Town of Green Mountain Falls

Fire Mitigation Advisory Committee Agenda – Regular Meeting
Monday, May 30, 2022, at 6:30 p.m.

ZOOM-ONLY Meeting
Join the Zoom Meeting by clicking on the following link:

https://us02web.zoom.us/j/87632177496?pwd=RHBteTlzRllncHJQQVFJL01zQ3pRdz09

Meeting ID: 876 3217 7496 Passcode: 915382

To make a **public comment** please **pre-register** by 4pm on the day of the meeting via email: **clerk@gmfco.us**

REGULAR MEETING:

	ITEM	DESIRED OUTCOME
1.	CALL TO ORDER / ROLL CALL	
2.	ADDITIONS, DELETIONS, OR CORRECTION TO THE AGENDA	**FMC Action Desired**
3.	PUBLIC COMMENT: 3 MINUTES PER SPEAKER	Information Only
4.	CONSENT AGENDA a. Minutes from 05/04/2022	**FMC Action Desired**
	NEW BUSINESS	
	5. Green Box Mayor's Forum – Discussion of agenda and collateral materials for take away	**FMC Action Desired**
	6. Formation of Volunteer Groups and Requirements – Discussion a. Chipper Projects b. Homeowner assistance c. Slash, logs, and debris removal d. RoW mitigation e. Assessments Team f. Education Team	**FMC Action Desired**
	7. Top 3 Funding Requests from FMAC	**FMC Action Desired**
	OLD BUSINESS	
	8. MHYC/COSWAP Grant Update a. Status of project timeline b. Project oversight assistance c. SOW for slash and log removal – Don Walker	Information Only
	9. FMAC 5-year plan preparation development – Discussion.	**FMC Action Desired**
10.	CORRESPONDENCE a. Firewise USA handout packet b. Location of FMAC checklists on website	Information Only
11.	ADJOURN	

**The Town shall provide reasonable accommodation for those with disabilities on a case-by-case basis. Please send accommodation requests to clerk@gmfco.us by 4pm on the date of the meeting.

MEETING MINUTES

Fire Mitigation Advisory Committee
May 4, 2022
7:00 p.m. Zoom-only Meeting

Committee Members Present: David Douglas, Dan Battin, Rich Bowman, Kelly Hunter

Committee Members Absent:

GMF Staff: Nate Scott (Town Clerk/Treasurer, FMAC Secretary)

Agenda Item	Motion/Discussion	M/S	DD	DB	RB	KH	
1. CALL TO ORDER / ROLL CALL / PLEDGE OF ALLEGIANCE	Meeting called to order at 7:03 pm						
2. ADDITIONS, DELETIONS, & CORRECTIONS TO THE AGENDA	No changes. No motion.						
3. PERSONS NOT PRESENT ON THE AGENDA: 3 MINUTES PER SPEAKER	Mayor Todd Dixon comments that he would like the FMAC to start thinking about developing a master plan for the committee and that he plans on holding Board-Committee work sessions. Carolyn Bowers asks how many people attended the recent Sallie Bush fire mitigation public meeting.						
4. CONSENT AGENDA	a. Minutes from 03/28/2022 Motion to approve minutes without changes.	KH/RB	A	A	A	A	
5. OLD BUSINESS	a. Evacuation Checklists RB gives a brief explanation of the checklist, which is based on Ready, Set, Go. Discussion about how best to make this public – areas of display, formats, etc. Discussion on whether or not Board needs to approve. Staff advises that the last						

	administration just wanted to review for accuracy before posting but no Board approval is necessary. FMAC agrees to add hyperlinks where possible, to have Carolyn Bowers proof it, and then Nate can publish it to town website and Facebook page after town manager review. **Motion to accept this procedure.** b. COSWAP Update Nate Scott gave an update on upcoming meetings, status of private property owner access agreements, flagging of the site, etc. Discussion about first week of MHYC work and whether FMAC members should be involved in direction/supervision of work crews that first week. **No formal action.** c. April 26 Meeting Update Chair Douglas: where there any questions or concerns that came out of this meeting that FMAC needs to act on? Discussion on the need for info about all the ways people can dispose of cut fuel. Discussion about how the town can help disposal with chipper days. Chair Douglas will talk with Town Manager Frank about getting chipper days scheduled. **No formal action.**	DB/RB	A	A	A	A	
6. NEW BUSINESS	a. Rapid Fire Home Assessment						

	Chair Douglas wonders if the crew doing the architectural assessment in town could add a "Fire home assessment" to their list. Members commented that this crew has already been through town – so this is likely not possible. This checklist can/should be published along with the preparedness doc to the Town sites. **No formal action.** b. Fire Wise Certification Discussion about whether Green Mountain Falls is really Fire Wise certified town or not. Rich Bowman advises that the certification happened for the ute pass region: Cascade, Chipita Park, and GMF. Goes hand in hand with Community Wildfire Protection Plan. Discussion about how this program could inform or be part of the 3-5 year plan. FMAC and Board should come up with dates to schedule a combined work session on the 3-5 year plan. **No formal action.** Jump to 6d volunteer work in the ROW. c. Grants – Kelly Hunter can't write grants due to time constraints but has access to a grants database that she can search periodically. Discussion about access to the Town's grant portals. Can Chair Douglas have access to the Kirkpatrick Foundation grant portal on behalf of town? Nate Scott will ask. Nate will resend info about the grants database that can be searched by anyone.						

	d. Volunteer work in the ROW Discussion about the Town's stance toward volunteers and the plan for planning volunteer work (project-based volunteer plans with detailed descriptions of work). Discussion about projects needed: COSWAP fuel removal, ROW mitigation work. Skip to 7b discussion about Mayor's Forum.						
7. CORRESPONDENCE	a. Chipper Schedule – discussed previously. Chair Douglas will work with Town Manager Frank to schedule. b. Mayor's Forum Chair Douglas asks for images and other content to include in the Mayor's Forum presentation. Dan Battin will provide some content. Discussion about other information that could be included in the presentation. **No formal action taken.** Jump back to 6c. - grant discussion.						
8. ADJOURN	Next meeting to be May 30 @ 6:30 pm. No adjournment time announced. Time on computer was 9:02 pm when meeting adjourned.						

