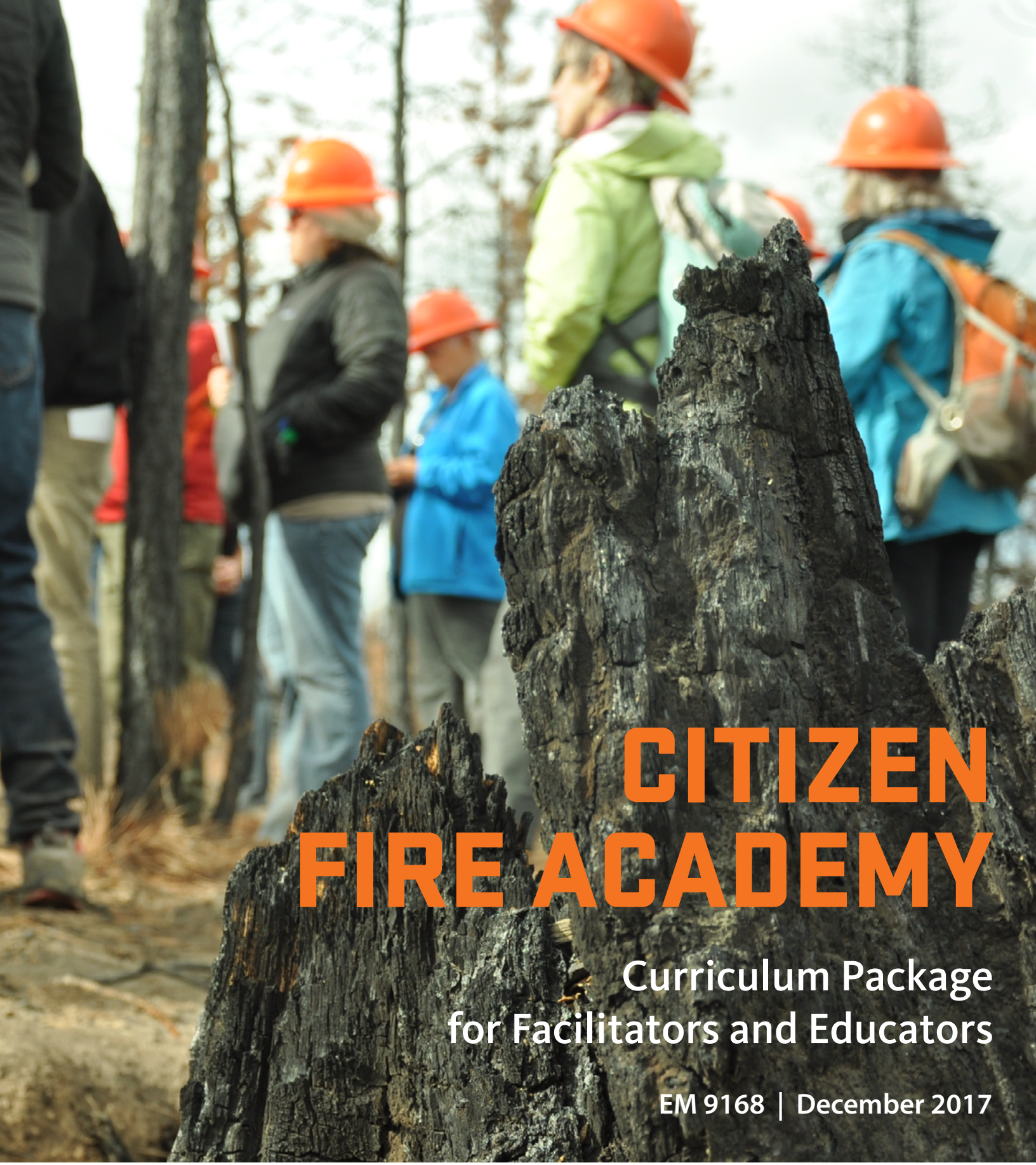


CITIZEN FIRE ACADEMY

Curriculum Package for Facilitators and Educators

EM 9168 | December 2017

Oregon State University

OSU Forestry & Natural Resources Extension Program

OREGON STATE UNIVERSITY EXTENSION SERVICE

CITIZEN FIRE ACADEMY

Curriculum Package for Facilitators and Educators

Photo: Carrie Berger, © Oregon State University

Acknowledgements

Authors

Stephen Fitzgerald
Extension Forestry and Natural Resources silviculture specialist and professor, Oregon State University

Kara Baylog
Citizen Fire Academy/Forestry program assistant, Jackson County Extension/Southern Oregon Research and Extension Center, Oregon State University

Max Bennett
Extension Forestry and Natural Resources agent and associate professor, Jackson County Extension/Southern Oregon Research and Extension Center, Oregon State University

Rhianna Simes
Master Gardener outreach coordinator, Jackson County Extension/Southern Oregon Research and Extension Center, Oregon State University

Nicole Strong
Extension Forestry and Natural Resources agent and assistant professor, Deschutes, Crook, and Jefferson counties, and Confederated Tribes of Warm Springs, Oregon State University

Cover Photo: Carrie Berger, © Oregon State University

Trade-name products and services are mentioned as illustrations only. This does not mean that the Oregon State University Extension Service either endorses these products and services or intends to discriminate against products and services not mentioned.

© 2017 Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials without discrimination on the basis of race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, familial/parental status, income derived from a public assistance program, political beliefs, genetic information, veteran's status, reprisal or retaliation for prior civil rights activity. (Not all prohibited bases apply to all programs.) Oregon State University Extension Service is an AA/EOE/Veterans/Disabled.

Published December 2017.

Table of Contents

Foreword

The vast possibilities of our great future will become realities only if we make ourselves responsible for that future. – Gifford Pinchot

The authors of this Oregon Citizen Fire Academy (CFA) curriculum are delighted to share this guidebook with you.

Every year in the western United States, we experience larger, more intense fires, with greater risk and damage to communities. The CFA program was developed to help engage and educate community members so that participants will be better equipped not only to reduce fire risk on their own properties, but also to support neighborhood and community efforts to increase wildfire preparedness and create fire-adapted communities. Our proven Extension volunteer development model increases confidence in participants, helps foster and strengthen community relationships, and creates a multiplier effect. The more local boots we have on the ground helping communities prepare for eminent wildfires, the safer our communities will be in the long run.

The goal of the curriculum is to offer the necessary teaching tools to any group or agency interested in conducting its own CFA program. Included are lesson plans, detailed agendas, and tour ideas, as well as suggestions for how you might present this curriculum as a hybrid course. The hybrid approach allows you to deliver some content and hold interactive discussions online, saving precious face-to-face time for skills building and field sessions.

If you have questions about this curriculum, or the CFA program, please contact us at CitizenFire@oregonstate.edu.

Sincerely,

Oregon Citizen Fire Academy authors:

Stephen Fitzgerald

Kara Baylog

Max Bennett

Rhianna Simes

Nicole Strong

Course Administration

Definitions

For the purposes of this curriculum package, the following terms describe the various people that make up the Citizen Fire Academy (CFA).

CFA coordinator: This is the person at Oregon State University (OSU) responsible for assisting organizations and agencies to put on CFA programs throughout the state, region, and anywhere there is interest in this program. They will be available for questions, comments, or concerns and may provide additional assistance such as on-the-ground support and management of volunteer hours. You may contact this person at CitizenFire@oregonstate.edu.

CFA facilitator: This is the person or persons responsible for coordinating and organizing the local CFA program on the ground. While this person may be an Extension agent, they are not required to be. The CFA facilitator may be from a forestry or fire agency at the local, state, or federal level; a Firewise community or fire-adapted communities coordinator; or the representative of any entity interested in putting on the program in their location.

The CFA facilitator will recruit instructors and participants, develop field tours, facilitate in-person classes, and, if using the online/hybrid approach, will maintain the Canvas site throughout the coursework. This person may also coordinate volunteers following the completion of coursework. This person may or may not have a background in forestry and fire, but they will be familiar with local stakeholders and landowners.

CFA participant: This is a person who has registered and is taking the CFA coursework. CFA participants may be forest landowners, members of homeowners associations, landscape and construction professionals, community members, and anyone interested in improving the fire preparedness of their homes and community. Following graduation, CFA participants may also be referred to as CFA volunteers.

Instructors: These are the people delivering the content of the CFA program through course modules and field tours. They may be forestry and fire agency representatives, professionals, Firewise community representatives, fire preparedness outreach coordinators, and others. They have expertise in one or more of the CFA module topics. The CFA facilitator may or may not also be an instructor depending on their expertise and preferences.

Methods

Throughout CFA, the goals should be to build relationships and trust between community members and between fire management agencies and the public, to spark a shift in the way the community thinks about wildfire, and, ultimately, to encourage collaborative wildfire preparedness planning and action. CFA works to create a cultural shift in the community, moving from relying on agencies and organizations to manage wildfire, to recognizing their own role in preparing for and responding to wildfire. This is to say, CFA promotes fire-adapted communities.

The first way CFA promotes this cultural shift is by adjusting CFA participants' risk perception through the educational portion. Simply put, CFA provides participants with good understanding of the nature of wildfire and helps them recognize the risk wildfire poses to their properties and communities. Research shows that risk perception is an important factor in motivating individuals to cooperate with agencies and to conduct wildfire preparedness activities, such as fuels reduction and other forms of vegetation modification. By using a model that includes both coursework and field tours, the CFA educational experience accommodates a variety of learning styles. Whether lessons are learned sitting in a classroom or online, they are reinforced when participants are brought out to the field and shown how their studies can be applied in real life.

After completing the educational experience, CFA participants become CFA volunteers and have the task of engaging with friends, family, and neighbors to increase community awareness of wildfire risk. This grassroots-level focus is an important aspect of fire-adapted communities and is one of many

ways to encourage communities to prepare for and be ready to respond to wildfire. These social interactions, which are often beyond the scope or ability of wildfire management agencies, can provide important formal and informal educational opportunities and help improve a community's capacity to prepare for and respond to wildfire. Continual communication between community members about risk perception is an important factor not only in motivating individuals to act, but in sustaining community-wide efforts.

CFA volunteers can also play a role in fire response, directly and indirectly. Throughout coursework and field tours, CFA participants meet and interact with representatives from various agencies, including:

- Wildfire management agencies, such as local fire departments and districts
- Locally stationed and state forestry agencies, such as the Oregon Department of Forestry
- Federal agencies, such as the U.S. Forest Service and Bureau of Land Management

Some CFA volunteers continue these relationships, either by volunteering through the agencies as information liaisons to the community during a wildfire, or by offering information to the community about these agencies during outreach events. Improved communication between agencies and the public has a direct correlation to greater trust and more accurate information during a response to a wildfire.

For more information on the social science that serves as a pedagogical foundation of the CFA program, we recommend that any CFA facilitator review the following publications:

Fischer, A. Paige, and Susan Charnley. "Risk and Cooperation: Managing Hazardous Fuel in Mixed Ownership Landscapes." *Environmental Management* (2012): Online.

McCaffrey, Sarah. "Community Wildfire Preparedness: A Global State-of-the-Knowledge Summary of Social Science Research." *Current Forestry Reports* (2015): 81–90.

Steinberg, Michele. "Firewise Forever? Voluntary Community Participation and Retention in Firewise Programs." *Proceedings of the Second Conference on the Human Dimensions of Wildland Fire* Aug. 2011: 79–87.

Stidham, Melanie, Eric Toman, Sarah McCaffrey, and Bruce Shindler. "Improving an Inherently Stressful Situation: The Role of Communication During Wildfire Evacuations." *Proceedings of the Second Conference on the Human Dimensions of Wildland Fire* Aug. 2011: 96–103.

Syllabus

CFA equips participants with the knowledge they need to improve fire preparedness and resiliency in their communities. The content has been divided into six modules, with options to combine and separate the modules to fit the needs of the CFA facilitator. The six modules are:

1. Introductory Module
2. Fire Science
3. Living in a Fire Environment
4. Fire Risk and Home Protection Strategies
5. Fuels Reduction Strategies
6. Effective Volunteering and Graduation

Delivery methods

In order to accommodate the varied populations of fire-prone environments, CFA can be delivered in two different ways: a conventional model and a hybrid approach.

