPP implementation and funding;
Firewise Communities/USA®

- National recognition program
- A tool for communities to educate their neighbors about Firewise practices
- Communities work together to create resilient forests and landscapes
- Provides the community with metal Firewise signs, and other resources
- Benefits including grant eligibility, community-building, long-term planning, insurance discounts, and publicity
- Colorado is on the national scale
- www.firewise.org
Firewise Communities/USA®

• Five requirements to become recognized:
  – Start a Firewise Board
  – Complete a wildfire risk assessment and action plan
  – Spend $2 per capita on Firewise
  – Hold a Firewise event once per year
  – Fill out an application at www.firewise.org and send to:
    Courtney Peterson
    Colorado State Forest Service
    5060 Campus Delivery
    Fort Collins, CO 80523
    Courtney.Peterson@colostate.edu
Colorado Firewise Communities Survey

• Survey e-mailed to all Firewise representatives in Colorado at time
  • (February 25 – March 21, 2016)
• Link to online survey or fillable PDF
• Response rate = 49%
  • (64 out of 130 communities)
• Length of Firewise Communities/USA recognitions ranged from 1 to 15 years
  • Average length of recognition = 4 years
• # of homes within communities ranged from 5 to 2,972 homes
  • Average # of homes within communities = 224
100% of respondents said the Firewise Communities/USA recognition helped increase wildfire mitigation efforts in their community!

Ways the Firewise Communities/USA recognition helped increase wildfire mitigation within Colorado communities:

- More interest in wildfire mitigation: 92%
- Pride in the community: 65%
- Better collaboration with neighbors: 65%
- More interest in pursuing grants for wildfire mitigation: 55%
- More interest in other wildfire preparedness activities (signage, evacuation, etc.): 42%
- More interest in learning about forest management: 38%
- Changes in community covenants: 9%
- Other: 11%
Firewise Communities Survey Results

Percentage of homes that had completed defensible space actions when the community first became a Firewise Community/USA

- Less than 25%: 50%
- 25%: 27%
- 50%: 11%
- 75%: 3%
- Almost all of the homes had completed defensible space: 8%
Firewise Communities Survey Results

Percentage of homes that have completed defensible space actions today

- Less than 25%: 8%
- 25%: 30%
- 50%: 27%
- 75%: 13%
- Almost all of the homes had completed defensible space: 20%
Other actions taken by community to reduce wildfire risk (besides d-space)

- Community chipping day(s) (or other slash removal efforts): 75%
- Wildfire mitigation in common space areas: 67%
- Community work day(s): 66%
- Adding reflective address signs (on homes and/or mailboxes): 53%
- Community fuelbreak: 45%
- Evacuation planning: 45%
- Shaded fuelbreak along road rights-of-way: 44%
- Adding reflective street signs: 23%
- Other: 23%
Firewise Communities Survey Results

Communities receive support (technical, monetary, or other) from:

- Local fire department: 81%
- Local Colorado State Forest Service (CSFS) district office: 77%
- Local U.S. Forest Service office: 27%
- Local wildfire council: 20%
- Local Bureau of Land Management office: 3%
- Other: 31%
75% of respondents said they face challenges to implementing wildfire mitigation actions within their Firewise Communities/USA:

- Lack of engagement and participation from part-time residents, secondary homeowners, absentee landowners
- Lack of interest in mitigation/want to maintain privacy from neighbors and the “wild-natural” look of property
- Costs of completing mitigation work – both the time and willingness to spend the money
- Don’t know how to implement mitigation work once they know areas of greatest risk
- Lack of cross-boundary efforts from land management agencies
- Conflicts with local HOA ordinances
Firewise Communities Survey Results

Is there anything that the Colorado State Forest Service or others (e.g., local wildfire councils) could do to better help you in maintaining your Firewise Communities/USA recognition status?