GMF TOWN RoW MITIGATION
VOLUNTEER PROJECT

INTRODUCTION

This project is to perform fire mitigation on Town owned Right of Ways (RoW). Because of the cost and scheduling issues associated with most organizations that are performing fire mitigation activities, the Town of GMF is pursuing using volunteers to do as much of the fire mitigation activities on Town owned RoWs as possible. In doing so, the Town must ensure that the individuals doing the work have the appropriate training and/or certifications. The Fire Mitigation Committee (FMC) will be an integral part of this effort. This effort begins with an assessment and classification of a particular Town RoW area so that the appropriate crews can be assigned.

SCOPE

The FMC will identify and classify the Town RoW areas that are shown in Appendix 1. These areas are to be classified in accordance with the following rating system:

- Class 1: Volunteer Shrubs and grasses only
- Class 2: Class 1 plus trees up to 3? inches in diameter
- Class 3: Class 2 plus trees up to 8? inches in diameter
- Class 4: Class 3 plus trees greater than 8? inches in diameter

RoW areas will be assigned a crew lead and a crew appropriate to the Class rating.

VOLUNTEER WORKFORCE

The volunteer job descriptions are shown in Appendices 2-? For this effort, the following volunteer positions are identified and are in order for lower-level to higher-level positions (higher order positions may perform lower-level duties):

- General Labor: This is used mainly for manual labor tasks (like hauling slash) and requires little training.
- Hand Tool Operator: This is for those individuals who are using hand tools to perform fire mitigation.
- Small Engine Tool Operator: This is for those individuals who are using things like motorized (electric or gas) weed trimmers, hedge trimmers, pruners or other small engine tools.
- Chainsaw Operator: This is for those individuals who are using chainsaws to fell trees.
- Class 4 Chainsaw Operator: This is for those individuals who will be felling large trees.
- Crew Lead: This is for the individuals who will be leading mitigation crews. The crews are expected to follow the crew lead's instructions. Crew Leads may not perform chainsaw duties if they have not met the training requirements of the position.

TOOLS

The Town does not provide any tools. Volunteers are expected to bring their own.

POSITION DUTIES

The following Table shows which volunteer positions can be used for the certain Class of mitigation activity and what training is required. Carry, Use, Safety and Storage (CUSS) daily briefings are required for all positions.

VOLUNTEER JOB	RoW CLASS OK TO WORK				TRAINING REQ'D	LIMITATIONS
	Class 1	Class 2	Class 3	Class 4		
General Labor	X	X	X	X	Daily CUSS	Slash removal only
Hand Tool Operator	X	X	X	X	Daily CUSS	May not cut trees with hand tools over ?? inches in diameter
Small Engine Tool Operator	X	X	X	X	• Daily CUSS • Small Engine Tool Operational Safety	May not cut trees over ?? inches in diameter
Chainsaw Operator	X	X	X	X	• Daily CUSS • Chainsaw Operational Safety • Tree felling safety	May not fell trees larger than 8?? inches in diameter
Class 4 Chainsaw	X	X	X	X	• Daily CUSS • Chainsaw Operational Safety • Tree felling safety • X yrs experience cutting trees down	May not fell trees larger than zz inches in diameter
Crew Lead	X	X	X	X	• Daily CUSS • Certified???	

TABLE 1: Positions, Training and Limitations

PROCEDURE

1. The FMC will classify the various RoWs that the Town owns.

2. The FMC will propose the crews and the qualifications of those crews to work in certain RoWs. Crews will be identified by name.
3. RoWs must be clearly delineated with survey pins/markers. Alternatively, if the adjacent property owners have given permission (OK if they accidentally cut in a property owners property), then crews may conduct the mitigation activities.
4. Crews will meet together prior to any work for a CUSS briefing and mitigation area briefing. Crew leads are responsible for all on-site training.
5. Portable First Aid kits are required to be on-site.
6. Mitigated areas are to be cut down to 12 inches maximum height(?)
7. If power lines are in the RoW, no cutting may be done that may interfere with the power lines. Direct power line interference is the responsibility of the utility company.
8. It's preferable to have all slash/cuttings removed. If that is not possible, then slash cuttings must be kept to a minimum depth of ?? inches.
9. Report to the BoT areas that have been mitigated.

APPENDIX 1: TOWN-OWNED RIGHT OF WAYS

Insert the Town Right of Way diagram

APPENDIX 2: GENERAL LABOR POSITION DESCRIPTION

Position: General Volunteer Labor for fire mitigation activities on Town-Owned property in Green Mountain Falls Colorado.

Description: This is a volunteer position for the Town of Green Mountain Falls. Volunteer positions do not have Workman's Compensation benefits, therefore the volunteer must submit a waiver form (available from the Town's web-site). Volunteer positions are not paid positions, no benefits will be paid.

Duties: This position is for general labor only. Most duties include hauling the cuttings that others laborers have cut to predetermined areas. On occasion, a crew lead may assign a similar duty that is not specifically identified here.

Previous Training Required: None. On-site training will be provided.

APPENDIX 3: HAND TOOL OPERATOR POSITION DESCRIPTION

Position: Hand Tool Operator for fire mitigation activities on Town-Owned property in Green Mountain Falls Colorado.

Description: This is a volunteer position for the Town of Green Mountain Falls. Volunteer positions do not have Workman's Compensation benefits, therefore the volunteer must submit a waiver form (available from the Town's web-site). Volunteer positions are not paid positions, no benefits will be paid.

Duties: This position is for individuals using hand tools to perform fire mitigation activities. Most duties include cutting and trimming volunteer brush and grasses. Tree cutting using hand tools is limited to trees with a diameter of xx inches or less. On occasion, a crew lead may assign a similar duty that is not specifically identified here.