The conventional model uses the pedagogical format of several Oregon State University Extension programs. Participants gather in a classroom and receive instruction from one or more presenters. In-class instruction may be accompanied by a field portion where participants can interact with the subject matter first-hand. In CFA, this means participants will be able to view fire scars and learn how to assess fire risk in the field by completing relevant exercises.

In the hybrid version, CFA retains the field tour portion of the program, but substitutes the in-class interaction with a convenient, easy-to-use online course that participants can complete within a set timeline.

Timeline

It is recommended that instruction take place over the course of 2 to 3 months. This will provide adequate time for participants to absorb new information, develop and ask questions, and complete any required homework. Field tours may be scheduled in conjunction with the modules or separately as stand-alone events. How you decide to schedule and integrate the field tours will depend on field tour locations, your participants, and whether you chose to use the hybrid approach or the conventional model for module coursework.

An example syllabus can be found in Appendix A (page 124).

Room setup

There are a variety of ways to deliver each in-person module, and how a room is set up can enhance the delivery method. Before deciding on a room setup, take into consideration the needs of any CFA participants with disabilities and make sure to select a room that all participants can access.

The following are some examples of layouts the CFA facilitator may wish to use when setting up the classroom for in-person modules.

Banquet

This layout is ideal for events where participants interact primarily in groups. The smaller size of each table and the face-to-face layout give more opportunity for conversation.

Cinema

This layout is ideal for one-way interaction between the speaker or presenter and the participants, or when showing a film or production.

Cocktail

This layout is ideal for mixer-type functions where all participants interact with each other. Cocktail tables may have few or no seats, encouraging participants to visit multiple tables.

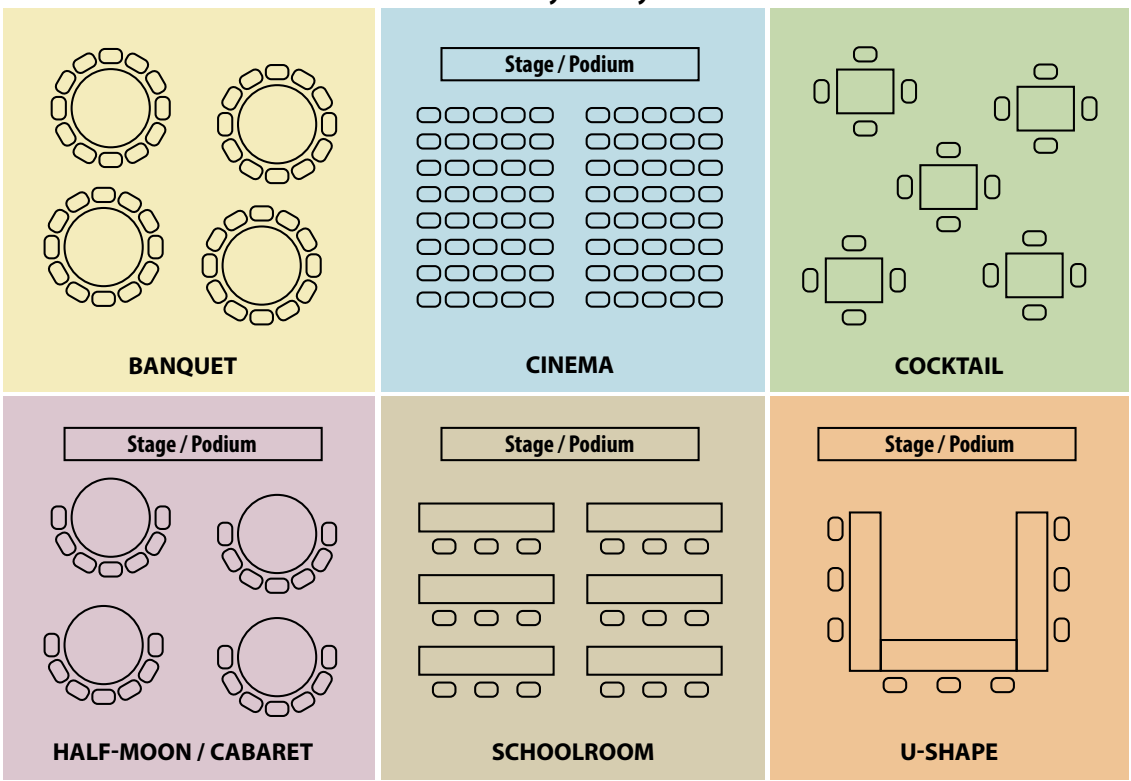
Half-Moon/ Cabaret

Similar to the banquet layout, this arrangement is ideal for events where participants interact both with the presenter and with each other.

Schoolroom

This layout is ideal for small-group instruction where the presenter or instructor wants to use

Room layout styles



one-way educational techniques and also interact back and forth with participants.

U-Shaped

This layout is ideal for collaborative planning sessions between participants, or interactive educational programs where the instructor requires easy access to participants for one-on-one assistance.

Recruiting instructors

One of the goals of CFA is to acquaint participants with local agencies and emergency resources. To this end, it is strongly recommended that you recruit, where possible, local experts in fire, fire preparedness, and forestry. Each lesson plan details the content of the module and should be used in determining the best candidates to serve as instructors.

Prior to establishing a CFA program, it is recommended that the facilitator organize a meeting with possible partnering agencies, such as:

- Local offices for the U.S. Forest Service
- Bureau of Land Management
- Oregon Department of Forestry (or local state forestry department)
- County emergency preparedness representatives
- Local fire district and fire department representatives
- Firewise community representatives
- Other organizations relevant to your area's fire preparedness and firefighting infrastructure

This meeting is an opportunity to discuss the goals of CFA, objectives and key points for each module, instructor needs, ways partnering agencies can help, and potential volunteer activities for CFA participants following graduation.

Marketing and publicity

The most important parts of CFA are the CFA participants! These are the dedicated landowners, professionals, and community members who will take the course and put their new knowledge to use on their properties and in their communities. It is the CFA facilitator's job to ensure that the participant group is large enough to make efforts worthwhile and to encourage learning between participants, but small enough to give participants direct interaction with instructors. Ideally, groups should have no more than about 15 to 20 participants and no fewer than 10.

Registration pricing may impact the level of interest in the program. That said, paying for registration can motivate CFA participants to take more ownership of their entire CFA experience. CFA facilitators should set a registration price that covers costs—including refreshments, transportation, and printing needs—but should avoid setting the price so high that it discourages participation.

Marketing strategies could include flyers, brochure mailings, press releases, and radio or television advertisements. CFA facilitators that regularly work with landowners and community members may make individual contact with people they feel would benefit from the program.

An example flyer, press release, and brochure are included in Appendix B (page 127).

Wildfire preparedness plan

The wildfire preparedness plan should be viewed as the CFA participants' "final project" for module coursework. Working on this plan throughout the module will help participants reinforce the concepts they are learning, and by the end of the educational part of the program, it will serve as an excellent starting point as they begin working on their own properties.

The wildfire preparedness plan is generally an individual's plan for his or her own home and property. However, some CFA participants—particularly those living in subdivisions, homeowners associations, or Firewise communities—may be interested in developing a wildfire preparedness plan for their entire neighborhood. In this case, their work on the wildfire preparedness plan can count as volunteer service and should be reported as such.

A copy of the wildfire preparedness plan can be found in Appendix C (page 135).

Lesson Plans

Photo: Carrie Berger, © Oregon State University

Module 1: Introductory Module

Introduction

This module sets the stage for every subsequent module in CFA. It focuses on the content that will be covered, describes how to learn effectively using the classroom materials or hybrid approach, and most importantly, connects the modules with the overarching wildfire preparedness plan and volunteer projects. CFA participants should leave this session prepared to make the most of remaining coursework and understand how they fit into the concept of a Fire-Adapted Community.

Room setup

This module works best in a U-shaped layout so that participants can interact with each other. If there are 20 or more participants, a half-moon/cabaret style layout is recommended. If using the hybrid approach, plan to have laptops available, book a computer lab, or request that participants bring their own laptops. (See "Room setup," page 7)

Total time needed

3.5 to 4 hours in the classroom

Equipment needed

- Computer with PowerPoint
- Projector and screen
- Handouts
- Flip charts, markers, easel
- Laptops if using the hybrid approach

Background resources

- "Wildfires and Us" video: https://vimeo.com/106449254
- Wildfire preparedness plan template, see Appendix C (page 135)
- Wildfire preparedness plan example, see Appendix C (page 135)
- OSU Volunteer Liability Form
- "How Will you Prepare Your Community for Wildfire as a CFA volunteer?" worksheet

Host prep

- While recruiting agency partners as speakers and field tour guides, invite them to attend the introductory session to give a few words on the need for the CFA program and what they hope to accomplish through it
- Familiarize instructors and panelists with objectives, content, agenda, and structure of session
- Communicate with CFA participants to confirm location and time
- Make sufficient copies of all handouts, schedules, and forms
- Reserve classroom
- Confirm projector and laptop for the video
- Set up room
- Prepare refreshments (if applicable)
- Prepare a cash box for program fees (if applicable)

Class prerequisites

There is no prework for this module.

Learning objectives

Participants will:

- Recognize how knowledge learned through CFA will help them prepare themselves and their communities for wildfire
- Identify the content, structure, and expectations of the CFA program, including:
  - ❑ Each module
  - ❑ Wildfire preparedness plan
  - ❑ Volunteer hours and projects
  - ❑ Time commitment

- ❏ Field tour needs and timing
- ❏ Access and use of Canvas[1] (for hybrid CFA courses)

- Recognize who to contact for additional information, questions, and resources
- Prepare for volunteer service by brainstorming potential volunteer and outreach opportunities

Behavior objectives

Participants will:

- Sign the OSU Volunteer Liability Form
- Prepare to meet the expectations of the course, fieldwork, and volunteer service
- Begin initial work on the wildfire preparedness plan
- Identify personal skills, talents, and interests as potential volunteer service opportunities

Delivery methods

- Video
- Presentations from partnering agencies and CFA facilitator
- Module presentation
- Introductory activity
- Participant roundtable discussion

Instructor guidance

The first day is your first impression for the rest of the course. It is important to get participants enthusiastic about the course, and to get them to take ownership in what they are about to learn over the next several weeks. Although a portion of this module needs to be lecture-style instruction about the syllabus and agenda for subsequent modules, this day should be generally interactive.

Learn about your participants' motivations for joining CFA. Learn about what they hope to get out of the course. Ask them how they hope to contribute to their neighborhoods and communities following the end of the modules, using the information they have learned. Ask each participant to describe the conditions where she or he lives. Do participants generally live in the wildland-urban interface (WUI)? Are they part of homeowners associations (HOA), or do they have limited contact with their neighbors?

Ask participants about their experiences with fire and wildfire. Do they have friends or family who lost their homes to a wildfire or survived one? Ask participants about any special circumstances, such as how to evacuate an elderly parent living at home, or how to prepare collaboratively for fire when neighbors are unresponsive.

If you are including a volunteer component in the delivery of this course, talk with CFA participants about it from the start. Ask participants what is important to them, what their skills are, and brainstorm volunteer project ideas with participants.

The included PowerPoint presentation can help CFA participants understand where they fit into the concept of a Fire-Adapted Community and gives background on how to enact a community-wide change in the culture and perception of wildfire preparedness and response. However, CFA facilitators are not required to use the presentation and may prefer to keep the atmosphere more informal for this session.

Sample agenda

Location: Auditorium

1:00 p.m. Introduce CFA facilitator, agency partners, and participants.

Agency partners speak to participants about their roles in fire prevention and firefighting.

Instructors speak about local fire history, show maps of fires in the region.

Participants share motivations for joining and their experiences with fire.

2:00 p.m. Why is wildfire preparedness important to your community? How does CFA help you to prepare?

