



The Quiet Majority: Understanding Communities to Make Mitigation Work

14 April 2020

Natural Hazards Center

Making Mitigation Work Webinar Series

Today's talk

The WiRē Team & Center

Wildfire: The Big Picture

The WiRē Approach

- Paired, Parcel-Level Data
- Research Outcomes
- Practitioner Outcomes

The Wildfire Research (WiRē) Team & Center



www.wildfireresearchcenter.org

WiRē Team:

Chris Barth - BLM Montana/Dakotas
Hannah Brenkert-Smith - CU Boulder
Hilary Byerly – CU Boulder
Patty Champ - USDA FS RMRS
Jamie Gomez - West Region Wildfire Council
Lilia Falk – West Region Wildfire Council
James Meldrum - USGS

WiRē Center:

Colleen Donovan – project manager
Carolyn Wagner – data manager/analyst
Ali Lerch – wildfire mitigation practitioner



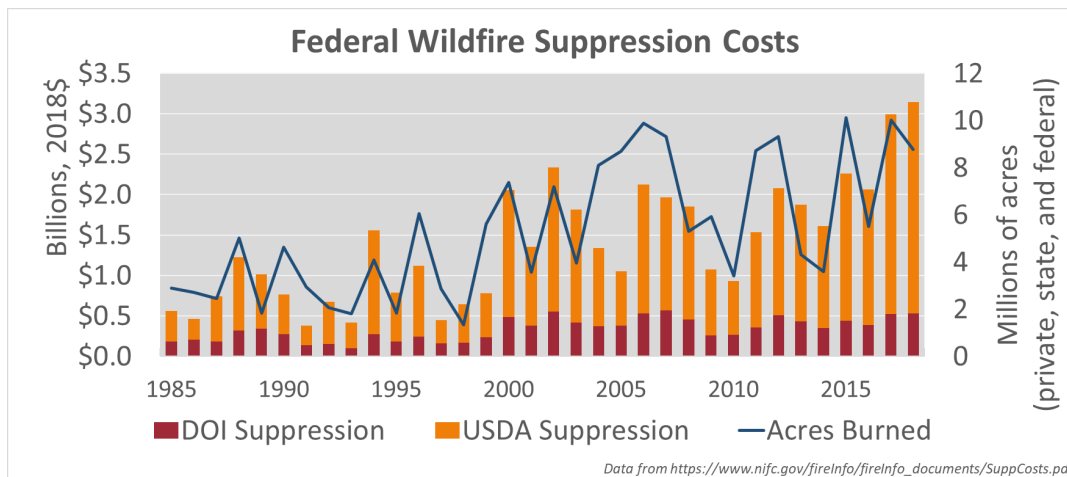
Wildfire: The Big Picture

Challenges associated with wildland fire management are increasing both in complexity and extent

Fire season is longer and more destructive

Nearly \$3 Billion in suppression

- direct + indirect = 30x

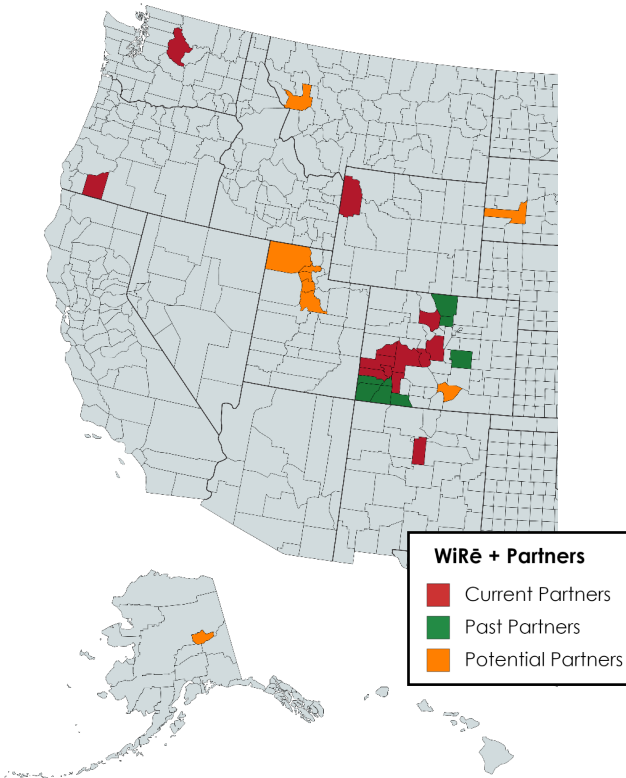


However...