Previous Training Required: None. On-site training will be provided.

APPENDIX 4: SMALL ENGINE TOOL OPERATOR POSITION DESCRIPTION

Position: Small Engine Tool Operator for fire mitigation activities on Town-Owned property in Green Mountain Falls Colorado.

Description: This is a volunteer position for the Town of Green Mountain Falls. Volunteer positions do not have Workman's Compensation benefits, therefore the volunteer must submit a waiver form (available from the Town's web-site). Volunteer positions are not paid positions, no benefits will be paid.

Duties: This position is for individuals using small engine tools (either electric or gas powered) to perform fire mitigation activities. Most duties include cutting and trimming volunteer brush and grasses. Tree cutting using small engine tools is limited to trees with a diameter of xx inches or less. On occasion, a crew lead may assign a similar duty that is not specifically identified here.

Previous Training Required: None. On-site training will be provided.

APPENDIX 5: CHAINSAW OPERATOR POSITION DESCRIPTION

Position: Chainsaw Operator for fire mitigation activities on Town-Owned property in Green Mountain Falls Colorado.

Description: This is a volunteer position for the Town of Green Mountain Falls. Volunteer positions do not have Workman's Compensation benefits, therefore the volunteer must submit a waiver form (available from the Town's web-site). Volunteer positions are not paid positions, no benefits will be paid.

Duties: This position is for individuals using chainsaws (either electric or gas powered) to perform fire mitigation activities. Most duties include cutting and trimming volunteer trees. Tree cutting is limited to trees with a diameter of xx inches or less. On occasion, a crew lead may assign a similar duty that is not specifically identified here.

Previous Training/Experience Required: Previous experience with chainsaw use and safety required. On-site safety training will be provided. May be called upon to provide general chainsaw safety briefings to other crew members.

APPENDIX 6: CLASS 4 CHAINSAW OPERATOR POSITION DESCRIPTION

Position: Class 4 Chainsaw Operator for fire mitigation activities on Town-Owned property in Green Mountain Falls Colorado.

Description: This is a volunteer position for the Town of Green Mountain Falls. Volunteer positions do not have Workman's Compensation benefits, therefore the volunteer must submit a waiver form (available from the Town's web-site). Volunteer positions are not paid positions, no benefits will be paid.

Duties: This position is for individuals using chainsaws (either electric or gas powered) to perform fire mitigation activities on larger trees. No limitations are placed on this position for the diameter of the tree. On occasion, a crew lead may assign a similar duty that is not specifically identified here.

Previous Training/Experience Required: Previous experience with chainsaw use and safety required. A minimum of zz years worth of experience cutting down larger trees (over yy inches in diameter) is required. Daily on-site safety briefings will be provided. May be called upon to provide general chainsaw safety briefings.

APPENDIX 7: CREW LEAD POSITION DESCRIPTION

Position: Crew Lead for fire mitigation activities on Town-Owned property in Green Mountain Falls Colorado.

Description: This is a volunteer position for the Town of Green Mountain Falls. Volunteer positions do not have Workman's Compensation benefits, therefore the volunteer must submit a waiver form (available from the Town's web-site). Volunteer positions are not paid positions, no benefits will be paid.

Duties: This position is for individuals who are leading crews conducting fire mitigation activities. The Crew Lead's primary duty is to ensure that the crews have received the appropriate safety briefings. Crew Leads are also responsible for monitoring their crews and mandating appropriate breaks (rest and hydration). Crew Leads may also perform fire mitigation activities that they are qualified for.

Previous Training Required: Certification ???

Fire Mitigation Advisory Committee - Action Plan

Coordination of Volunteer Work Force

COSWAP Workforce Development Grant: Scope of Work

#1- Fuels Reduction/Thinning, to include biomass removal, along Thomas Trail; approx. 2 .5 acres: Description of task and methods: In Town-owned parcels 8308307001 and 8308307035 (El Paso County), reduce fuel load along the Thomas Trail elevation and down to private property.

The following prescription has been developed by David Poletti, CSFS Forester: Trees in the area are infected with mistletoe and are mostly small diameter.

The prescription is to remove dead and dying Douglas fir, that has been infected with mistletoe.

Other dead and dying trees may be removed to create openings in the forest.

Aspen, ponderosa pine, limber pine, white pine, and spruce will be favored over Douglas fir.

Thin live trees with a focus on creating breaks of 10 feet in the forest canopy.

Remove any vegetation acting as a ladder fuel.

In areas where Aspen is the dominate tree species, favor aspen to create pure Aspen patches.

Limb trees greater than 8" DBH to 6'above ground.

Due to the steep terrain and low accessibility slash will have options:

Lop and scattered to a depth of no more than 12".

Limbs will be cut into pieces less than 36" in length.

In areas with a lot of biomass, some trees may be retained to avoid having slash deeper than 12".

When feasible, chip slash on site.

(Town will provide a chipper at strategic staging points.)

When feasible, cut fuel can be hauled by work crews to designated pickup area(s).

(Town will coordinate volunteer and staff labor for fuel removal and hauling, in order to reduce such work by the MHYC crew.)

Deliverables:

Reduce fuel volume and catastrophic fire risk around GMF perimeter by creating a fuel break;

improve wildlife habitat for animals and

recreation experience for public land users.

PROCESS

Selection: select trees and vegetation to be felled and lopped, by an arborist or the equivalent.

Felling: all selected trees and vegetation shall be hewn to ground.

Limbing: all felled trees shall be de-limbed.

Scattering: all lopped limbs less than 3 feet in length shall be scattered on ground (Note: exceeding large limbs in length and girth may be left on ground with boles for skidding).

Bucking: all boles that exceed 30 feet in length, shall be cut in half-logs.

Bunching: none required, all boles shall be left where hewn and de-limbed to season.

Yarding: all boles will season for approximately 12 months and then shall be donkeyed down by GMF volunteer crew and staff.