Discussion and/or show "Wildfires and Us" video

2:30 p.m. Review syllabus

Discuss expectations for the CFA participants, including wildfire preparedness plans and service commitment

Discuss field tour schedule and logistics

[1] Canvas an open-source learning management system used by CFA to provide online content to participants. More information on Canvas can be found at: https://www.canvaslms.com/

2:45 p.m. Refreshment break

3:00 p.m. Review Final Project wildfire preparedness plan, including an example of a completed plan

3:30 p.m. Complete volunteer "How Will You Prepare…" activity

Pass out Volunteer Service Activities sheet and discuss options available for CFA volunteers following graduation

4:00 p.m. Pass out liability forms to sign

Confirm participants' contact information

Provide CFA facilitator contact information

4:15 p.m. (For hybrid approach): Instruction on how to access Canvas

5:00 p.m. Adjourn

Content outline

- ■ Introduction and overview of agenda
  - ❑ Introductory activity and introduction of participants, facilitator, and agency speakers
- ■ Overview of CFA / Introductory Module presentation
  - ❑ Why is CFA important?
    - "Wildfires and Us" https://vimeo.com/106449254
  - ❑ Goals and mission of CFA
  - ❑ Explanation of the education and service model
  - ❑ Agency partners (who will be featured throughout the course and through volunteering) introduce themselves
- ■ Review the syllabus
  - ❑ Structure of the course modules (conventional or hybrid)
    - Schedule
    - Time commitment
    - Working with Canvas (if applicable)
  - ❑ Field trip logistics
    - Carpool or caravans
    - Recommended gear
    - First aid kit
    - Water and snacks
    - Physical demands of field locations, terrain, and travel
  - ❑ Service component
    - Volunteer requirement and community engagement from a fireshed perspective
    - Volunteer plan and completion timeline
    - Volunteer skills and talents activity
    - Volunteer job descriptions
  - ❑ Expectations and course outcomes
    - Participant development and coursework
      - Conduct an assessment on own property
      - Implement Firewise practices in and around the home
      - Implement fuels reductions on forested property
      - Engage in prefire planning such as working with Firewise communities and developing evacuation plans
      - Wildfire preparedness plan (See Appendix C, page 135)
      - Review sample wildfire preparedness plan
    - Community development
      - Service hours requirement
      - Use knowledge of fire and fire resiliency strategies to engage friends, family, neighbors and community
      - Develop a Volunteer Plan
  - ❑ Communication
    - CFA Facilitator contact information
  - ❑ Forms
    - OSU Volunteer Liability Form
    - Confirm CFA participant contact information

Exercises

"How Will you Prepare Your Community for Wildfire as a CFA volunteer?"

This activity is designed to get CFA participants thinking about how they will eventually give back to the community during the service portion of the program. The CFA facilitator should distribute the

Volunteer Service Activities sheet and the "How Will You Prepare Your Community for Wildfire as a CFA Volunteer?" worksheet. After going over the various types of volunteer service on the Service Activities sheet, have them fill out the worksheet. Try to keep the atmosphere casual so that participants feel able to share their thoughts if they want to.

Following the activity, have participants keep the worksheet and the Service Activities sheet, and have them use both to inform their volunteer plan.

Alternative delivery methods

This module can be combined with the next module if needed to reduce the overall number of courses. However, due to the importance of laying out participant expectations and future coursework, it is recommended that the module stay as a standalone.

It is also recommended that this module be conducted in person, even if the CFA facilitator has opted to use the hybrid approach for instruction. This allows the facilitator to learn names and faces, while developing the kind of personal connection that engages participants.

Suggested homework

Review wildfire preparedness plan at home with family. Fill in basic information portions.

If using the hybrid approach, ensure that CFA participants understand how to access the material by having them log in and post in a forum introducing themselves to the group.

Introductory Module Materials

slide deck

Citizen Fire Academy

Introductory Module

CITIZEN FIRE ACADEMY

Oregon State University

Oregon State University Extension Service

Wildfire snapshot 2015

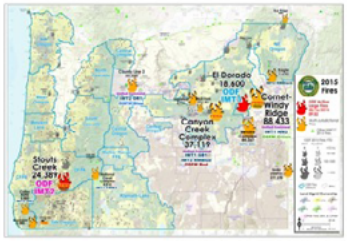
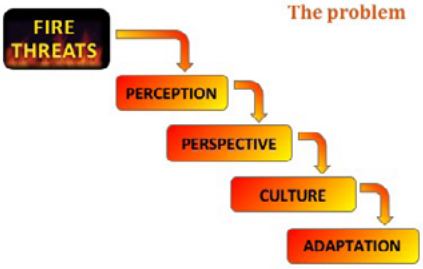


Image: Teresa Zena Alcock, Oregon Department of Forestry

The problem



Graphic adapted from presentation by Ed Smith

Put fire on the agenda!

- Help promote learning and adaptation that helps individuals, neighborhoods better prepare for and live with wildfire
- Reduce loss of homes, infrastructure, and property
- Increase community and firefighter safety
- Reduce wildfire damage to forests, rangelands, and watersheds
- Promote fire-adapted communities

Photo: Nora Boyley, © Oregon State University

What will you learn?

- The fundamentals of fire behavior from a scientific perspective
- Property owner responsibilities with regards to fire preparedness in your area
- Resources that exist on a federal, state and local level that you can access for help in preparation to and during a wildfire
- Strategies you can use around your home to improve the chances it will survive
- Strategies you can use in forested wildlands that are being used to help communities adapt to fire
- What you can do in your community to get your friends, family and neighbors on board to prepare for wildfire!

How does CFA work?

- 7 in-person classes
  - Introduction
  - Fire Science
  - Living in a Fire Environment
  - Home Protection Strategies
  - Fuels Reduction Strategies
  - Effective Volunteering
  - Graduation
- Interactive field tours
  - Field tours and outdoor demonstrations build on lessons learned in class
- CFA Participant Work
  - Completion of the Wildfire Preparedness Plan for each participant
  - 20 to 30 hours of volunteer service to community wildfire preparedness

How does CFA work?

- 2 in-person classes
  - Introduction / Learning Canvas
  - Effective Volunteering and Graduation
- 4 online modules, including a conference call "office hour" to answer questions
  - Fire Science
  - Living in a Fire Environment
  - Home Protection Strategies
  - Fuels Reduction Strategies
- 2 interactive field tours
  - Field tour #1: builds on lesson learned in Fire Science and Living in a Fire Environment
  - Field Tour #2: builds on lessons learned in Home Protection Strategies, Fuels Reduction Strategies and Effective Volunteering
- CFA participant work
  - Completion of the Wildfire Preparedness Plan for each participant
  - 20 to 30 hours of volunteer service to community wildfire preparedness

Thanks!

Photo: Alexandra Stanwell

PLEASE PRINT

Group:			
Activity:		Date(s):	
Participant:	(Name)	Age:	Sex:
	(Street Address)		
	(City)	(State)	(Zip)
	(Home Phone)	(Work Phone)	(Cell Phone)

ACKNOWLEDGEMENT OF RISK AND WAIVER OF LIABILITY

Read this Acknowledgement of Risk and Waiver of Liability carefully and in its entirety. It is a binding legal document. Please read both sides of this page. Sign and return this form to (INSERT Department contact name _____ and Department address/phone_____ for contact). If you are under the age of 18, this form must be signed by you as the participant AND by your parent or legal guardian.

I, the undersigned, am aware that participation in the Activity (hereafter referred to as **ACTIVITY**) describe above may include activities that may cause injury and dangerous. I acknowledge that participation in this ACTIVITY has the following non-exhaustive list of particular activities that bear risk and danger and from which bodily injury, up to and including death, may occur:

INSERT RISKS HERE

With full knowledge of the facts and circumstances surrounding the ACTIVITY, I voluntarily participate in the ACTIVITY and assume the responsibilities and risks resulting from my participation, including all risk of property damage and injury to others and to myself. I agree to comply with all of the rules and conditions of participating in the ACTIVITY. I have adequate applicable insurance necessary to provide for and pay any medical costs that may directly or indirectly result from my participation in the ACTIVITY, or otherwise understand that I am solely responsible for any medical costs that may directly or indirectly result from my participation in the ACTIVITY. I will indemnify and hold the State of Oregon, acting by and through the State Board of Higher Education, on behalf of Oregon University System and Oregon State University, it employees, directors, officers, and agents (hereafter referred to as **UNIVERSITY**) harmless with respect to any and all claims, injuries, and costs associated with my participation in this ACTIVITY.

Furthermore, I acknowledge that I am solely responsible for any action that I participate in associated with this ACTIVITY or around this ACTIVITY, regardless if occurring before, during or after the period of the ACTIVITY. I will conduct myself in a manner that is considerate of other participants and in accordance with UNIVERSITY Rules and Regulations (***including Student Code of Conduct, when applicable***) and with any state and city laws or rules where the ACTIVITY is occurring. If this ACTIVITY is an off-campus UNIVERSITY sponsored event, such as field trips, conferences, research, experiential learning, extension of classroom learning, etc., I understand that conduct not acceptable in the classroom setting is not acceptable during this ACTIVITY and will be handled in accordance with the Student Conduct Regulations. In addition, I understand that if I travel to the ACTIVITY with a UNIVERSITY group and/or advisor, I will return with the group unless prior arrangements have been made with the UNIVERSITY faculty/staff who is supervising the ACTIVITY.

I recognize and acknowledge that UNIVERSITY may record my participation and appearance in ACTIVITY on any recorded medium (including, but not limited to video, audio, photos) for use in any form (including, but not limited to print, websites, blogs, internet). I authorize such recording and release UNIVERSITY to use my name, likeness, voice, and biographical material to exhibit or distribute such recordings in whole or part without restrictions or limitations for any educational or promotional purpose. I further release UNIVERSITY to use material from blogs associated with ACTIVITY without restrictions or limitations for any educational or promotional purpose.

I am aware that if I provide a vehicle not owned and operated by the UNIVERSITY for transportation to, at, or from the ACTIVITY site, or if I am a passenger in such a vehicle, the UNIVERSITY is not responsible for any damage caused by or arising from my use of such transportation. Furthermore, I acknowledge that I am solely responsible for any action that I take that is outside the scope of the scheduled ACTIVITY, regardless if occurring before, during or after the period of the ACTIVITY.

To the extent permitted by law, and in consideration for being allowed to participate in the ACTIVITY, I hereby save, hold harmless, discharge and release the UNIVERSITY from any and all liability, claims, causes of actions, damages or demands of any kind and nature whatsoever that may arise from or in connection with my participation in any activities related to the ACTIVITY, whether caused by the negligence or carelessness of the UNIVERSITY or otherwise.

It is my express intent that this Acknowledgement of Risk and Waiver of Liability shall bind my spouse, the members of my family and my estate, heirs, administrators, personal representatives and assigns. I further agree to save and hold harmless, indemnify and defend the UNIVERSITY from any claim by the aforementioned parties arising out of my participation in the ACTIVITY.

COMPLETE BOTH SIDES OF THIS FORM

ORM-REV. 8.22.12

I recognize and acknowledge that the UNIVERSITY makes no guarantees, warranties, representations, or other promises relative to the ACTIVITY, and assumes no liability or responsibility for injury or property damage that I may sustain as a result of participation in the ACTIVITY.

I further understand and agree that this is a release of liability and indemnity agreement, and it is intended to be **as broad and inclusive as permitted by law**. If any portion hereof is held invalid, it is agreed that the balance shall, notwithstanding, continue in full force and legal effect.

MEDICAL INFORMATION

I hereby certify that, with or without accommodation,* I have no health-related reasons or problems that preclude or restrict my participation in the ACTIVITY. I hereby consent to and understand myself to be solely responsible for the cost of first aid, emergency medical care, and, if necessary, admission to an accredited hospital for executing such care or treatment for injuries that I may sustain while participating in any activity associated with the ACTIVITY.

NAME OF CONTACT PERSON IN CASE OF EMERGENCY:

Name:_____ Complete Address:_____
(street)

Phone: (home)_____ (work)_____ _____
(city) (state) (zip)

*If you have a disability requiring an accommodation please contact (INSERT Dept contact name and phone number) _____
_____at least one week (7 days) before the date of the ACTIVITY.

SIGNATURES

In signing this Acknowledgement of Risk and Waiver of Liability I hereby acknowledge and represent: (a) that I have read this document in its entirety, understand it, and sign it voluntarily; and (b) that this Acknowledgement of Risk and Waiver of Liability is the entire agreement between the parties hereto and its terms are contractual and not a mere recital.