“There is no one-size-fits-all solution to reducing wildfire risk. Solutions must be tailored to landscapes and communities.”



WiRē + Partners



Current Partners

- West Region Wildfire Council (CO)
- Chaffee County (CO)
- Fire Adapted Bailey (CO)
- Grand County Wildfire Council (CO)
- Ashland Fire Rescue (OR)
- Chelan County Fire District 1 (WA)
- Teton County/TAWPC (WY)
- Santa Fe Fire Department (NM)

Potential Partners

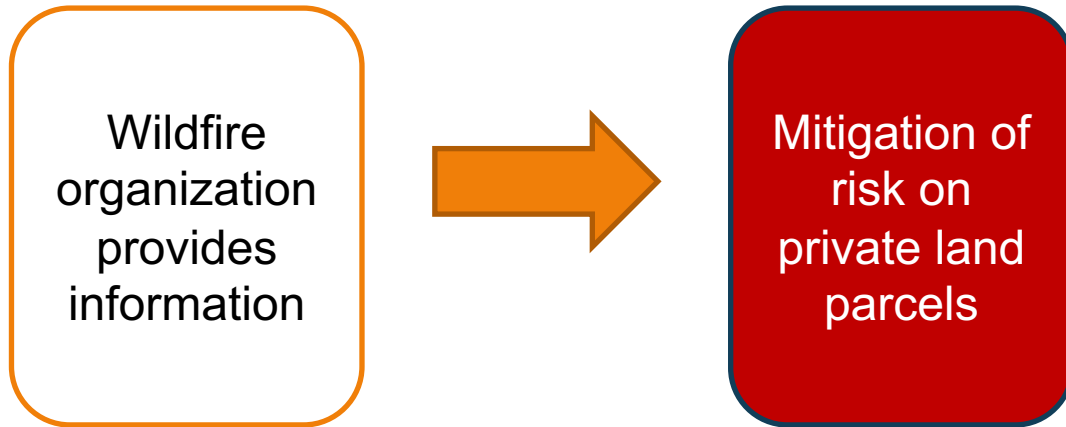
- Fairbanks North Star Borough (AK)
- Spanish Peaks Alliance for Wildfire Protection (CO)
- Frenchtown Fire (MT)
- Rapid City Fire Department (SD)
- Wasatch Front (UT)

Past Partners

- Wildfire Adapted Partnership (*formerly Firewise of Southwest Colorado*) (CO)
- Boulder County (CO)
- Larimer County (CO)
- Colorado Springs Fire Department (CO)



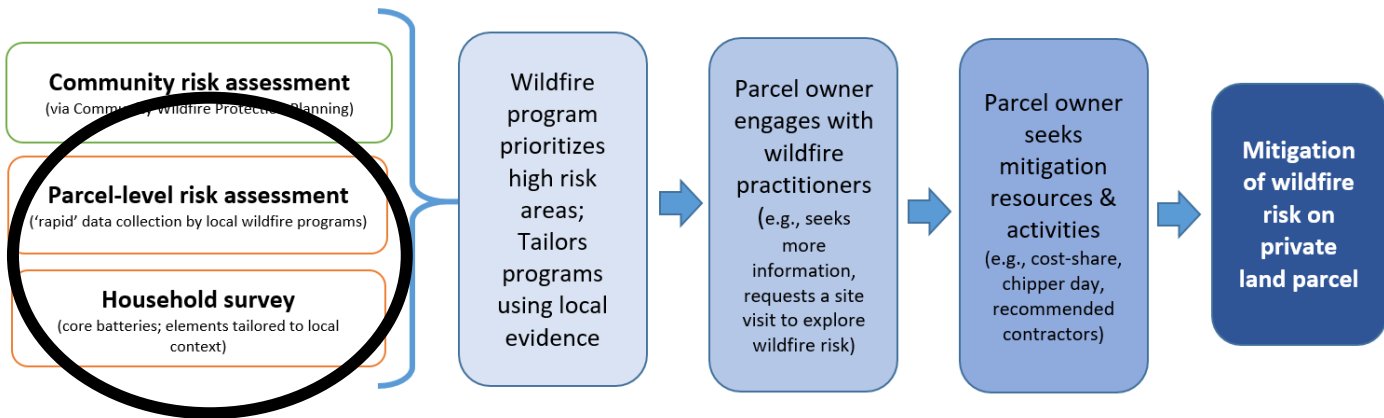
Naïve Model of Behavioral Change



Problems:

- Uses generic information, mass produced
- Assumes knowledge-deficit
- Prioritizes wildfire over local social processes

WiRē Model of Behavioral Change



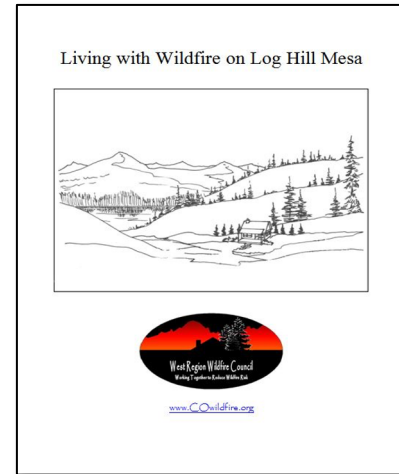
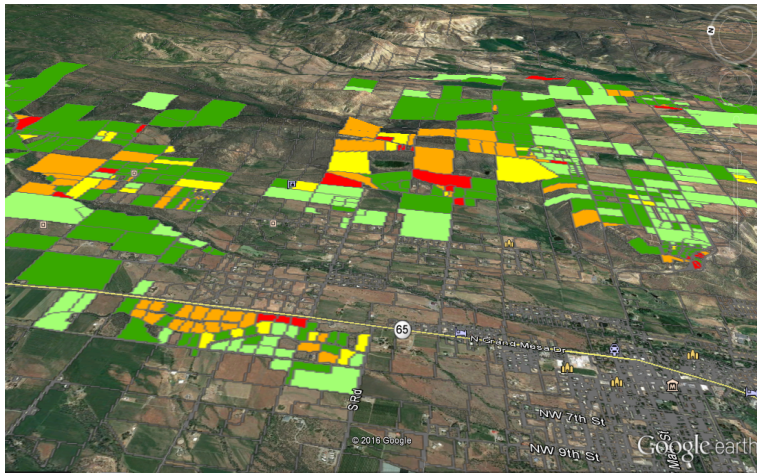
Cornerstone of WiRē approach