MHYC Responsibility: June, July, August, of 2022

Selection

Felling

Limbing

Scattering

Bucking

Bunching (not required)

GMF - FMAC Responsibility: June, July, August of 2023

Yarding

Various approved areas along Mountain Ave. and Hondo Ave.

Chipping

Various approved areas along Mountain Ave. and Hondo Ave.

Volunteers (2 - 3 man teams)

Yarding Team: (winches the boles off mountain, stacks them in the yard)

A Wincher (designated field manager and runs the tow-line)

Two Swampers (helps the Wincher)

Donkey Team: (locates boles and attaches the tow-line for skidding)

A Skidder (chokes the boles with the tow-line)

Two Swampers (helps the Skidder)

Physical Fitness: This work is for an average, healthy adult, who is fit. If you have any concerns about your ability to participate in this type of work, such as bush-wack climbing or lifting up to 50lbs, please consult with your physician for advice.

Resources

Winching Truck

Drum Winch (fixed and portable)

1000' tow-line and rigging

1000' return-line and rigging

Block and Tackle

Choker Chain

Skid

Timber Jack

Fire Extinguisher

Wood Chipper

Staging Yard

By DCW (05-26-22)

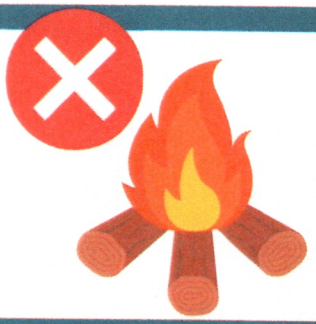
CITY OF WOODLAND PARK & TELLER COUNTY

STAGE 2 FIRE BAN

THIS BAN APPLIES TO THE FOLLOWING ACTIVITIES:

CAMPFIRES

No building, maintaining, attending, or using any fire to burn trash, debris, fence rows or vegetation, any campfire, recreational fire, the firing of model rockets, or any incendiary device, and outdoor charcoal grills.



SMOKING

No smoking except within an enclosed vehicle, trailer, or non-commercial building on improved concrete or asphalt surfaces.

INTERNAL COMBUSTION ENGINES

No operating or using any internal combustion engine, including but not limited to chainsaws, lawnmowers, generators, and all-terrain vehicles UNLESS equipped with a spark arresting device properly installed and maintained, and a chemical pressurized fire extinguisher and one round point shovel kept with the operator.

OTHER RESTRICTIONS

- No welding with an open flame except inside a building.
- No use of or lighting of any fireworks or explosives requiring fuses or blasting caps.
- Any other device, mechanism, or material that is judged by the Woodland Park Police Department to cause any potential fire hazard.

Thank you!

For your help to prevent wildfires in Woodland Park and Teller County.

Real-time local fire updates available at City of Woodland Park Facebook Page, Teller County Sheriff's Facebook Page, and NE Teller County Fire Protection District Facebook Page.

LIVING WITH FIRE

WILDFIRE EVACUATION CHECKLIST

REVIEW THIS INFORMATION NOW TO PREPARE YOURSELF FOR A QUICK AND SAFE EVACUATION.

TO-GO BAG ESSENTIALS:

- ☐ Important documents (bank, IRS, trust, investment, insurance policy, birth certificates, medical records)
- ☐ ATM, credit and debit cards
- ☐ Medications
- ☐ Prescription glasses
- ☐ Driver's license
- ☐ Passport
- ☐ Computer backup files
- ☐ Inventory of home contents (consider making a video inventory now, prior to an emergency)
- ☐ Photographs of the exterior of the house and landscape
- ☐ Address book
- ☐ Cell phone charger
- ☐ Personal toiletries
- ☐ Enough clothing for 3-5 days
- ☐ Family heirlooms, photo albums and videos.

WHAT TO WEAR:

- ☐ Wear only cotton or wool clothes, including long pants, long-sleeved shirt or jacket, a hat, and boots.
- ☐ Carry gloves, a handkerchief to cover your face, water to drink, and goggles.
- ☐ Keep your cell phone, a flashlight, and portable radio with you at all times.
- ☐ Tune in to a local radio station and listen for instructions.

PREPARE FAMILY MEMBERS, PETS, AND LIVESTOCK:

- ☐ If possible, evacuate all family members not essential to preparing the house for wildfire.
- ☐ Plan several evacuation routes from your home.
- ☐ Designate a safe meeting place and contact person.
- ☐ Relay your plans to a contact person.
- ☐ Evacuate pets and livestock whenever possible and never turn the animals loose.
- ☐ Notify your local Humane Society or other organizations for assistance with animals if needed.
- ☐ Be aware of your emergency notification system such as reverse 911.

PREPARE VEHICLE:

- ☐ If you can lift your garage door manually, place vehicle in the garage pointing out with the keys in the ignition and disconnect the electric garage door opener. If not, park in your driveway facing out.
- ☐ Roll up the car windows.
- ☐ Close the garage door, but leave it unlocked.
- ☐ Place essential items in the car.
- ☐ If you do not drive, make other arrangements for transportation in advance.

INSIDE THE HOME:

- ☐ Close all interior doors.
- ☐ Leave a light on in each room.
- ☐ Remove lightweight, non-fire-resistant curtains and other combustible materials from around windows.
- ☐ Close fire-resistant drapes, shutters, and blinds.
- ☐ Turn off all pilot lights.
- ☐ Move overstuffed furniture, such as couches and easy chairs, to the center of the room.
- ☐ Close fireplace damper.
- ☐ Close or block off any doggie-doors.