DATE_____ SIGNATURE_____

Participants who are not 18 years of age or older must sign above and also must obtain the signature of a parent or legal guardian below:

I certify that I am the parent or legal guardian of the above-named participant in the ACTIVITY. On behalf of myself and my spouse, partner, co-guardian or any other person who claims the participant as a dependent, I have read the above agreement, I understand the contents of this Acknowledgement of Risk and Waiver of Liability, assent to its terms and conditions, and sign this Acknowledgement of Risk and Waiver of Liability of my own free act. I acknowledge that my dependent and I have agreed to the terms and conditions of my dependent's participation in the ACTIVITY, and I hereby give my consent to participation by my dependent in the ACTIVITY, and to receive medical treatment determined to be necessary. I further agree to hold harmless, indemnify and defend the UNIVERSITY from and against all claims, demands or suits that my dependent has or may have.

DATE_____ SIGNATURE_____

COMPLETE BOTH SIDES OF THIS FORM

ORM-REV. 8.22.12

How will you prepare your community for wildfire as a CFA volunteer?

Think about your skills and talents and check the box that applies most to you for each statement. Count the number of checkmarks and multiply it by the number below each column. Add up all the totals to get your suitability score for that particular activity. At the end, enter and compare your suitability scores to get an idea of which volunteer activities might be more interesting to you.

Written outreach	**This is me**	**I have some skill**	**I am the opposite**
I am good at listening to and understanding others.			
I am good at delivering constructive suggestions.			
I am good at creative writing.			
I am good at motivating others.			
I am a good writer.			
Total number of checkmarks	x2	x1	x0
Totals:	_____ +	_____ +	0 = _____/10

Creative outreach	**This is me**	**I have some skill**	**I am the opposite**
I am good at listening to and understanding others.			
I am good at delivering constructive suggestions.			
I am artistically creative.			
I am good at motivating others.			
I have artistic talents.			
I have talents in graphic design.			
Total number of checkmarks	x2	x1	x0
Totals:	_____ +	_____ +	0 = _____/12

One-on-one education	**This is me**	**I have some skill**	**I am the opposite**
I work well with people.			
I get along well with most of my neighbors.			
I am diplomatic.			
I am good at listening to and understanding others.			
I am good at delivering constructive suggestions.			
I enjoy extending hospitality to people at my property.			
I am good at making new friends.			
I am good at motivating others.			
Total number of checkmarks	x2	x1	x0
Totals:	_____ +	_____ +	0 = _____/16

Public education	This is me	I have some skill	I am the opposite
I work well with people.			
I get along well with most of my neighbors.			
I am good at listening to and understanding others.			
I am diplomatic.			
I am good at delivering constructive suggestions.			
I enjoy extending hospitality to people at my property.			
I am good at making new friends.			
I am good at motivating others.			
I enjoy public speaking.			
Total number of checkmarks	x2	x1	x0
Totals:	_____ +	_____ +	0 = _____/18

Emergency response	This is me	I have some skill	I am the opposite
I work well with people.			
I work well under pressure.			
I am flexible and able to complete tasks as needed.			
I work well during emergency situations.			
I have a good sense of geography.			
I am good at organizing information in a hurry.			
Total number of checkmarks	x2	x1	x0
Totals:	_____ +	_____ +	0 = _____/12

Physical work	This is me	I have some skill	I am the opposite
I work well with people.			
I prefer working with my hands.			
I enjoy using tools.			
Total number of checkmarks	x2	x1	x0
Totals:	_____ +	_____ +	0 = _____/6

Leadership	This is me	I have some skill	I am the opposite
I am diplomatic.			
I am good at delivering constructive suggestions.			
I enjoy extending hospitality to people at my property.			
I am a creative decision maker.			
I am good at motivating others.			
I enjoy public speaking.			
Total number of checkmarks	x2	x1	x0
Totals:	_____ +	_____ +	0 = _____/12

Youth education	This is me	I have some skill	I am the opposite
I am artistically creative.			
I enjoy public speaking.			
I am friendly and approachable.			
I like to work with children.			
Total number of checkmarks	x2	x1	x0

Totals: _____ + _____ + 0 = ____/8

Suitability scores

Volunteer task	Recommended score	My score
Written outreach	6	____/10
Creative outreach	7	____/12
One-on-one education	9	____/16
Public education	10	____/18
Emergency response	7	____/12
Physical work	4	____/6
Leadership	7	____/12
Youth education	5	____/8

Module 2: Fire Science

Introduction

This module gives participants the basic fire science foundation for understanding the principles and topics in subsequent modules, such as home protection strategies, fuel reduction, home assessments, and living in a fire environment.

The information in this module will also help participants in preparing the wildfire preparedness plan for their property, which is a requisite for all participants in CFA training.

Finally, the concepts, terminology, and information about the science of fire will help participants communicate fire-related information more competently to others when doing outreach.

Room setup

The facilitator should secure a room large enough to comfortably accommodate the number of participants. Organize the room in a U-shape layout with long tables and chairs (See "Room setup," page 7). The room should have a large screen to display the presentation. Up front, there should be a large table (6 to 8 feet in length) that the instructor can use for in-class demonstrations and to display various props.

Total time needed

Classroom: 2 hours

Field: 3 hours

Equipment needed

Classroom

- Computer with PowerPoint
- Projector and screen
- Candle, glass jar, petroleum jelly, and lighter for demonstration #1 (fire triangle)
- Hair dryer, ice cubes, and radiant heater for demonstration #2 (modes of heat transfer)
- Grass, pine needles, and small to large branches for demonstration #3 (fuel sizes)
- Fuel kit for demonstration #4 (fire behavior with matchstick forest) – *To be performed outdoors due to smoke!*

Field

- Fire equipment (shovel, Pulaski, fire extinguisher) in vans if field tour is conducted during fire season

Background resources

- *Reducing Fire Risk on Your Forest Properties* (PNW 618) https://catalog.extension.oregonstate.edu/pnw618
- Local case study on examples of fire behavior and effects from a recent local wildfire
- Fire behavior computer models to demonstrate potential fire behavior in your local area. These may be found at local branches of state or federal forest management agencies. If possible, visit these sites to see where high, moderate, or low fire severity is expected.

Host prep

- Recruit instructor(s)
- Familiarize instructors and panelists with objectives, content, agenda, and structure of session
- Communicate with CFA participants to confirm location and time
- Reserve classroom
- Identify field tour location that illustrates examples of fire behavior and fuels, such as a recent burn site
  - ❑ The location should provide opportunities to make comparisons between fuel loads, slope, fuel type, and treated versus

untreated lands. If possible, discuss weather effects on fire intensity and spread.

- Confirm field tour host(s) and location prior to field tour
- Confirm transportation to field tour location
- Prep Demonstrations #1–3
- Confirm permission to conduct Demonstration #4 (Matchstick Forest) outdoors at class or field site
- Confirm projector and laptop for presentations
- Set up room
- Prepare refreshments (if applicable)

Class prerequisites

There is no prework for this module.

Learning objectives

Participants will:

- Recognize the common ignition sources in their state or region
- Analyze the components of the fire triangle and fire behavior triangle
- Interpret how fuel (and its arrangement), weather, and topography interact to affect fire behavior

Behavior objectives

Participants will:

- Describe to peers how fuel loading, fuel continuity, and the chemical makeup of fuel affect fire behavior
- Apply knowledge to other modules and topics, including home assessments
- Describe which factors can and cannot be mitigated when it comes to fire severity, intensity, and subsequent effects
- Continue work on their wildfire preparedness plan

Delivery methods

Presentation from instructors

- 3 in-class demonstrations
- 1 outdoor demonstration
- Discussion
- Field tour

Instructor guidance

This module is foundational to most of the modules in the CFA training. It is important that you be enthusiastic and make this module fun, and the demonstrations in this module will help achieve that. Be sure to practice them ahead of time so they all go smoothly in the classroom.

The field trip will be very important in bringing some real-world application to this module. Try to locate a recent wildfire where you can take participants to discuss all the concepts within this module, including the fire triangle and fire behavior triangle. In particular, examine the severity of the fire and what influence fuel, weather, or topography may have had on behavior.

Sample agenda

Location: Auditorium

9:00 a.m. Welcome, introductions, and logistics for the day

9:30 a.m. Presentation and demonstrations

10:30 a.m. Break

10:45 a.m. Presentation and remaining demonstrations

11:45 a.m. Lunch

1:00 p.m. Field tour begins

4:00 p.m. Field tour ends

Content outline

- Briefly define risk versus hazard (*these definitions will be repeated in subsequent modules throughout the curriculum*)
- Sources of fire ignitions and acres burned in Oregon
  - ❏ Lightning
  - ❏ Human
- Components of combustion – the fire triangle
  - ❏ Heat
  - ❏ Oxygen
  - ❏ Fuel
  - ❏ Demonstration #1: Fire Triangle (for setup instructions, see "Exercises," page 23)

- How wildfires behave – the fire behavior triangle
  - ❑ Weather
  - ❑ Topography
  - ❑ Fuels
  - ❑ Aspects of fire behavior
    - Fire spread and intensity: how fast and how hot
    - Fire severity: how hot and what effect it has on soils, vegetation, etc.
    - Fire brands, spotting, and fire whirls
    - Watchout! conditions
      - Wind greater than 20 mph
      - Temperature greater than 89 degrees
      - Humidity less than 20 percent
    - Local influences (vary by region)
      - East winds
      - Diurnal effects
      - Atmospheric stability or instability
      - Fog and marine air
- Modes of heat transfer
  - ❑ Convection
  - ❑ Conduction
  - ❑ Radiation
  - ❑ Demonstration #2: Modes of Heat Transfer (for setup instructions, see "Exercises," page 24)
- Fuel is the common denominator! (for the fire triangles)
  - ❑ Fuel particle size (small fuel and large fuel; or 1-hour, 10-hour, 100-hour, and 1000-hour)
    - How fuel particle size affects wetting and drying
    - Demonstration #3: Fuel Size Examples and Their Contribution to Fire Behavior (for setup instructions, see "Exercises," page 25)
  - ❑ Fuel loading (amount in tons/per acre)
  - ❑ Fuel arrangement and continuity
    - Vertical (ladder fuels)
    - Horizontal (continuity)
    - Fuel chemical makeup
      - Oils, terpenes, etc.
      - Fire-prone plants versus fire-resistant vegetation
    - Local influences
      - Variations of fuels in your region (e.g., low shrub component in northeast Oregon)
    - Homes as fuel and their combustibility (*mention this only briefly; more detail will be given in the Home Protection Strategies module*)
      - Roofs, decks, siding, and vegetation
      - Embers and their entry into homes
- Fire behavior principles demonstration
  - ❑ Demonstration #4: Matchstick Forest Fire Behavior Demonstration (for setup instructions, see "Exercises," page 26)
  - ❑ Discuss observations
- Additional instruction (optional)
  - ❑ Present a case study on fire and fire behavior which could include the following:
    - Modeling of fire progression and fire behavior for a given landscape
    - Example of a wildfire for each region showing the variation in fire spread, intensity, and effects
      - Squires Peak (Medford/Central Point area)
      - B & B (central Oregon east Cascades area)
      - Oak Knoll (Ashland)
      - Other examples from your region
    - This topic could also be covered on the field trip

Exercises

There are four demonstrations for this module. Demonstrations #1 through #3 can be performed inside, but demonstration #4 should be performed outside the classroom to avoid setting off smoke alarms. Below are setup directions and discussion points for each demonstration.

Demonstration #1 – Fire Triangle

This demonstration illustrates that if you take away one element of the fire triangle (oxygen, fuel, or

heat source), the fire will go out. This demonstration is conducted in front of the class on a table with a fire-proof surface. You will need a clear glass jar, a tea light candle, petroleum jelly, and a lighter or match. Place a little petroleum jelly on the rim of the jar to create a seal between the rim and the table top. Light the candle and place the jar over the candle. After a few moments, the candle will begin to dim and go out.