Cornerstone: Paired, Parcel-Level Data

rapid wildfire risk assessment

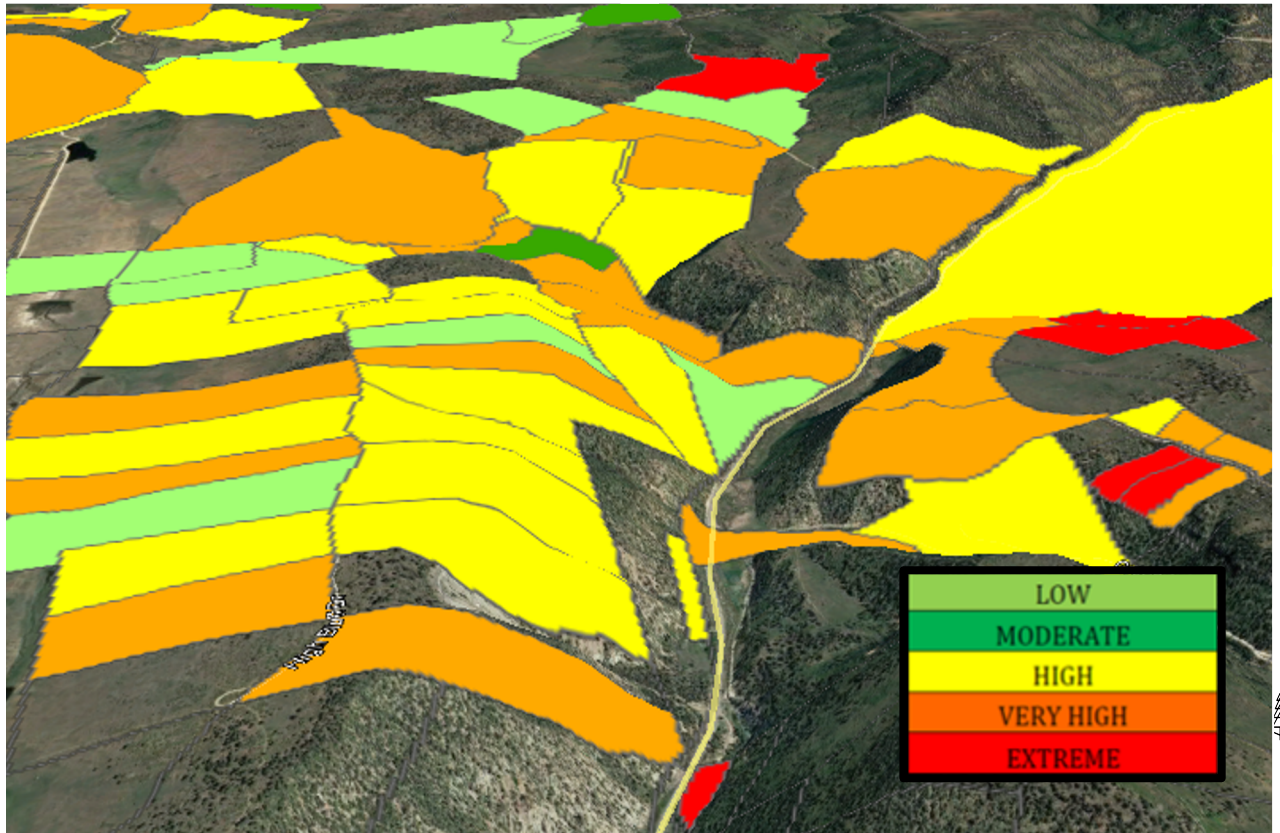


household survey



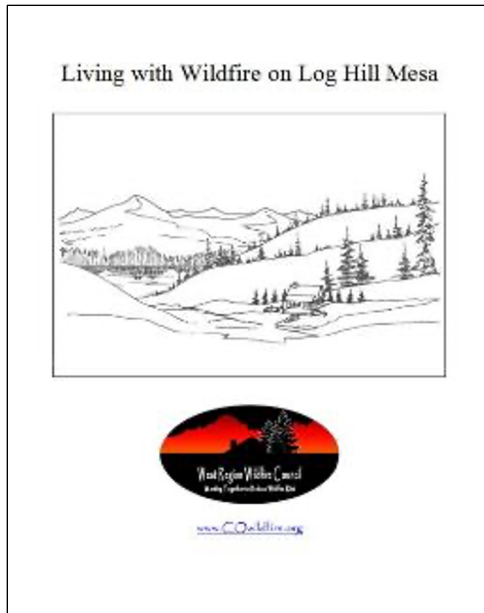
**All data are collected and owned by practitioner stakeholders*

Parcel-level Rapid Wildfire Risk Assessment



Household Surveys

- About 120 questions
- wildfire risk questions



General categories	More specific topics
Background	Demographic and housing Risk attitudes Wildfire Experience
Thoughts about wildfire	State awareness/concern Sources of information about wildfire Attitudes about wildfire/mitigation Insurance
Mitigation decisions	Barriers preventing mitigation Incentives for mitigation Evacuation planning Neighbor interactions about wildfire
Perceived risk characteristics	Self-assessment (same as rapid-assessment) Expected outcomes of wildfire Risk perceptions



Key Insights about risk reduction actions:

- 1) Residents are considering their own parcel's condition – *and* the context of the broader biophysical and social landscape
- 2) In-person engagement with experts was associated with more mitigation actions (translation into actionable)
- 3) Incentives, access to local programs, and pathways that support risk reduction, increase mitigation activities

The WiRē Approach

Understand unique characteristics of an entire community

- Use social science to characterize communities and social processes
 - Collect social & biophysical data systematically
- Learn as we go (adaptive)
- Leverage what we learn
- Use insights to support the development of *effective* wildfire education and mitigation programs
 - Infuse results into programs → change conversations

Practitioner outcomes: Changing conversations about residents

TOMV Residents are Willing to Remove Trees...