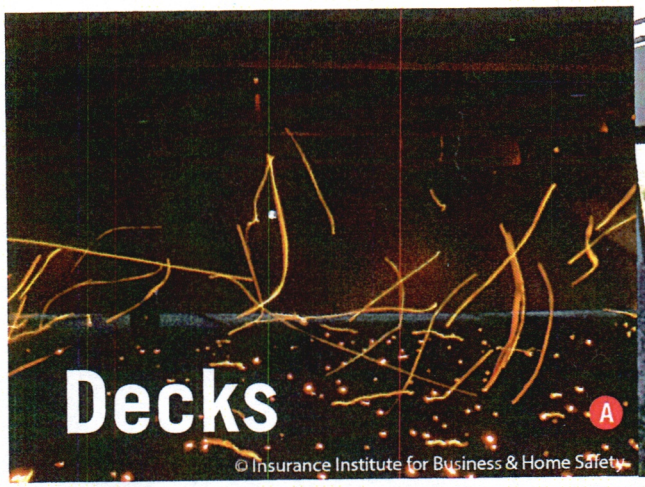
OUTSIDE THE HOME:

- ☐ Place combustible patio furniture in the house or garage.
- ☐ Shut off propane at the tank or natural gas at the meter.
- ☐ Close all exterior vents, doors, and windows.
- ☐ Prop a noncombustible ladder against the house to provide firefighters with easy access to the roof.
- ☐ Make sure that all garden hoses are connected to faucets and attach nozzles set on "spray".
- ☐ Leave exterior doors and gates unlocked.
- ☐ Turn on outside lights.
- ☐ If available and if there's time, cover windows, attic openings, and vents with plywood that is at least one-half inch thick.
- ☐ Fill trash cans and buckets with water and place where firefighters can find them.

Be prepared! It will likely be dark, smoky, windy, and hot. There may be airborne burning embers, no power or telephone, and poor water pressure. Remember, there is nothing you own worth your life! Please evacuate immediately when asked.

This checklist was adapted from *Wildfire Evacuation Checklist*, University of Nevada, Reno Extension publication #FS-06-07. Funding for this project provided in part by a Community Fire Assistance Agreement with the Bureau of Land Management – Nevada State Office in cooperation with University of Nevada, Reno Extension. University of Nevada, Reno is an EEO/AA institution.

EXTENSION
College of Agriculture, Biotechnology & Natural Resources



WILDFIRE RESEARCH FACT SHEET

Reduce the Vulnerability of Your Deck to Wildfire

MANY HOMES LOCATED IN WILDFIRE-PRONE AREAS HAVE ATTACHED DECKS, WHICH CAN POTENTIALLY SPREAD FIRE TO THE HOUSE WHEN IGNITED DURING A WILDFIRE.

A burning deck can ignite siding or break the glass in doors or windows, allowing fire to gain entry into the house. Consequently, making decks less vulnerable to wildfire also makes your house less vulnerable. Reducing the deck's vulnerability requires an approach that focuses on the materials and design features used to build the deck, and creating a noncombustible zone around and under the deck.

EMBER EXPOSURE AND IGNITION

Walking surfaces of decks are either solid surface or constructed using deck boards (with between board gaps). Solid surface decks are commonly light weight concrete or tile. Combustible deck board types include: solid wood and wood-plastic composites (these products are more widely used than noncombustible deck boards). Noncombustible deck board types include: metal and fiber cement.

Recent testing at the IBHS Research Center showed embers mostly lodge between deck board gaps and where deck boards rest on joists. Embers can accumulate and potentially ignite decking and combustible joists. Embers can also fall through board gaps and land on materials stored beneath the deck. It's critical to remove all combustible materials from the under-deck area to minimize the opportunity for ignitions; where resulting flames would impinge on the decking (some wood-plastic decking products are vulnerable to flaming exposures).

IBHS tests also showed that even without vegetative debris in between deck gaps, medium density softwood decking products, such as redwood or western redcedar are vulnerable to ember ignitions. Most wood-plastic composites, along with higher density tropical hardwood, and fire-retardant treated decking products are less vulnerable to embers. The vulnerability to embers in these locations is a reminder to remove debris that accumulates in these areas.

BUILDING CODE REQUIREMENTS

The International Wildland Urban Interface Building Code (IWUIC) and the California Building Code are the most commonly referenced construction codes for wildfire-prone areas; both include requirements that focus on the walking surfaces of decks. Noncombustible products are allowed by both codes.

The California Code provides provisions for accepting combustible decking products. These types of products are more commonly used by homeowners living in wildfire-prone areas across the country. Their requirement governs the amount of heat released when combustible decking is ignited by a gas burner. This mimics burning debris that could be located under the deck, or burning vegetation impinging on the underside of the deck, but does not mimic ember exposure. Combustible decking products that comply with the California Code can be found at: http://osfm.fire.ca.gov/licensinglistings/licenselisting_bml_searchcotest.

The IWUIC prohibits common combustible deck boards with the exception of fire-retardant treated decking (rated for outdoor exposure) and other materials that meet the requirements of an Ignition Resistant Material. However, as of this date, no other materials meet these requirements. The IWUIC allows an enclosed deck option that uses a horizontal construction attached to the bottom of the deck joists. This option should only be used with a solid surface deck. Using this option with deck boards (and the associated gaps), will cause moisture-related degradation problems (corrosion of fasteners and wood rot). Water from rain or melting snow will easily get into the enclosed space and will have a much harder time getting out.

Photo Captions:

- **A** Embers that pass through deck board gaps will land on the ground, or on combustible materials stored under the deck, as shown during this IBHS test.
- **B** The near home noncombustible zone that surrounds the foundation should include a noncombustible area underneath the deck.
- **C** Vegetative debris in between deck board gaps will make this location even more vulnerable to ember accumulation.