Ask participants the follow questions:

- Why did the candle go out? (Lack of oxygen).
- What else can we do to extinguish flames? (Deny the fire of fuel, such as creating a fire line in mineral soil; reduce or eliminate the heat source by using water; take away the oxygen by using a chemical fire extinguisher for chemical, fuel, or grease fires)

(Optional) Discuss the relationship between photosynthesis and combustion

- Present the chemical formula for photosynthesis:

Carbon Cycle – Photosynthesis

$CO_2 + H_2O + \text{energy} \rightarrow C_6H_{12}O_6 + O_2$

carbon dioxide; water; sun; glucose; oxygen

represents any organic matter in plants

Adapted from diagram by Charles Ophardt, Elmhurst College

- Present the chemical formula for combustion:

Carbon Cycle – Combustion, Metabolism

$CH_4 + O_2 \rightarrow CO_2 + H_2O + \text{energy}$

or $C_6H_{12}O_6$; oxygen; carbon dioxide; water; (heat)

represents any fossil fuel, food, organic matter

Adapted from diagram by Charles Ophardt, Elmhurst College

Explain that photosynthesis is the process of plants slowly taking energy (heat) from the sun and growing tissue. Carbon dioxide is stored in the tissue, and oxygen is released into the atmosphere. Combustion is the process of that tissue (plant matter) burning. Oxygen is consumed and carbon dioxide and heat are released into the atmosphere. Both processes are directly related, each one being the opposite of the other.

Demonstration #2 – Modes of Heat Transfer

The purpose of this demonstration is to illustrate convective, conduction, and radiant modes of heat transfer to fuel. This demonstration is conducted in front of the class. You will need a hair dryer, ice (of different sizes), and a radiant heater.

There are three modes of heat transfer:

1. Conduction
2. Convection
3. Radiation

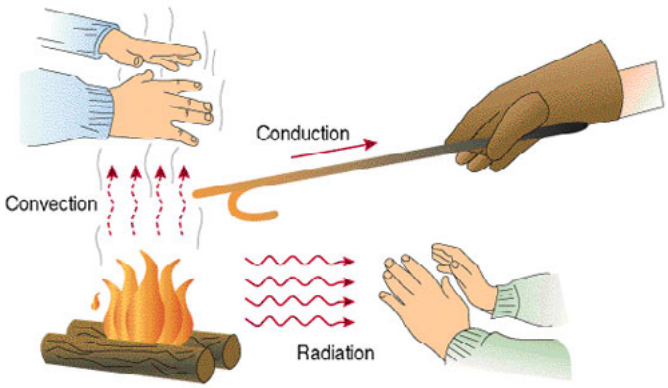


Illustration: Kmecfiunit/CC BY-SA 4.0

Convection

Use the hair dryer to illustrate heat transfer by convection. Turn the hair dryer on and vary the speed of the fan. Convection heating is the most efficient mode of heat transfer. The movement of warm air more effectively dries and heats the fuel ahead as the fire spreads.

Conduction

Conduction is the next mode of heat transfer. You will use ice cubes (or chunks) of different sizes to represent different-size fire brands that might land on fuel and ignite it. Describe that a fire brand is, essentially, a "nugget" of heat the same way an ice cube is a nugget of cold.

Take a small piece of ice and place it against your forearm. The ice cube conveys coldness to your skin via conduction. Likewise, when a fire brand makes

direct contact with a fuel particle, heat transfers from the fire brand to the fuel.

The bigger the ice cube, the longer and the more your skin is cooled as the ice melts. Thus, the more uncomfortable your skin feels. A very large chunk of ice against your skin could even cause damage, much like how a large fire brand can conduct enough heat to a fuel particle that it reaches the point of combustion. Of course, the fire brand's size (total amount of heat) and the fuel particle's size (e.g., needles versus large branches) and moisture content determine whether the fuel will eventually combust.

Radiation

Radiation is the least efficient mode of heat transfer. Radiant heating is caused by the transmission of electromagnetic waves from a heat source that are then absorbed by an object, generating heat; this can occur even through a vacuum. The amount of radiant energy absorbed is a function of the square of the distance between the heat source and the object.

Before the demonstration, place 100-hour fuels (1 to 3 inches in diameter) at different distances from a radiant (light) heat source for at least 15 to 20 minutes, giving them enough time to absorb the radiation and heat up. Later, using an infrared thermometer, measure the temperature of each one, noting the differences.

Demonstration #3 – Fuel Size Examples and Their Contribution to Fire Behavior

For this demonstration, you will need examples of 1-hour, 10-hour, 100-hour, and 1000-hour fuels (grass, pine needles, and small to large branches). Arrange the fuel examples on the front table so participants can see them; or, better yet, pass the fuel examples around so the participants can feel them and look at them more closely.

Pass out a copy of Table 8, page 37 from *Reducing Fire Risk on Your Forest Property Wildfire* (PNW 618): https://catalog.extension.oregonstate.edu/pnw618 and then discuss what we mean by 1-hour, 10-hour, 100-hour, and 1,000-hour fuels. The main concept to get across to participants is how a fuel particle's size and surface-to-volume ratio affect wetting and drying time and, consequently, its ability to ignite by convection, conduction, and radiation (see Figure 1).

Another way to illustrate this concept is to show how to properly construct a campfire (this could also be shown in a video from the web). A campfire is constructed with the following fuels in this order:

1. Tinder (1-hour fuels): up to ¼ inch in diameter, dry grass or needles or paper
2. Kindling (10-hour fuels): ¼ inch to 1 inch in diameter, small twigs; (100-hour fuels): 1 inch to 3 inches in diameter, larger branches
3. Fuel logs (1,000-hour): 3 inches to 8 inches in diameter or greater

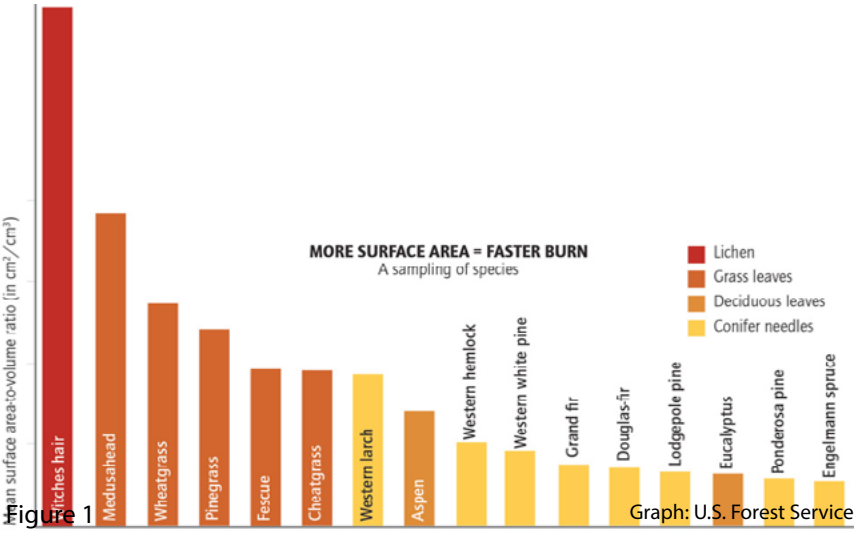


Figure 1 Graph: U.S. Forest Service

Photo: Jason/Troop 317 Wiki

With a strike of the match, the 1-hour fuels ignite, preheating and igniting the 10-hour fuels above, and so on. Layering the fuels in reverse order makes a campfire more difficult to ignite.

Demonstration #4 – Matchstick Forest Fire Behavior Demonstration

This demonstration is meant to illustrate and summarize the concepts presented in the Fire Behavior Triangle (fuel, weather, topography). Ahead of time, use the fire kit to create two or three different matchstick forests with different fuel loading and structure:

- Multi-strata forest with trees of different heights (e.g., matchsticks of different heights) with heavier surface fuels (cedar chips, paper shreds, or both)
- Open forest with low surface fuels (e.g., more widely spaced matchsticks with low levels of cedar chips, paper shreds, or both)
- Clumpy or patchy forest. This can be created by leaving openings with no matchsticks. In addition to openings, you can vary the density of the matchsticks to represent a more open forest versus a really dense forest.

Take the three matchstick forests outside the building to avoid setting off smoke alarms. With the participants, discuss the differences in the fuel conditions. Ask them how they think each one might burn? Ignite the matchstick forests one at time and observe if the fire behaves as the participants predicted. If not, why?

Photo: Kara Baylog, © Oregon State University

To add variation to the burning, use a small battery-operated fan to create wind and place one of the matchstick forests on an incline to create slope. Compare the fire behavior (crown versus surface fire, rate of spread) between the three forest types.

Once the matchstick forests have burned, use a squirt bottle filled with water to extinguish the flames.

Field tour

The length of the field trip is 3 hours, including travel time. The purpose of the field trip is to reinforce concepts on the fire and fire behavior triangles: potential ignition sources, fuel, weather, and topography. Look for field sites that illustrate the following:

- heavy, moderate, and light fuel levels
- different fuel types (grass, shrub, timber)
- fuel continuity and fuel structure (fuel ladders, dense versus light densities)
- activity fuels versus natural fuels
- variations in terrain and how that might affect fire behavior
- fire behavior from a recent wildfire showing variations in fire intensity or severity or both (*discuss factors that may have contributed to the intensity or severity and the fire effects observed*)

Alternative delivery methods

With enough preplanning by the instructor and prework by the participants, it is possible to deliver this module entirely in the field. However, the instructor may have to forego some of the in-class demonstrations.

Suggested homework

The information presented in this module will give participants necessary background knowledge to continue working on their wildfire preparedness plan at home.

Self-assessment questions

1. What comprises the fire triangle? (Fuel, heat, oxygen)
2. What comprises the fire behavior triangle? (Fuel, topography, weather)

3. How does slope influence fire behavior? (The flames tilt more towards the slope and the fuels ahead, more effectively preheating and combusting them. Thus, fire tends to move faster uphill than over a flat area.)
4. What is a fuel ladder? (Comprised of grass, shrubs or small trees, and medium-sized trees)
5. What is the one component we can manipulate to reduce fire intensity and how fast it moves? (Fuel)

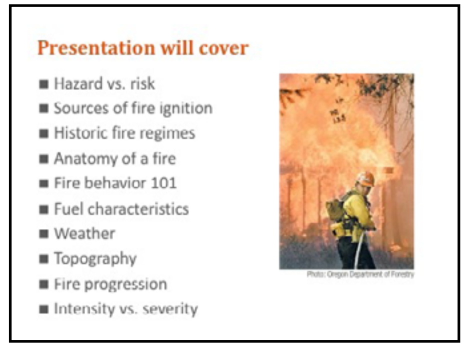
Fire Science Materials

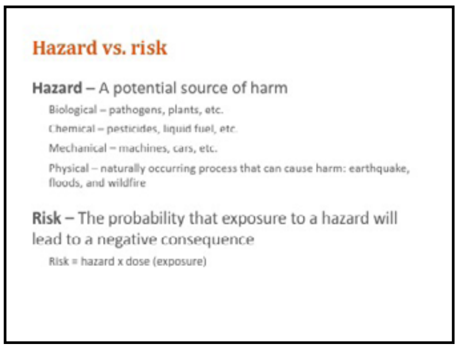
Photo: Carrie Berger, © Oregon State University

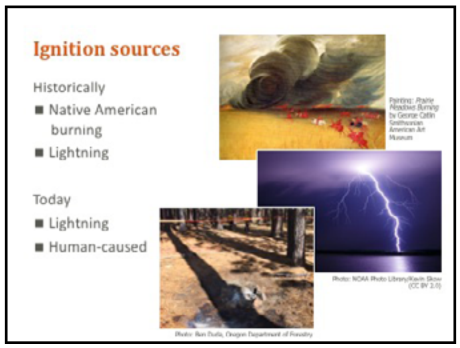
slide deck

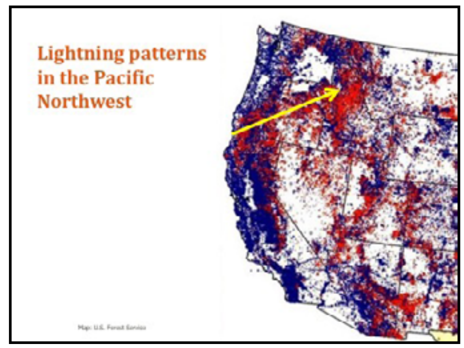

Citizen Fire Academy
Fire Science
Oregon State University
Oregon State University Extension Service

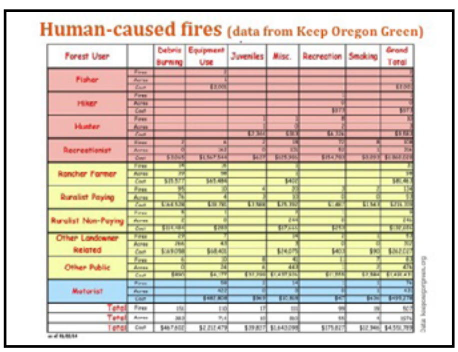

This module will provide some of the background you need for developing your Wildfire Preparedness Plan.