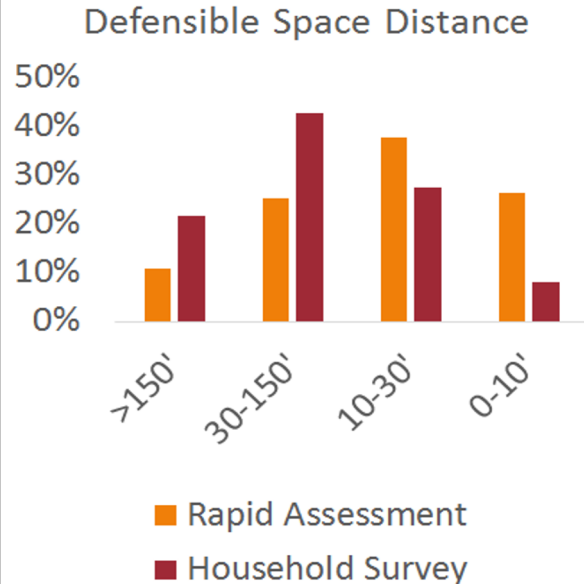
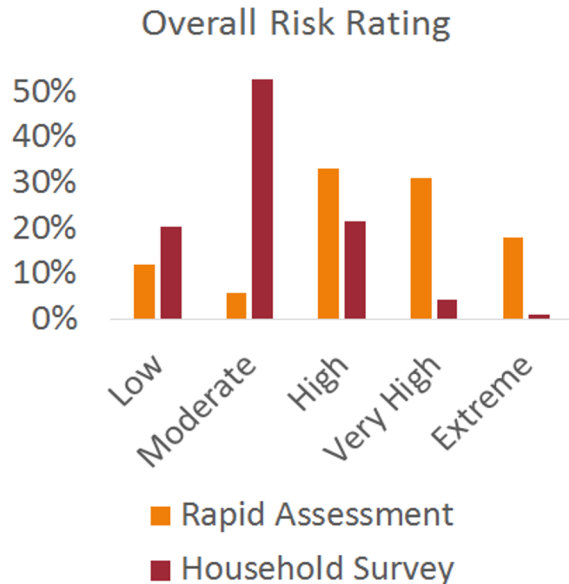


Would be willing to remove trees to reduce wildfire risk.



Viewed HOA restrictions on cutting trees as a barrier to reducing wildfire risk.

Why both sources of data?



Underestimating parcel risk conditions correlates with believing that there is a higher likelihood that the local fire department would save one's home during a wildfire event.

(Delta County)

Based on full
WiRē Dataset
as of Oct 2017

Inter- and intra-community variation matters

In the event of wildfire, do you expect the fire department to save your home?

■ Not Likely ■ Likely



- Expectations of what would happen during a wildfire
- Where residents go to get information about wildfire
- Facing informational barriers to risk reduction
- ❖ All point to critical role local context plays

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Percentage of respondents (by community) n=2234; 68 communities

Meldrum, J. R., Brenkert-Smith, H., Champ, P. A., Falk, L., Wilson, P., & Barth, C. M. (2018). Wildland–urban interface residents’ relationships with wildfire: Variation within and across communities. *Society & natural resources*, 31(10), 1132-1148.

Participation and Willingness-to-Pay

While costs vary, the average cost to a homeowner of having a contractor remove vegetation to reduce wildfire risk is approximately \$1000 per acre. If your property is less than one acre, the average cost to reduce risk on the entire property is approximately \$1000. If a grant program paid for a share of the cost of this work on your property, would you participate in the program? *(Circle one number)*

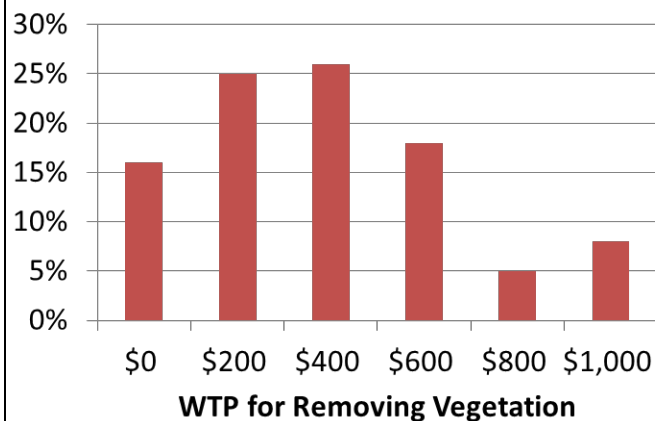
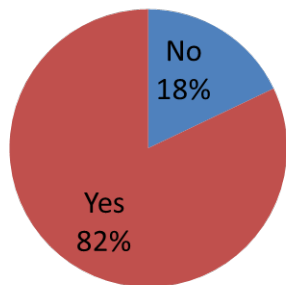
0 No

1 Yes → Please circle the **highest** amount that you would be willing to pay per acre to have a contractor remove vegetation.

Amount you pay / Amount grant pays per acre

\$1000 / \$0
\$800 / \$200
\$600 / \$400
\$400 / \$600
\$200 / \$800
\$0 / \$1000

Participate?