RECOMMENDATIONS FOR YOUR DECK:

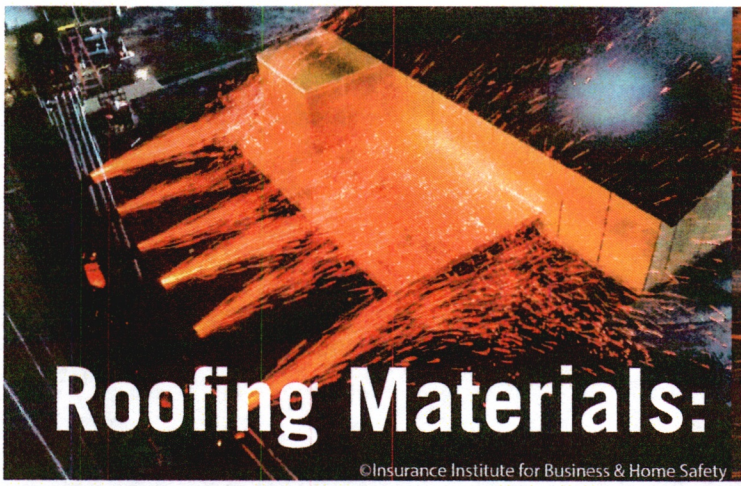
1. Combustible materials should not be stored beneath decks. This will effectively create a noncombustible zone under the entire footprint of the deck.
2. Routinely remove debris that accumulates in between deck board gaps and debris that can accumulate at the intersection between the deck and house.
3. If the deck is a non-fire-retardant treated softwood deck, consider removing and replacing deck boards within a few feet of the house. Be careful to match the deck board thickness.
4. When building new decks, select deck boards that comply with the California Building Code requirements. If using wood joists, cover the top and part of the sides with a foil-faced bitumen tape product.

Insurance Institute for Business & Home Safety®

NFPA

FIREWISE USA™
RESIDENTS REDUCING WILDFIRE RISKS

This publication was produced in cooperation with the USDA Forest Service, US Department of the Interior and the National Association of State Foresters. NFPA is an equal opportunity provider.



Roofing Materials:

©Insurance Institute for Business & Home Safety

©Insurance Institute for Business & Home Safety

WILDFIRE RESEARCH FACT SHEET

©Insurance Institute for Business & Home Safety

Roofs are a highly vulnerable part of a home during wildfires

HOMEOWNERS NEED TO IMPLEMENT RISK REDUCTION ACTIONS THAT MAKE HOMES BETTER ABLE TO SURVIVE A WILDFIRE - AND THE ROOF IS A GREAT PLACE TO BEGIN!

HOW HOMES IGNITE

Homes ignite in one of three ways: embers/firebrands, radiant heat exposure or direct flame contact. An example of an ember ignition is when wind-blown embers accumulate on combustible materials such as a wood shake roof. An untreated wood shake or shingle roof covering is the greatest threat to a home.

ROOF COVERINGS AND ASSEMBLIES

Roof covering fire ratings are Class A, B, C, or unrated; with Class A providing the best performance. Common Class A roof coverings include asphalt fiberglass composition shingles, concrete and flat/barrel-shaped tiles. Some materials have a "by assembly" Class A fire rating which means, additional materials must be used between the roof covering and sheathing to attain that rating. Examples of roof coverings with a "by assembly" fire rating include aluminum, recycled plastic and rubber and some fire-retardant wood shake products. If a wood shake roof does not have the manufacturer's documentation specifying the fire retardant, assume it's untreated.

TILE AND ROOF COVERINGS WITH GAPS BETWEEN THE COVERING AND ROOF DECK

Flat and barrel-shaped tiles, metal, and cement roof coverings can have gaps between the roof covering and sheathing, which typically occur at the ridge and edge of roofs. These openings can allow birds and rodents to build nests with materials that are easily ignited by embers. Flames from this type of ignited debris can spread to the structural support members, bypassing the protection offered by a Class A rated roof covering. Plugging these openings between the roof covering and the roof deck, is commonly called "bird stopping". Regularly inspect and maintain these areas.

DEBRIS ACCUMULATION – ROOF AND GUTTERS

Wind-blown debris (including leaves and pine needles from nearby and overhanging trees) will accumulate on roofs and in gutters. Dry debris can be ignited by wind-blown embers. These flames can extend to the edge of the roof and adjacent siding. Even with Class A fire-rated roof coverings, vertical surfaces next to the roof edge will be exposed to flames from the ignited debris. Regularly remove vegetative debris from your roof and gutters.

ATTICS, CRAWLSPACES, SOFFITS AND EAVES

Post-fire research has shown attic vents, roof and gable end vents and under-eave areas are entry points for embers and flames. Reduce the size and number of embers that pass through vents into attic and crawlspaces by covering them with a ⅛-inch metal mesh screen. When wildfires threaten, vents can be covered with ½-inch or thinner plywood, or a thin metal plate. Ensure these are removed when the threat has passed.

REDUCE YOUR ROOF'S VULNERABILITY TO WILDFIRE

1. Roofs should be Class A fire-rated, such as asphalt composition shingles. If you're unsure about your roof's rating, hire a professional roofer to make a determination.
2. Remove debris on the roof and in the gutters at least twice a year, or more often if necessary.
3. Remove tree branches that overhang the roof.
4. Periodically inspect exposed areas under eaves and soffits to ensure construction materials are in good condition.
5. Cover vents, e.g., with noncombustible, corrosion-resistant ⅛-inch metal mesh screens.
6. Inspect and maintain your roof on a regular basis. Replace when necessary.

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Attic and Crawl Space Vents

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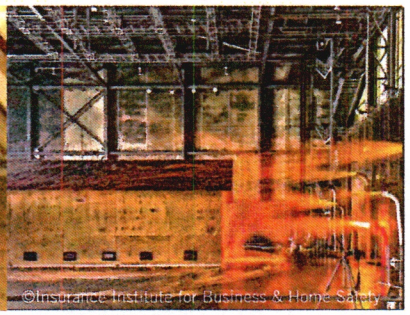

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Windblown embers can enter attics and crawl spaces through vents.

INSTALLING THE RECOMMENDED MESH SCREENING AND ELIMINATING STORAGE IS CRITICAL TO REDUCING BUILDING IGNITIONS DURING A WILDFIRE.

VENTS IN ATTICS AND CRAWL SPACES

Attic and crawl space vents, and other openings on the vertical wall of a home, serve important functions, including providing ventilation to remove unwanted moisture from these typically unoccupied spaces and oxygen for gas appliances such as hot water heaters and furnaces. Wind-blown embers are the principal cause of building ignition and can readily enter these spaces, which are often hot and dry. Providing air for ventilation, while also keeping out embers can present a dilemma. Dry materials are more easily ignited by embers, so limiting the entry of embers into attic spaces is critical. Adding to the problem are the combustible materials we tend to store in these spaces (e.g., cardboard boxes, old clothes and other combustible materials) because embers accumulate against them and they can be easily ignited.