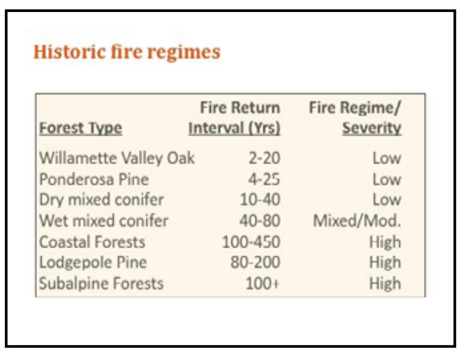

Presentation will cover
Hazard vs. risk
Sources of fire ignition
Historic fire regimes
Anatomy of a fire
Fire behavior 101
Fuel characteristics
Weather
Topography
Fire progression
Intensity vs. severity
Photo: Oregon Department of Forestry

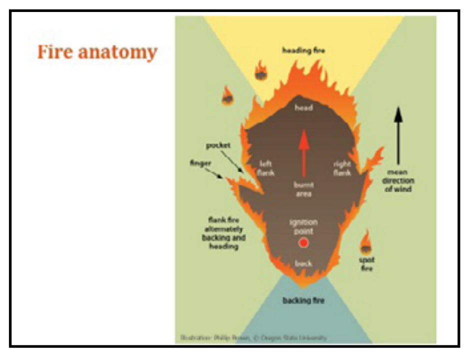

Hazard vs. risk
Hazard – A potential source of harm
Biological – pathogens, plants, etc.
Chemical – pesticides, liquid fuel, etc.
Mechanical – machines, cars, etc.
Physical – naturally occurring process that can cause harm: earthquake, floods, and wildfire
Risk – The probability that exposure to a hazard will lead to a negative consequence
Risk = hazard x dose (exposure)

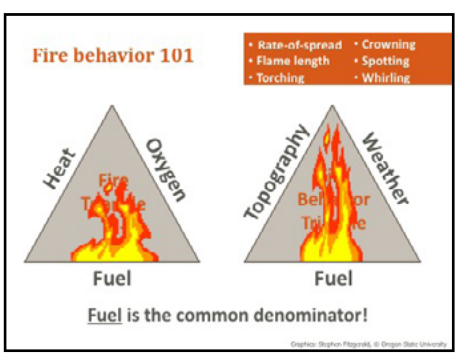

Ignition sources
Historically
Native American burning
Lightning
Today
Lightning
Human-caused

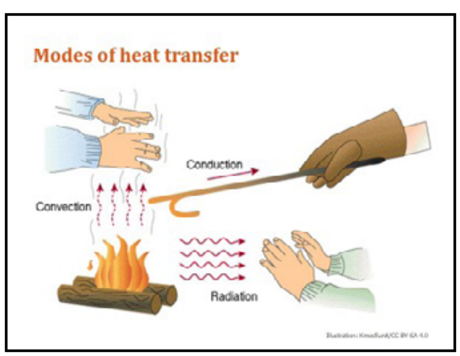

Lightning patterns in the Pacific Northwest

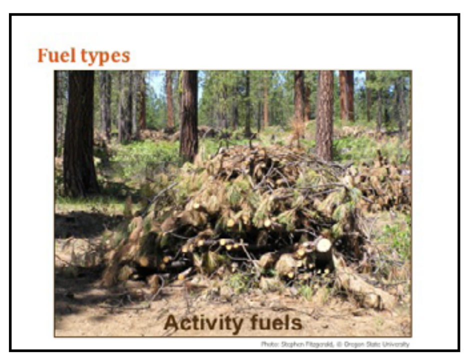

Human-caused fires (data from Keep Oregon Green)


Historic fire regimes
Forest Type | Fire Return Interval (Yrs) | Fire Regime/ Severity
Willamette Valley Oak | 2-20 | Low
Ponderosa Pine | 4-25 | Low
Dry mixed conifer | 10-40 | Low
Wet mixed conifer | 40-80 | Mixed/Mod.
Coastal Forests | 100-450 | High
Lodgepole Pine | 80-200 | High
Subalpine Forests | 100+ | High


Fire anatomy
heading fire
head
pocket
finger
left flank
right flank
burnt area
mean direction of wind
ignition point
back
spot fire
backing fire


Fire behavior 101
• Rate-of-spread
• Flame length
• Torching
• Crowning
• Spotting
• Whirling
Heat
Oxygen
Fire Triangle
Fuel
Topography
Weather
Behavior Triangle
Fuel
Fuel is the common denominator!


Modes of heat transfer
Conduction
Convection
Radiation


Fuel types
Activity fuels

Fuel characteristics

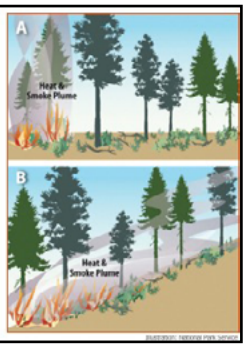
- Fuel moisture content:
  - % water content
  - energy required drive off water
- Fuel particle size:
  - diameter
  - surface area-to-volume ratio
- Fuel loading:
  - tons per acre
- Fuel arrangement & continuity:
  - vertical (ladder fuels)
  - horizontal (distribution of fuel)
- Fuel chemical makeup:
  - volatile oils, sap & pitch
  - fire prone vs. fire resistant plants

Homes as fuel

Topography

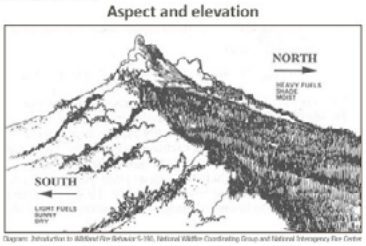
Slope steepness

- Flames are tilted toward the slope and preheats fuel.
- Fire literally "runs" uphill.



Topography

Aspect and elevation



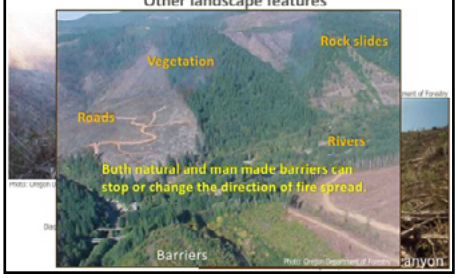
The direction the slope faces, exposure to the sun

Topography

Position of fire

Topography

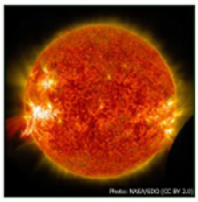
Other landscape features



Weather

Temperature

Preheats and dries fuels



Causes air movement (wind) and dries fuel

The sun heats the Earth's surface and surface fuels, which then heats the air.

Weather

Wind

Increases oxygen supply

Dries fuels

Cause spot fires

Influences direction of fire spread

Moves air heated by convection into more fuels

Dry east winds are particularly dangerous during August and September in Oregon

Weather

Precipitation

Duration generally has greater affect than volume

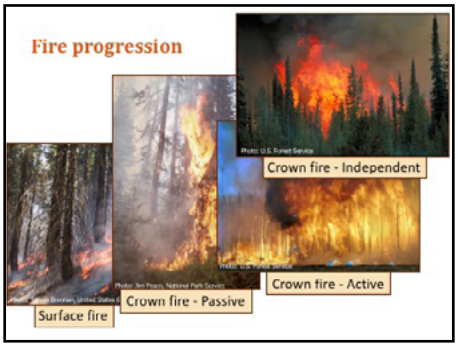
Pattern of yearly precipitation affects fuel drying

Weather

Relative humidity

- Affects diurnal wetting and drying of fuel
- Fuel particle size

Fire progression



Factors that affect a surface fire's transition to a crown fire

- Foliage moisture content
- Surface flame length sufficient to initiate torching of tree crowns
- Height to the base of the canopy

Factors that affect a surface fire's transition to a crown fire

- Foliage moisture content
- Surface flame length sufficient to initiate torching of tree crowns
- Height to the base of the canopy

Factors that affect crown fire behavior

Crown fire is dependent on:

- Rate-of-spread of the fire, which is influenced by weather and topography
- Crown density

Factors that affect crown fire behavior

Crown fire is dependent on:

- Rate-of-spread of the fire, which is influenced by weather and topography
- Crown density

Fuel arrangement and fire behavior

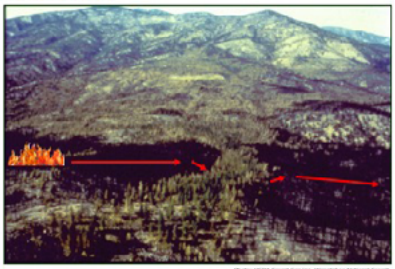
Treatments to moderate potential and severity of surface and crown fires

- Pruning
- Mechanical
- Thinning
- Pile and Burn / Chip
- Prescribed fire

Treatments to moderate potential and severity of surface and crown fires

- Pruning
- Mechanical
- Thinning
- Pile and burn / Chip
- Prescribed fire

An example

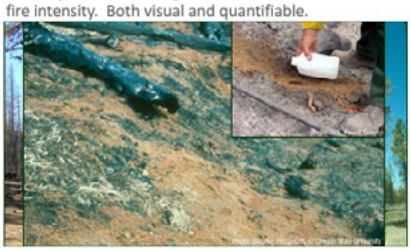


Fire intensity and fire severity

Intensity = The energy release (kW) per unit length of fireline. Flame length (L) relates to intensity

Fire intensity and fire severity

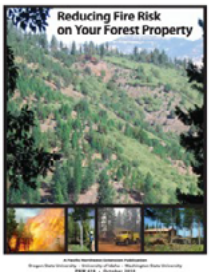
Severity = Effects on vegetation and soil as a result of fire intensity. Both visual and quantifiable.



Summary

- Fire triangle
- Fire behavior triangle
- Manipulating fuel
- It's all about physics of fire!

For more info:



https://catalog.extension.oregonstate.edu/pnw618

Module 3:
Living in a Fire Environment

Introduction

This module gives an overview of the human and community infrastructure for wildfire protection planning and response. Key topics include local fire protection infrastructure, fire suppression practices, emergency response, evacuation, laws and regulations, and community wildfire protection planning. This is critical information for CFA participants both as individual homeowners and landowners and also as volunteers who will work in outreach and education. Most of the content is similar across the state, but there may be variations in local regulations and community wildfire protection planning efforts.

Room setup

Typical schoolroom setup, or half-moon/cabaret style if small group exercises are used. Have table and chairs up front for panel discussions. (See "Room setup," page 7)

Total time needed

Classroom: 3.5 to 4 hours

Equipment needed

- Computer with PowerPoint
- Projector and screen
- Handouts
- Flip easels or wall space to post maps
- Pins or tape to affix maps

Background resources

- Scripted PowerPoint presentation. Available as a single presentation covering all the topics or can be broken into the following topical presentations:
  - ❏ Fire risk
  - ❏ Fire protection infrastructure
  - ❏ Fire suppression practices
  - ❏ Evacuation planning and preparation
  - ❏ Fire protection rules and regulations
  - ❏ Community wildfire protection planning
- The following maps and local resources are recommended. They will need to be obtained by the local CFA Facilitator. These can be provided as wall maps, handouts, digital files on the class Canvas site, or all three.
  - ❏ Land ownership map, showing federal, other public, and private lands, as well as city and county boundaries
  - ❏ Map of local fire districts (ideally showing point locations of dwellings)
  - ❏ Map showing locations of recent (e.g., in the last 5 or 10 years) fire incidents in the area
  - ❏ Map showing locations of historic large fires
  - ❏ Map showing zones of high fire hazard or local priorities for fuels reduction
- Links to local and regional wildfire information
  - ❏ National Wildfire Coordinating Group current incident information http://inciweb.nwcg.gov/
  - ❏ Oregon Department of Forestry wildfire blog about fires on department-protected lands http://wildfireoregondeptofforestry.blogspot.com/
  - ❏ Oregon Department of Forestry, Forestland-Urban Interface Fire Protection Act http://www.oregon.gov/ODF/Fire/Pages/UrbanInterface.aspx
- Pages 20 to 24 of *Before Wildfire Strikes: A Handbook for Homeowners and Communities in Southwest Oregon* (EM 9131) https://catalog.extension.oregonstate.edu/em9131 or a local

equivalent. The entire publication has relevant information for the CFA participant.