Improving Slash Management & wildfire risk mitigation



51 participants
76 woodpiles chipped
35% survey respondents struggle
with slash management

118 participants
399 woodpiles chipped
13% of those same respondents
still struggle with slash

WRWC significantly expanded
their chipping program

2012



2017

Opportunities emerge: Two perspectives, shared goals

Practitioner perspective

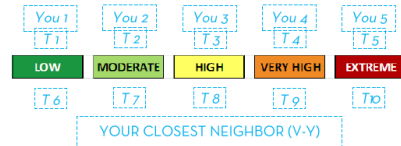
Have 6000+ Rapid Assessments

- “How can we share this information with WUI Residents?”

Your community has an overall wildfire risk of:

Community Rating

West Region Wildfire Council recently assessed the wildfire risk of property in your area. Properties were rated low to extreme.



To learn more about your property's wildfire risk and what you can do to lower that risk:

- ◆ Visit your custom website specific to your home:

Unique URL

- ◆ Attend the Wildfire Mitigation Forum June 3 from 10 a.m. to 12 p.m. at Mountain Village Town Hall.
- ◆ Contact WRWC at (970) 615-7300



West Region Wildfire Council
102 Par Place, Suite #1
Montrose, CO 81401

NON-PROFIT
U.S. POSTAGE PAID
DURANGO, CO
PERMIT NO. 449

Name
Address 1
City, State, Zip



PROTECT YOUR HOME.
CREATE DEFENSIBLE SPACE.



WILDFIRE MITIGATION FORUM

JUNE 3 Mountain Village Town Hall 10 A.M.

LEARN your property's fire risk rating | SCHEDULE a home site visit | CREATE defensible space with financial support | IMPROVE your property's wildfire risk rating

If you are unable to attend this meeting in person, it will stream live at townofmountainvillage.com/residents/incentive-programs/wildfire-mitigation.



Opportunities emerge: Two perspectives, shared goals

Practitioner perspective

Have 6000+ Rapid Assessments

- “How can we share this information with WUI residents?”

Programs require residents opting in

- “How can we engage with residents where we have little working experience? Or have no HOA?”

Research perspective

Behavioral biases and wildfire risk mitigation decisions

- “Can we investigate systematically?”

Specificity of risk information

- “Does providing personalized risk information lead to different behavioral outcomes than providing community-level risk information?”

Social processes (social interactions, spatial spillovers) important in WUI risk

- “Could social comparisons be leveraged to increase wildfire-related behaviors?”

Nudge project: Two perspectives, shared goals



Working Together to Reduce Wildfire Risk



2016 Updated Full Name
2016 Updated Address 1
2016 Updated Address 2

August 8, 2016

Dear Cedaredge Resident,

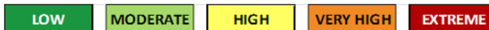
We have recently seen the devastating effects of wildfire in Colorado communities. We do not want to see homes destroyed by a wildfire in Cedaredge. Therefore, the Cedaredge Volunteer Fire Department and the West Region Wildfire Council (WRWC) are working together to help homeowners reduce their risk from wildfire. We all need to *work together to reduce our risk from wildfire*.

As part of the 2014 Community Wildfire Protection Plan (CWPP), WRWC conducted a wildfire risk analysis in your area to determine how residents can be better prepared in the event of a wildfire. We thought you might be interested in the following information about your wildfire risk:

Your community's overall wildfire risk is rated as: [community rating]

Your own property's wildfire risk rating is: [property rating]

The average wildfire risk rating of your ten closest neighbors: [property rating]



West Region Wildfire Council is providing you with more information about your property's wildfire risk and what you can do about it. To learn more, you can visit a website built and maintained by WRWC that is specific to your home.

Go to (www.COwildfire.org/myhome) and type in this code when asked: **XXXXX**

To learn more about programs and funding available to assist you in your efforts to reduce your wildfire risk, please contact Jamie Gomez, Mitigation & Education Coordinator for Delta, Ouray, and San Miguel Counties, at (970) 615-7300.