HOW VENTS FUNCTION

Ventilated attic spaces have openings in two locations. Inlet air comes from vents located in the under-eave area at the edge of your roof. Exiting air leaves through vents located on the roof or at the gable ends of your home. If your home is built over a crawl space, you will typically have vents on each face of your home to provide cross-ventilation. Experiments conducted at the IBHS Research Center demonstrated that regardless of whether a vent had an inlet or outlet function, when wind blows against its face, it is an inlet vent. Therefore, any vented opening on your home should be able to resist the entry of embers. Unvented attic and crawlspace designs are available for some areas of the country. These designs are more easily implemented with new construction. Check with local building code officials to see if this is an option where you live.

USE MESH SCREENING TO REDUCE EMBER ENTRY INTO VENTS

Building codes require vent openings to be covered by corrosion resistant metal screens, which are typically 1/4-inch to keep out rodents. However, research shows that embers can pass through 1/4-inch mesh and ignite combustible materials, particularly smaller materials such as saw dust. Embers also can enter smaller screening, such as 1/16-inch, but cannot easily ignite even the finer fuels; however, this size screening is more easily plugged with wind-blown debris and is easily painted over if you are not careful when re-painting your house. Installing 1/8-inch mesh screening is suggested in wildfire prone areas, as it effectively minimizes the entry of embers. It's important to note that 1/8-inch screening only minimizes the size and number of embers and does not eliminate them entirely; making it very important to reduce what's stored in the attic and crawl space.

BEST CHOICES FOR VENTS TO RESIST EMBER ENTRY:

1. For (under-eave) inlet vents, opt for a soffited eave design. IBHS research demonstrates that gable end vents and other vent openings are vulnerable to wind-blown embers when the face of the vent is perpendicular to the wind flow, while embers are less likely to pass through vents with a face that is parallel to the wind flow. Therefore, soffited eave construction is preferred to open eave.

2. For outlet vents, opt for a ridge that is rated to resist wind driven rain. These vents have an external baffle at the vent inlet. Vents that have been approved for use by the California Office of the State Fire Marshal.

3. Turbine vents also help keep embers out, but you should attach a piece of 1/8-inch mesh to the bottom of the roof sheathing at the opening for the vent.

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Fencing

A ©Insurance Institute for Business & Home Safety

B ©University of California, Agriculture and Natural Resources

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C ©Insurance Institute for Business & Home Safety

Material, Installation and Maintenance Choices

NONCOMBUSTIBLE FENCING PRODUCTS REDUCE POTENTIAL HOME IGNITIONS

Many wildfire educational programs, along with the Insurance Institute for Business & Home Safety (IBHS) recommend noncombustible fencing products when placed within five feet of a building. As a necessary component, fencing located within the zero to five-foot noncombustible zone should be constructed of noncombustible materials.

A noncombustible zone minimizes the likelihood of wind-blown embers igniting fine fuels (such as bark mulch) located close to the building. Ember-ignited mulch can result in a radiant heat and/or flaming exposure to the building's exterior. Using noncombustible fencing where it attaches to the building reduces the opportunity of a burning fence igniting the exterior of the structure. Fencing products are often available in eight-foot pieces and use of that full section of noncombustible material is recommended. Observations made during the 2012 Waldo Canyon fire in Colorado Springs, CO provided evidence that burning fencing generates embers that can result in additional ignitions down-wind.

PERIMETER FENCING

When neighboring buildings are located within 20 feet of each other, use of steel fencing for the perimeter area can serve as a radiant barrier, providing added protection should a neighboring building ignite and burn. Research in Australia demonstrated the ability of panelized steel fencing to resist a radiant heat exposure.

RESEARCH FINDINGS TO HELP AVOID FENCE IGNITIONS

Recent research conducted by IBHS and the National Institute of Standards and Technology (NIST), both independently and in a collaborative project, provided additional information about the vulnerability of combustible fencing.

Photo Captions:

A Flame spread to the building when combustible debris was at the base of the fence.

B Gates made from noncombustible materials should be used where a fence is attached to the home. Source: University of California, Agriculture and Natural Resources

C Ignition from ember accumulation at the intersection of the vertical planks and horizontal support member.

RESEARCH FINDINGS:

1. Use a noncombustible fence section when it's attached to a building.

2. The area at the base of the fence should be kept clear of debris. Flame spread to the building will be more likely if fine vegetative fuels (e.g., pine needles, leaf litter and small twigs) have accumulated. Avoid placement of combustible mulch near the fence.

3. A fence design that allows for greater air flow, such as a single panel lattice fence, makes it more difficult for wind-blown embers to accumulate at plank, or lattice panel to horizontal support locations. If an ignition occurs, it's also more difficult for lateral flame spread to occur in the fencing material. Fence ignitions from wind-blown embers are more likely to occur at locations where vertical fencing planks attach to horizontal support members. The most vulnerable fencing from this perspective is a "privacy" fence, where the fence planks are on the same side as the horizontal support members.

4. A fence built from lattice that's applied to both sides of the support posts may be desired for privacy or other landscaping purposes, but should be avoided in wildfire-prone areas. Recent research at NIST has demonstrated that fire growth and lateral flame spread are much greater in this design style.

5. Vinyl fencing is not vulnerable to ember exposures alone, but did burn when subjected to flaming exposures from burning debris. Vinyl fencing will deform if subjected to radiant heat.

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Under-Eave Construction

The under-eave area of a house is often overlooked when addressing vulnerabilities that can cause damage or loss during a wildfire. Neglecting this structural component increases susceptibility to heat from flames, which can become trapped, allowing fire to spread through attic vents and into the attic. Embers lodged in gaps between blocking and joists can also result in ignition and fire entry into the attic.