- "FIREGROUND: Wildland Firefighting" https://www.youtube.com/watch?v=8PIBcj1Pq2k
- Pages 30–31 of *Reducing Fire Risk on Your Properties* (PNW 618) https://catalog.extension.oregonstate.edu/pnw618
- Red Cross Wildfire Safety Checklist
- Local or county community wildfire protection plan, obtained by local CFA facilitator

Host prep

- Recruit instructor(s) and panelists
- Familiarize instructors and panelists with objectives, content, agenda, and structure of session
- Communicate with CFA participants to confirm location and time
- Make sufficient copies of all handouts
- Reserve classroom
- Confirm projector and laptop for the video
- Set up room
- Prepare refreshments (if applicable)
- Create or obtain relevant maps
- Identify field sites (if applicable)
- Organize field tour transportation (if applicable)
- Do a practice field tour with instructor(s)

Class prerequisites

There is no prework for this module.

Learning objectives

Participants will:

- Describe trends in fire risk regionally and locally
- Discuss wildfire suppression practices, including detection, initial attack, and how response to wildland and WUI fire differs
- Identify which fire agencies are responsible for various types of fire protection and how they coordinate
- Recall how to access current information about wildfire
- Explain basic aspects of the various local and state laws and rules pertaining to fire and fuels reduction and know where to get more information
- Review basic aspects of safe evacuation procedures and shelter-in-place
- Describe locally relevant community wildfire protection planning efforts (e.g., Community Wildfire Protection Plans (CWPPs), Firewise communities) and recall roles of the main "players" (agencies and organizations) in each community.

Behavior objectives

Participants will:

- Access current information about wildfires
- Develop an evacuation plan and emergency disaster kit
- Identify potential CFA volunteer opportunities related to what was taught in this module
- Share information with neighbors about evacuation planning
- Direct neighbors and members of the public to sources of information about wildfires and rules and regulations

Delivery methods

- Lecture and discussion
- Panel discussion
- Large group or small group exercises
- Field tour (optional)

Instructor guidance

This module covers a substantial amount of material and several different topics. Having panels of invited local experts followed by discussions will make the sessions more interactive and enjoyable for participants and will help prevent "death by PowerPoint," especially if most or all of the module is conducted in the classroom.

A scripted PowerPoint is available that covers the main points of each topic but is not an in-depth treatment. The PowerPoint can be used

for "mini-lectures" to introduce each topic or as prereading.

Suggested delivery methods for each topic are described below.

Fire risk (30 minutes)

Show the PowerPoint. Then refer to local maps showing:

- Locations of recent (e.g., in the last 5 or 10 years) fire incidents in the area
- Locations of historic large fires
- Zones of high fire hazard or local priorities for fuels reduction

These maps can be used to stimulate a discussion about local fire history and fire risk patterns. The last slide of the PowerPoint presentation lists several possible discussion questions.

Fire protection infrastructure (30 minutes)

Preclass assignment: Review map of fire districts in county. Participants determine which fire district they are in. Show the PowerPoint to introduce the topic. Then, discuss actual or hypothetical fires and provide other relevant information (e.g., if a structure is involved or not, if the land is private or public, whether or not it is inside the fire district, how the U.S. Fire Service or Bureau of Land Management fight fire USFS/BLM, etc.) and ask the group to identify which agency or agencies would be involved in suppression.

Fire suppression and emergency response (45 to 60 minutes)

Panel discussion. Invite two or more fire professionals to describe their experiences with local fires, ranging from the Wildland Urban Interface (WUI) to large wildland fires. Have them walk the group through a typical fire (hypothetical or actual), from detection and initial attack to subsequent emergency response procedures (10 to 15 minutes per panelist). One panelist covers a WUI fire, the other a large wildland fire. They should "tell the story" of the fire. Have panelists end by giving their contact information and any recommendations for volunteer activities. Open up for questions (15 minutes).

Alternative: Visit location of a fire in the field and have a local fire agency representative tell the story, similar to the above.

Evacuation planning (45 to 60 minutes)

Assign prereading: Red Cross Wildfire Safety Checklist. Panel discussion. Include local residents or fire professionals (ideally, at least one of each) who have been through an evacuation. Have them describe do's and don'ts, lessons learned (10 to 15 minutes per panelist). Open up for questions (15 to 30 minutes). Prompt participants and panelists to discuss evacuation procedures and shelter-in-place. Alternative: Incorporate this discussion into a field tour.

Laws and regulations (30 to 60 minutes)

Assign prereading on Oregon rules and laws pertaining to wildfire: pages 30–31 in *Reducing Fire Risk on Your Property* (PNW 618). Show the PowerPoint to introduce the topic. Instructor should review key rules and laws, including county and other locally applicable regulations.

Community wildfire protection planning (30 to 60 minutes)

Lecture and discussion. Provide overview of Cohesive Wildfire Strategy, fire-adapted communities, Community Wildfire Protection Plans, etc., including local organizations and efforts (15 to 30 minutes). Guest presenter or panel discussion. Invite one or more energetic, local community members to discuss their neighborhood- or community-level efforts to organize fuels reduction projects, phone trees, evacuation plans, Firewise communities, etc. This is intended to be inspirational in conveying what a non-agency community member can do. Discuss what CFA participants can do to develop their own Firewise communities. Alternative: This could also be covered by guest presenters on a field tour.

Note to instructor: There are a wide variety of agencies and organizations that may be involved in wildfire protection planning and other prefire activities such as promoting fuels reduction on private lands and organizing Firewise

neighborhoods. The specific roles of each agency and organization vary significantly across the state. For example, in some areas city fire departments or rural fire protection districts are directly involved in prefire activities while in other areas such activities are not considered part of departmental mandates. The instructor should initiate a discussion about the main players and their roles in the geographic area covered by the CFA class.

Optional topics (time permitting):

Land use planning: The facilitator may consider discussing the implications of land use planning for WUI fire issues.

Types of WUI: The facilitator may consider reviewing the various types of WUI environments (intermix, interface, occluded, rural) and their implications for fire behavior and response.

Sample agenda

Location: Auditorium

11:00 a.m. Welcome; review agenda and objectives for day; introductions

11:15 a.m. Fire risk discussion

12:00 p.m. Lunch

12:30 p.m. Fire protection infrastructure lecture and discussion

1:00 p.m. Fire suppression and emergency response panel discussion

1:45 p.m. Break

2:00 p.m. Evacuation planning panel discussion

2:45 p.m. Laws and regulations review lecture and discussion

3:30 p.m. Break

3:45 p.m. Community wildfire protection planning discussion

4:30 p.m. Debrief day; homework; prework for next session

5:15 p.m. Adjourn

Content outline

- Fire risk
  - ❏ Describe the trends in number of fires, acres burned, and fire severity in the western United States and Oregon, or your state and region. This reinforces content touched on briefly in the fire science and fuels reduction modules.
- Local fire protection infrastructure
  - ❏ Explain the forest and urban fire protection complex, including who is responsible for what (city, rural fire district, state fire managers such as ODF, and federal fire managers such as the USFS and BLM), zones of overlap, wildland versus structure protection, and how agencies coordinate
- Fire suppression practices
  - ❏ Describe the typical process of response to a wildfire, including detection, initial attack, and emergency response procedures in the order they typically occur
  - ❏ Discuss difference between suppression and response in a wildland situation versus a WUI fire
  - ❏ Discuss how to access current wildfire information, including regional and locally relevant sources
- Evacuation planning and preparation at family and neighborhood levels
  - ❏ Principles and practices of safe evacuation
  - ❏ Ready, Set, Go
  - ❏ Shelter-in-place
  - ❏ Preparing evacuation and disaster kits
  - ❏ Neighborhood planning and phone trees
- Important laws and regulations
  - ❏ Fire protection laws, fire season, and regulated closure
  - ❏ County land use planning requirements (in some counties)
  - ❏ SB 360 requirements in Oregon or similar state-mandated landowner responsibilities (in some counties)
  - ❏ Forest Practices Act—notification and permits
  - ❏ Where to go for more information
- Community wildfire protection planning infrastructure

- ❏ Describe the Cohesive Wildfire Strategy, fire-adapted communities, Community Wildfire Protection Plans (CWPPs), and Firewise communities
- ❏ Discuss locally relevant community wildfire protection planning efforts (e.g., Project Wildfire in Deschutes County, Oregon)
  - Discuss roles of the main stakeholders (agencies and organizations) in each community
- ❏ Give examples of neighborhood-level efforts to coordinate fuels reduction and other aspects of wildfire response

■ Volunteer opportunities

- ❏ Discuss possible volunteer opportunities related to what was taught in the module. Examples: facilitate neighborhood meeting, create neighborhood phone tree, assist neighbors with evacuation planning.

Exercises

Indoor exercises may consist of group interaction, such as having participants identify which agencies would be involved in fire suppression in their area, and prompting participants to consider whether they would shelter in place or evacuate in the event of a fire, or a similar exercise. There are no outdoor exercises.

Alternative delivery methods

This module could be conducted entirely in the classroom or could incorporate a field session. The field session could cover the fire suppression and emergency response, evacuation, and protection planning topics. Some examples of field sessions:

- ■ Visit one or more sites in a neighborhood or other area involved in a recent WUI fire. Have local fire department personnel or other agency staff tell the story of the fire, including detection, initial attack, and suppression efforts. If possible, invite a local homeowner to talk about his or her experience, including evacuation, if that occurred. Have fire personnel talk about lessons learned, if any.
- ■ Visit a wildland fire site. Discuss suppression efforts, fire behavior, emergency response, evacuation, and so forth.
- ■ Visit a Firewise community or neighborhood where residents have worked together to prepare for fire. Invite an energetic community member to discuss neighborhood meetings, phone trees, evacuation plans, access, coordinated fuels treatments if any, etc. Have community member discuss challenges and rewards of developing a Firewise community. Offer contact information for those interested in starting their own.

Another approach would be to combine the field activities described above with a longer field tour that also covers fire behavior, fuels reduction, home protection strategies, etc.

In the hybrid approach, participants should review the narrated PowerPoint and complete the recommended prereadings and viewings listed under "Background resources" on page 32. The CFA facilitator will need to acquire the local maps, Community Wildfire Protection Plan, and any other local information recommended in this lesson plan and upload it to Canvas. The questions below can be used for participant self-assessment as well as to facilitate discussion among online participants.

Suggested homework

Complete relevant sections of title page and evacuation plan in wildfire preparedness plan.

Self-assessment questions

Suggested discussion questions for each subtopic are listed below. Not all of the questions need to be posed; these are just examples.

Fire risk

Note: To respond to the following questions, participants should refer to maps showing the locations of recent (e.g., in the last 5 or 10 years) fire incidents in the area, locations of historic large fires, zones of high fire hazard or local priorities for fuels reduction, and local land ownership and WUI boundaries.

- ■ What areas tend to have the highest number of fires? Why? (Hint: Consider proximity to human activities)
- ■ What areas have the greatest level of fire hazard? Why? (Hint: Consider fuels, topography, and weather patterns)

- Is there an official WUI boundary? How is it defined?
- What values are at risk? Consider homes, property, infrastructure, timber, watersheds, habitat, etc. How do these values coincide with fire risk and hazard?
- What are ownership patterns (public versus private, industrial versus nonindustrial, developed versus undeveloped)? How do these affect the situation?
- Based on the answers to these questions, what areas are the highest priority for protection or treatment?

Fire protection infrastructure

- Examine the fire district map. What fire district are you in? Who would typically respond to a structure and a wildland fire in your area? Are there homes outside of fire district boundaries? What should these owners do to protect themselves?

Fire suppression

- What are the biggest differences between fighting a wildfire in the WUI and one in a more remote area without housing?

Evacuation planning and preparation

- Where do you go online to learn about current wildfires and smoke?
- Have you ever had to evacuate from a wildfire?
- What factors will you consider when deciding whether you will shelter in place or evacuate?
- What is in your emergency preparedness kit?