Sincerely,

Jamie Gomez
Mitigation & Education Coordinator
West Region Wildfire Council

[signature]

Tom Laird
Fire Chief
Cedaredge Volunteer Fire Department



Nudge

Improving Decisions about
Health, Wealth, and Happiness

Richard H. Thaler and Cass R. Sunstein

...with a new afterword

"One of the few books I've read recently that fundamentally changes the way I think about the world." - Steven Levitt, coauthor of *Freakonomics*



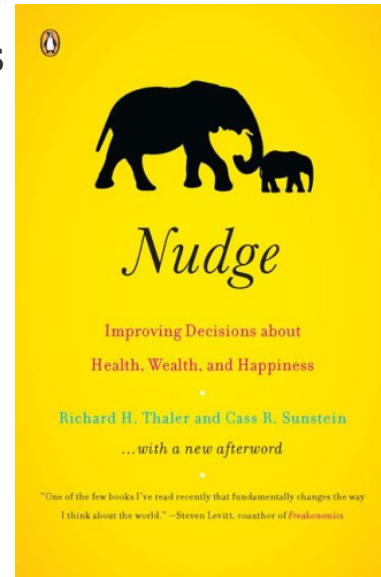
Nudge project: Two perspectives, shared goals

Three treatment groups

(A) community rating only (control)

(B) community rating
+ parcel-level rating

(C) community rating
+ parcel-level rating
+ neighbors' average rating



Your own property's wildfire risk rating is:

[own property rating]

Your community's overall wildfire risk is rated as:

[community rating]

The average wildfire risk rating of your ten closest neighbors:

[neighbor rating]

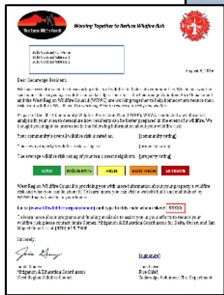
LOW

MODERATE

HIGH


VERY HIGH

EXTREME



THEME B: Home Hardening


Roofing assembly



Roofing of home or oriental assembl wildfire

Your property's rating:

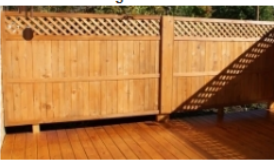
Building exterior



The de have at

Your property's rating:


Decks & fencing



Combu signficat (exp above)

Your property's rating:

Other combustibles




Other c zones (combus combus kindling

Your property's rating:

THEME D: Emergency Access


Ingress & egress



The ability for you to evacuate your home and community during a wildfire or other emergency is critical. The ability for emergency responders (police, ambulance, fire department) to identify your residence and safely access your property is equally critical. Access to and from your property is limited by the available road system. Properties with only one point of ingress and egress are given a higher score than properties with more than one point of ingress and egress.

Two or more roads in/out	One road in/out
Your property's rating:	▲


Address visibility



A metal sign, with 3" tall reflective lettering, is the most visible and durable sign during all conditions, including nighttime and heavy smoke.

Posted and reflective	Posted but not reflective	Not visible from the road
Your property's rating:	▲	

Driveway clearance



Greater than 24'

Between 20'-24'

Less than 20'

More than 24' of horizontal clearance and 15' of vertical clearance.

Between 20' and 24' of horizontal clearance and more than 15' of vertical clearance.

Less than 20' of horizontal clearance and 15' of vertical clearance.

Your property's rating:

	▲	
--	---	--

Rapid Wildfire Risk Assessment Summary

Each criterion in the wildfire risk assessment has an attached 'score' that corresponds directly with the elements potential to compromise a structure during a wildfire event. In other words, elements that make a structure significantly more vulnerable to wildfire are given more weight when considering the overall wildfire risk. Roofing assembly, proximity to dangerous topography, and defensible space are given the heaviest weighting. However, each theme and individual category, listed above, represent a significant and standalone wildfire risk factor for your home and property. Your property's wildfire risk is based on the Rapid Wildfire Risk Assessment was conducted, is identified below.

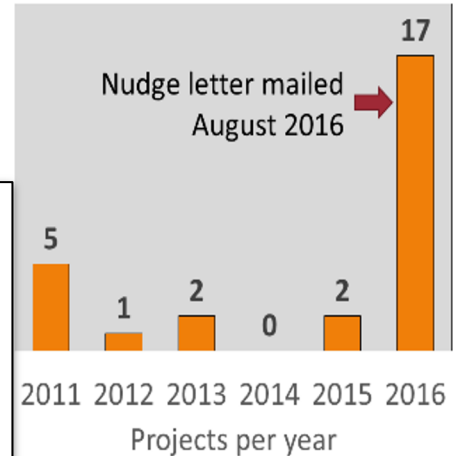
Last Update: 2013	LOW	MODERATE	HIGH	VERY HIGH
Your property's rating:			▲	