TYPES OF UNDER-EAVE CONSTRUCTION

Open-Eave Construction: Roof rafters visibly extend out beyond the exterior wall. This option is typically less expensive and is commonly found in many parts of the U.S.

Soffited-Eave Construction: Material connecting and enclosing the space between the edge of the roof and the exterior wall.

SOFFITED-EAVE CONSTRUCTION IS BEST FOR HOMES WITH A WILDFIRE RISK

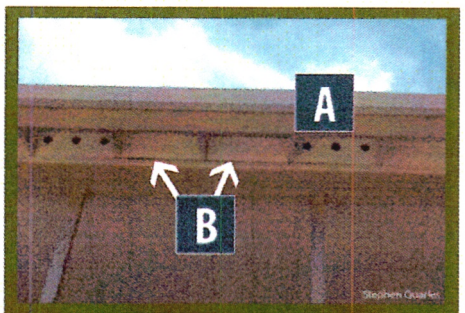
Wildfire research conducted by IBHS supports the use of soffited-eave construction. Additional research and guidance (e.g., FEMA P-737, Home Builder's Guide to Construction in Wildfire Zones - Fact Sheet No.6 https://www.fema.gov/media-library-data/20130726-1652-20490-2869/fema_p_737_fs_6.pdf) also suggests a soffited design as the best option. Vents located in the under-eave area can be entry points for embers and flames when limited effort has occurred to reduce risks in the home ignition zones (particularly in the near-home zone). Embers entering an attic can ignite stored combustible materials. Research has shown that open-eaves are more vulnerable to both ember entry and direct flame contact exposures, relative to soffited-eaves.

With open eaves, use a sealant (such as caulking) to cover gaps, or enclose the underside of the roof overhang. In open-eave construction, embers can and do accumulate between blocking and joists and can ignite these members if sufficient accumulation occurs.

The open-eave blocking likely included vents, so remember to add an adequate amount of soffit vents as part of the project. Make sure the vent area ratio (vent into the enclosed soffit and enclosed soffit into the attic) follows the requirements of local building codes.

Time-to-ignition is faster with under-eave construction and lateral flame spread is quicker, exposing other areas along the length of the home. (Using the recommended 0 to 5-foot noncombustible near-home zone minimizes the likelihood of an ignition at the base of the exterior wall.)

Using noncombustible or ignition-resistant materials to enclose the eave is recommended. The enclosure should extend from the roof edge horizontally back to the exterior wall. The horizontal soffit member is attached to a ledger board that is itself attached to the exterior wall.



Open-eave construction with vents in blocking (A), and gaps between blocking and other wood members in the under-eave area (B).

Flame impingement exposure to the underside of the eave, and time-to-ignition of the joists, blocking and fascia was quicker; and lateral flame spread faster, when an open-eave design was used in research experiments.

Lateral flame spread was reduced when a combustible soffit material ignited in this test of a soffited-eave with a combustible soffit material.

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WILDFIRE RESEARCH FACT SHEET

IMMEDIATE (NONCOMBUSTIBLE) ZONE

Why is it important to create and maintain 5 feet of noncombustible space around the exterior of a building?

Wildfire risks are on the rise, but there are ways home and business owners can take control of their vulnerabilities. Changes made to a structure and its surroundings within 100 feet can make a big impact. Research from the Insurance Institute for Business and Home Safety (IBHS) shows that the first 0 to 5 feet around the structure, known as the immediate zone or noncombustible zone, has the greatest impact on your risk. IBHS and the National Fire Protection Association® (NFPA®) recommend keeping this zone well-maintained and clear of combustible materials.

IBHS Research

The main objective of the 0-to-5-foot zone is to reduce the potential that embers landing near a building will ignite fuels and expose the area around a home to a direct flame (Figure 1). Removing anything that can ignite from embers is critically important. To verify how effective a 5-foot noncombustible zone is around a building, more than 180 tests were conducted in 2018 at the IBHS Research Center to evaluate fire behavior and heating of buildings (Figures 2a & 2b).

Key Observations

- For combustible landscaping, such as wood mulch, the thickness of the mulch bed, wind speed, and location of the flame and building all impact the potential of mulch to ignite and how quickly fire can spread to the building.
- Burning mulch generates embers that can ignite nearby mulch, increasing the chances of direct flame contact spreading to the building.
- When flames are 5 feet away, a building's surface temperature is below temperatures that could cause ignition. However, corners of a building (45-degree angles) experience a higher temperature when exposed to flames, even when a 5-foot space is present. Testing showed that corners can be more vulnerable due to fire spread through fuel (such as mulch) on the ground, because at the same wind speed, wind blowing directly at a wall (90-degree angle) will result in taller flames and more radiant heat, while wind on a corner (45-degree angle) will result in longer flames that are closer to the ground.

Recommendations

- Keep the corner areas of a building clear of combustible materials due to the higher probability of having direct flame touching the surrounding ground.
- Keep gutters free of debris and use metal gutters.
- Install hard surfaces, such as a concrete walkway, or use noncombustible mulch products, such as rock.
- Keep the lawn well irrigated and use low-growing herbaceous (non-woody) plants. Shrubs and trees are not recommended in the 5-foot zone.
- Remove dead vegetation and implement a maintenance strategy to keep the 5-foot zone clear of dead plant materials.
- Mitigating home ignition zones shouldn't stop at 5 feet from the building. It should be combined with the footprint of an attached deck and area that extends away from the building up to 100 feet or to the property line.

Figure 1 – Creating and maintaining home ignition zones (defensible space) around your property are proven ways to reduce risks of property damage during a wildfire, as tests at the IBHS Research Center have shown.

Figure 2a Experiments conducted at the IBHS Research Center to study the effectiveness of creating a noncomsbutible space around buildings.

Figure 2b Embers impacting a building: left side with combustible (wood) and the right with noncombustible (rock) mulch.

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Learn More

- For online training and other resources, see nfpa.org/firewise.
- Access the latest research from IBHS at ibhs.org.

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