- Maintaining contact with local agencies
- Need more information on how to implement mitigation/action plans
- Grants and funding assistance
- Want more insurance companies to give discounts to Firewise Communities/USA
- Communication between agencies working with Firewise Communities/USA
- Encourage community leaders to take responsibility for their own risk
CSFS Publications

• All CSFS publications are available to download on website
• Print copies are available
• Examples include:
  • Defensible Space Quick Guide
  • Firewise Construction
  • CWPP Guidelines
  • Fuelbreak Guidelines
Windcliff Community
Wildfire Mitigation
Estes Park, CO

Preserve at Pine Meadows: Wildfire Mitigation
Pine, CO
Colorado Wildfire Risk Assessment Portal

Are you at Risk?
Wildland fires continue to threaten people and property across Colorado. Continued population growth into wildland-urban interface areas and an increasing frequency of elevated fire weather conditions present major challenges to Colorado residents. Heightened awareness of wildfire risk, prevention and mitigation are becoming increasingly important to ensure safety. The Colorado Wildfire Risk Assessment Portal provides access to information that describes wildland fire risk statewide.

Applications

Public Viewer
Identify your risk

Professional Viewer
Support your fire protection plans

www.coloradowildfirerisk.com
Colorado Wildfire Risk Assessment Portal

Getting Started
Explore Map Themes
- Reference Base Layers
  - Cities
  - County Boundaries
  - Fire Protection Districts
  - Schools
  - Hospitals
  - Active Coal Fires
  - 2013-14 Large Fire Perimeters
  - 2011-12 Large Fire Perimeters
  - 2000-10 Large Fire Perimeters
  - HUC 12 Subwatersheds
  - CWPP Community
  - CWPP County
  - CWPP FPDP
  - FireWise Communities
- Wildfire Risk Themes
  - Wildfire Risk
    - Wildfire Threat
    - Fire Intensity Scale
  - Wildfire Effects Themes
  - Wildfire Behavior Outputs
  - Landscape Characteristics
  - Historical Wildfire Occurrence
  - Forest Management Activities

Reference Layers
- Active Layer Description
  - Represents the possibility of loss or harm occurring from a wildfire
- Hide Legend
- Full Description
- Transparency
- Reference Layers Description

Wildfire Risk
- Lowest Risk
- Low Risk
- Moderate Risk
- High Risk
- Highest Risk
Ready, Set, GO!

- Developed specifically for fire departments (FD)
- Managed by the International Association of Fire Chiefs (IAFC)
- Improve dialogue between FDs and residents
- **Ready**: Practice Firewise, be prepared
- **Set**: Situational awareness, pack emergency items, keep up-to-date with the news, etc.
- **Go**: Follow your personal wildland fire action plan, evacuate
- [www.wildlandfirersg.org](http://www.wildlandfirersg.org)
Wildfire Mitigation Measures

Subtraction

- Renewed until 2024
- Homeowners can subtract mitigation costs up to $2,500
- Required to provide supporting documentation (receipts, CWPP, proof of property ownership)

Funding Opportunities

CSFS Natural Resources Grants and Assistance Database

http://nrdb.csfs.colostate.edu/
Fire Ecology Institute for Educators

• Since 2001, the Fire Ecology Institute has been bringing important knowledge about wildfire across Colorado’s landscape to teachers, who in turn pass the information along to their students, parents, neighbors and communities

• Organized by Colorado Project Learning Tree (PLT) and the CSFS

• Reached 295 teachers and over 75,020 kids in 15 years!!!

• Go to http://coloradoplt.org/our-programs/fire-ecology-institute/ to read teacher reflections and lesson plans
Public Perceptions Survey of the CSFS

- Random sample of 3,000 Colorado residents
  - Online survey (mail out cover letter with URL)
  - Postcard reminder
  - Mail out questionnaire

- $n = 416$, 14% response rate
  - 161 (39%) = online version
  - 255 (61%) = paper questionnaire

- Non-response check – no substantive differences
- Data weighted (under-sampled females; under-sampled Hispanics)
Three versions of the survey

- Version 1: forest restoration, windbreaks, creating wildfire defensible space
- Version 2: forest thinning, clearcuts, patch cuts
- Version 3: prescribed fire, fuelbreaks, reducing surface fuels
Research Questions

I. What are Colorado residents’ attitudes of forest management practices (approval)? Are attitudes of forest management practices influenced by familiarity and evaluations of aesthetic impacts?