For more information
 Jamie Gomez
 Mitigation and Education Coordinator
 West Region Wildfire Council
www.coordinator@gmail.com
 970-615-7300

**SCHEDULE A
 SITE VISIT**

Nudge project: Practitioner highlights

WRWC-sponsored defensible-space projects in Cedaredge FPD increased after "nudge" letter



Increased contacts & site visits with Delta County, Colorado residents in 2017

30 

Number of residents in attendance at Cedaredge community meeting

45 

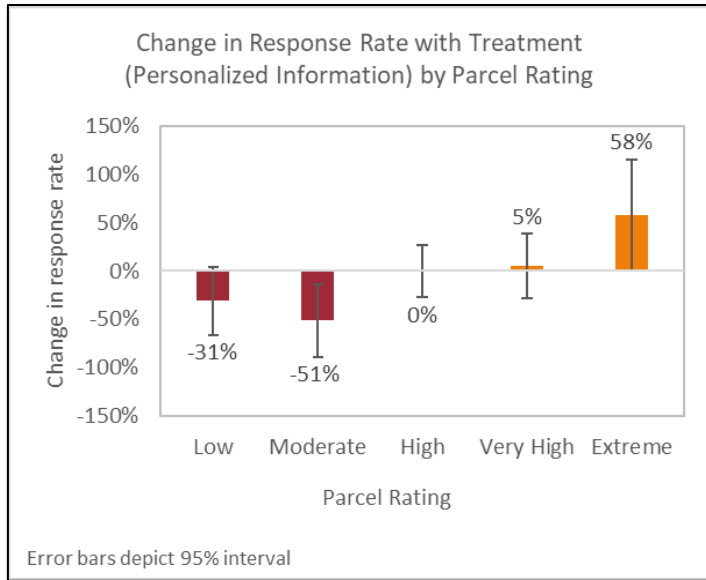
Number of site visits scheduled in Delta County

17 


Number of cost-share funded projects in Delta County

Preliminary results - subject to revision. Not for citation or distribution.


Information-seeking is an important step; can personalized information influence it?



Change in information seeking depends on underlying parcel rating



Working Together to Reduce Wildfire Risk



2016 Updated Full Name
2016 Updated Address 1
2016 Updated Address 2

August 8, 2016

Dear Cedaredge Resident,

We have recently seen the devastating effects of wildfire in Colorado communities. We do not want to see homes destroyed by a wildfire in Cedaredge. Therefore, the Cedaredge Volunteer Fire Department and the West Region Wildfire Council (WRWC) are working together to help homeowners reduce their risk from wildfire. We all need to *work together to reduce our risk from wildfire*.

As part of the 2014 Community Wildfire Protection Plan (CWPP), WRWC conducted a wildfire risk analysis in your area to determine how residents can be better prepared in the event of a wildfire. We thought you might be interested in the following information about your wildfire risk:

Your community's overall wildfire risk is rated as: [community rating]

Your own property's wildfire risk rating is: [property rating]

The average wildfire risk rating of your ten closest neighbors: [property rating]


LOW
MODERATE
HIGH
VERY HIGH
EXTREME

West Region Wildfire Council is providing you with more information about your property's wildfire risk and what you can do about it. To learn more, you can visit a website built and maintained by WRWC that is specific to your home.

Go to (www.CO.wildfire.org/myhome) and type in this code when asked: XXXXX

To learn more about programs and funding available to assist you in your efforts to reduce your wildfire risk, please contact Jamie Gomez, Mitigation & Education Coordinator for Delta, Ouray, and San Miguel Counties, at (970) 615-7300.

Sincerely,



[signature]

Jamie Gomez
Mitigation & Education Coordinator
West Region Wildfire Council

Tom Laird
Fire Chief
Cedaredge Volunteer Fire Department

"Nudge" letter with different levels of personalized information

Meldrum et al. *In Review* Would you like to know more? The effect of personalized wildfire risk information on information-seeking behavior in the WUI.

Pilot to NSF DRMS:

Behavioral Nudges in a Wildfire Risk Context: Social comparisons and community type

- Opportunity for:
 - Expansion of same treatments in new communities
 - Innovation on nudge messages and experimental design
 - Hope vs. Fear
 - Descriptive Norms

New Locations

- Ashland, OR (urban)
- Outside Wenatchee, WA (rural)



www.wildfireresearchcenter.org