II. What predicts Colorado residents’ satisfaction with the CSFS?

III. Are Colorado residents aware of their proximity to the WUI? Do demographics influence Colorado residents’ awareness?
Do you live in the WUI?

The WUI is defined as any area where man-made improvements are built close to, or within, natural terrain and flammable vegetation, and where high potential for wildland fire exists.

The percent “YES” should be 39%!

- Yes: 12%
- No: 41%
- Do not know: 18%
- Have never heard of the WUI: 29%

[Image source: csfs.colostate.edu]
Wildfire Risk

- Wildfire risk – possibility of loss or harm occurring from a wildfire
- Combines wildfire threat (i.e. likelihood of a fire occurring) with fire effects (i.e. areas of most concern adversely impacted by fire)
  - ‘-1’ – least negative impact from a wildfire
  - ‘-9’ – greatest negative impact from a wildfire
Map of Survey Respondents’ Wildfire Risk Index Based on CO-WRAP Data

<table>
<thead>
<tr>
<th>WUI Risk Index</th>
<th>Count</th>
<th>%</th>
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<tbody>
<tr>
<td>0</td>
<td>254</td>
<td>61</td>
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<tr>
<td>-1</td>
<td>4</td>
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<tr>
<td>-8</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>-9</td>
<td>13</td>
<td>3</td>
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</table>
Variables

• Dependent Variable
  – Respondents’ awareness of proximity to the WUI combined with CO-WRAP wildfire risk data
    • ‘0’ - respondents did not correctly identify that they live in the WUI
    • ‘1’ - respondents did correctly identify that they live in the WUI

• Independent Variables
  – Age
  – Level of education
  – Sex
  – Annual household income
  – Ethnicity
  – Race
  – Natural resource-related occupation
  – Familiarity with the CSFS
  – Total knowledge of the CSFS
Hypotheses

• Awareness of proximity to the WUI influenced by:
  – Age (+)
  – Education (+)
  – Income (+)
  – Natural resource related occupation (+)
  – Familiarity with the CSFS (+)
  – Knowledge of the CSFS (+)
  – Familiarity with forest management practices (+)

• Awareness of proximity to the WUI not influenced by:
  – Sex
  – Ethnicity
  – Race
# Results – Colorado Residents’ Awareness of Living in the WUI

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<tr>
<th>Independent Variables</th>
<th>No</th>
<th>Yes</th>
<th>$\chi^2$</th>
<th>$t$-value</th>
<th>$p$-value</th>
<th>Effect size</th>
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<td>Age a</td>
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<td>59</td>
<td>1.91</td>
<td>.057</td>
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<td>Education (M) b</td>
<td>9.30</td>
<td>9.94</td>
<td>1.99</td>
<td>.047</td>
<td>.101</td>
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<tr>
<td>Sex (%)</td>
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<tr>
<td>Male</td>
<td>68</td>
<td>32</td>
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<tr>
<td>Female</td>
<td>67</td>
<td>33</td>
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<td>Household income (%)</td>
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<td>$74,999 or less</td>
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<td>Race (%)</td>
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<td>Natural resource occupation (%)</td>
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<td>Familiarity with the CSFS (%)</td>
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<td>Knowledge of the CSFS (M) c</td>
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<td>6.00</td>
<td>2.20</td>
<td>.028</td>
<td>.109</td>
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Discussion

To increase residents’ awareness of proximity to the WUI, the CSFS should:

- Focus messages to more effectively inform audiences about the WUI
- Reach out to diverse and underrepresented audiences
- Find more opportunities to engage youth
- Increase familiarity/knowledge about the agency

- 21% of Colorado’s population is Hispanic
- By 2050, 1 out of 3 people in the US will be Latino

*Data from US Census Bureau*
Wildfire Mitigation Works!
This one square mile area had been managed over the past 30 years to improve forest health and reduce wildfire behavior.

These treatments proved effective and serve as a good model in the Ponderosa Pine fuel type.
Questions?
Thank you!

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