Rules and regulations

- What is SB360? How does it help or hinder your community?
- If a landowner with a few acres wants to do some fuels reduction, including thinning, piling, and burning, what are some of the rules they need to consider?
- How do you feel Oregon's land-use planning laws have prevented or increased human and wildfire interaction?

Community wildfire protection planning

- What does a community wildfire protection plan do? Does your community or county one?
- What are some of the ways community members or volunteers can help neighbors better prepare for wildfire? Do you see a role for yourself in working with neighbors in your community, subdivision, or homeowner's association? What are some of the challenges?

General questions

- What does "living in a fire environment" mean to you?
- How would you explain the difference between risk and hazard to a friend?

Living in a Fire Environment Materials

Photo: Dan Thorpe, Oregon Department of Forestry

slide deck

Citizen Fire Academy

Living in a Fire Environment

Oregon State University

Oregon State University Extension Service

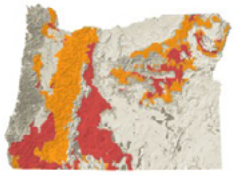
Fire Risk Overview

Citizen Fire Academy: **Living in a Fire Environment**

Fire is natural to Oregon's environment…

Forest Type	Fire Return Interval (Yrs)	Fire Regime/ Severity
Willamette Valley Oak	2-20	Low
Ponderosa Pine	4-25	Low
Dry mixed conifer	10-40	Low
Wet mixed conifer	40-80	Mixed/Mod.
Coastal forests	100-450	High
Lodgepole Pine	80-200	High
Subalpine forests	100+	High

But the risk of high-severity fire is increasing



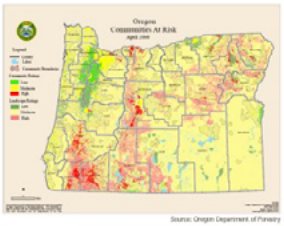
TODAY 40% OF OREGON'S FORESTLAND HAS BEEN DESIGNATED AS CLASS 3 OR HIGH-RISK FOR CATASTROPHIC FIRE.

CLASS 2

CLASS 3

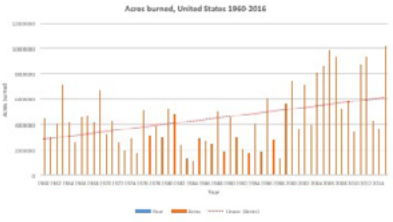
Source: Oregon Forest Resources Institute

High risk communities are concentrated in southwest, central, and eastern Oregon—but few communities are risk free



Source: Oregon Department of Forestry

Nationally, the acreage burned every year is going up…



… and fire intensity and severity are increasing

Valley Fire
California, 2015

- Measured and documented burning at 65 acres per minute for 5 hours.
- That equals 1 football field per second.

Fuels have increased in the last century

- Grazing
- Successful fire suppression following 1910
- Selective logging of large fire-resistant trees

And many homes have been built in wildland areas

- The WUI: Where structures and flammable vegetation merge in a wildfire-prone environment

There are many values at risk

- Homes and lives
- Watersheds
- Threatened and endangered species
- Timber and other resources
- Wilderness and special places

What is the situation in your area?

Look at a regional, county-level, or local wildfire risk map.

- What areas tend to have the highest number of fires and why? (Hint: consider proximity to human activities)
- What areas have the greatest level of fire hazard, and why? (Hint: Consider fuels, topography, and weather patterns).
- Is there an official WUI boundary? How is it defined?
- What values are at risk? Consider homes, property, infrastructure, timber, watersheds, habitat, etc. How do these values coincide with fire risk and hazard?
- What are ownership patterns (public versus private, nonindustrial vs. industrial, developed vs. undeveloped)? How do these affect the situation?
- Given the above, what areas have the greatest need for protection and/or treatment?

Fire Protection Infrastructure

Citizen Fire Academy: **Living in a Fire Environment**

Agencies have different roles in wildland and structural fire protection

- **U.S. Forest Service:** Provides fire protection on national forest lands. Does not provide structural fire protection.
- **Bureau of Land Management** (BLM): Contracts with Oregon Department of Forestry for fire suppression on its lands west of Cascades. Provides own fire protection on lands east of Cascades. Does not provide structural protection.
- **Oregon Department of Forestry** (ODF): Provides wildland fire protection on 16 million acres (half of state), including BLM (western OR) and private forestland (nonindustrial and industrial). Does not provide structural protection.
- **Rural fire protection districts** (RFPDs): Many throughout the state. Provide structural and wildland fire protection in rural and suburban areas.
- **Urban fire departments**: Provide structural fire protection. May assist with wildland fire suppression.

ODF does not provide structural fire protection but works with structural fire protection departments

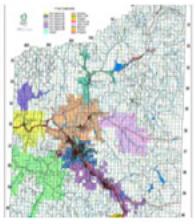
Photo: Stephen Fitzgerald, © Oregon State University

Get to know your neighbors…

Source: Southern Oregon Forest Restoration Collaborative

Discover your fire district

- Examine the fire district map. What fire district are you in?
- Who would typically respond to a structure and a wildland fire in your area?
- Are there homes outside of fire district boundaries?
- What should these owners do to protect themselves?



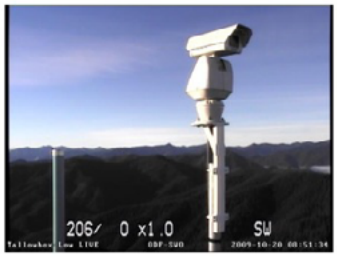
Source: Jackson County

Fire Suppression Practices

Photo: John O'Connor

Citizen Fire Academy: **Living in a Fire Environment**

Detection



Initial attack

Photo: John O'Connor

Firebreaks

Photo: Stephen Fitzgerald, © Oregon State University

Fire suppression tactics

Photo: Stephen Fitzgerald, © Oregon State University

Aerial operations

Photo: John O'Connor

Backburning

Photo: Max Bennett

Mop up

Photo: John O'Connor

Fire camp

Fire suppression priorities

- Personal safety
- Property
- Resources

Wildland use fire

Confine and contain strategy (a.k.a. "box and burn")

- https://vimeo.com/98755506

Evolving fire management strategies?

- Aggressive suppression of fires in wildland-urban interface and other vulnerable locations
- Confine and contain, wildland fire use in more remote settings

Question to consider

- What are the biggest differences between fighting a wildfire in the WUI versus one in a more remote area without housing?
- What do you think about wildland fire use? Should fire agencies continue a policy of aggressive suppression of all fires, or allow some fires to burn under prescribed conditions?

Evacuation Planning & Prep

Citizen Fire Academy: **Living in a Fire Environment**

Your wildfire evacuation plan

- Emergency contacts
- Where you will go or meet and how to get there
- What to bring
- Who to tell
- Pets/livestock
- Special needs
- Practice/drill

Supplies to take with you

- Water
- Food
- Extra clothing
- Flashlight
- First aid kit
- Medications
- Battery-powered radio
- Personal hygiene items
- Copies of important documents
- Multi-purpose tool
- Cell phone with chargers
- Family and emergency contact info
- Extra cash
- Map
- Emergency blanket
- Create a disaster kit

What should I do if there are reports of fires in the area?

- Be ready to leave
- Monitor local media
- Citizen Alert/social media
- Prep your car
- Prep pets
- Prepare the inside and outside of your home

Safe evacuation

- Follow all evacuation instructions
- Consider early evacuation
- Wear appropriate clothing
- Drive slowly with your headlights on
- Follow predesignated route unless directed otherwise

What if I can't leave?

- Stay inside your home
- Call 911
- Turn on all exterior lights
- Fill tubs and sinks with water; place wet rags under doors
- Stay away from windows, move to interior room
- Don't leave until fire has passed

Shelter-in-place?

- Homeowner stays in house during fire
- Has been used in Australia and some areas in U.S.
- Very high standards for home materials and design, defensible space; best with community approach

Coping with smoke

- Poses risks to vulnerable populations
- Familiarize yourself with the air quality index, and monitor the AQI at:

http://www.deq.state.or.us/aqi/index.aspx

Minimizing smoke exposure

- Stay inside. Close doors and windows; use recirculate mode on AC
- Avoid open flames and vacuuming
- Do not rely on common dust masks for protection; use "N95" mask

Where to get fire information

- Large wildfire information: http://inciweb.nwcg.gov
- Smoke information/air quality: http://oregonsmoke.blogspot.com/
- Local/regional ODF information

Questions to consider

- Where do you go online to learn about current wildfires and smoke?
- Have you ever had to evacuate from a wildfire?
- What factors will you consider when deciding whether you will shelter in place or evacuate?
- What is in your emergency preparedness kit?

Rules and Regulations

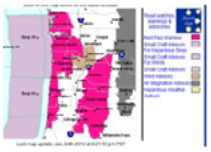
Citizen Fire Academy: **Living in a Fire Environment**

Fire season

- ODF determines based on fuel moisture and weather
- Late spring/early summer through early to mid-fall
- Fire danger rating
- Public regulated use closures on private and state lands
- Regulated commercial activities

Red flag warning

- When weather and fuel conditions could result in rapid fire growth
- Reminder to the public to be careful
- Usually associated with
  - Very low humidity
  - Warm temperatures
  - Strong or erratic winds
  - Dry fuels



Map: National Weather Service

Regulated public activities during fire season

- Open burning
- Mowing and chainsaw use
- Camp fires
- Off-road vehicle use
- Smoking

Photo: John O'Connor

Regulated commercial activities

- Logging and slash burning
- Forestry operations require notification to ODF and a permit
- Chainsaw use and on-site fire suppression equipment

Industrial fire precaution levels

- As fire danger increases, hours of operation and types of activities are restricted.

Landowner liability

- Landowners may be held liable for fire suppression costs if rules not followed
- Submit notification of operations
- "Every reasonable effort" standard
- Obtain adequate insurance

Oregon Forestland-Urban Interface Fire Protection Act

- A.K.A. Senate Bill 360
- Requires owners in designated areas to reduce excess vegetation around dwellings and along driveways
- Self-certification
- Liability
- Fully implemented in some Oregon counties

County and municipal regulations

- Counties may have standards for new home construction
  - Fuelbreaks
  - Roofing
  - Emergency vehicle access
- Municipal regulations
  - Woody material must be hauled away or chipped

Open burning by public

- Generally tightly regulated, especially near urban areas
- Specific rules vary by jurisdiction
- May require burn permit
- Localities may have specific burn seasons and/or permit burning only under certain conditions
- Escaped debris burns are a major source of wildfire!

Slash and debris burning in forest operations

- Permit to use fire is required; on same form as notification of operations
- File smoke management and burn plans
- Burning allowed only under prescribed conditions
- Prescribed underburning complex and risky

Questions to consider

- What is SB360? How does it help or hinder your community?
- Does your county have fire-related rules for siting or home construction?
- How is open burning regulated in your county or fire district?
- If a landowner with a few acres wants to do some fuels reduction—including thinning, piling, and burning—what are some of the rules they need to consider?
- How do you feel Oregon's land-use planning laws have prevented or increased human-wildfire interaction?

Wildfire Protection Planning

Citizen Fire Academy: **Living in a Fire Environment**

National Cohesive Wildfire Strategy

- Enacted by Congress 2009
- Will influence and direct how federal agencies interact and assist local entities (funding)
- Once finalized, it will be implemented across the country
- Creates a 5-year review cycle to update Congress
- The vision: *"Safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire."*
- Primary focus areas
  - Restoring and maintaining resilient landscapes
  - **Fire-Adapted Communities (FAC)**
  - Responding to Wildfires

What a Fire-Adapted Community looks like

Firewise

- Recognition program for neighborhoods and communities
- Steps:
  - Obtain a wildfire risk assessment
  - Form a board or committee, and create an action plan
  - Conduct a "Firewise Day"
  - Invest at least $2/person in Firewise activities
  - Submit application
- Website (lots of great info!)
  www.firewise.org

Community Wildfire Protection Plans (CWPPs)

A community-based, collaborative plan developed by local stakeholders that identifies and prioritizes areas for hazardous fuel reduction treatments to protect communities and infrastructure from wildfire.

Key players in wildfire protection planning

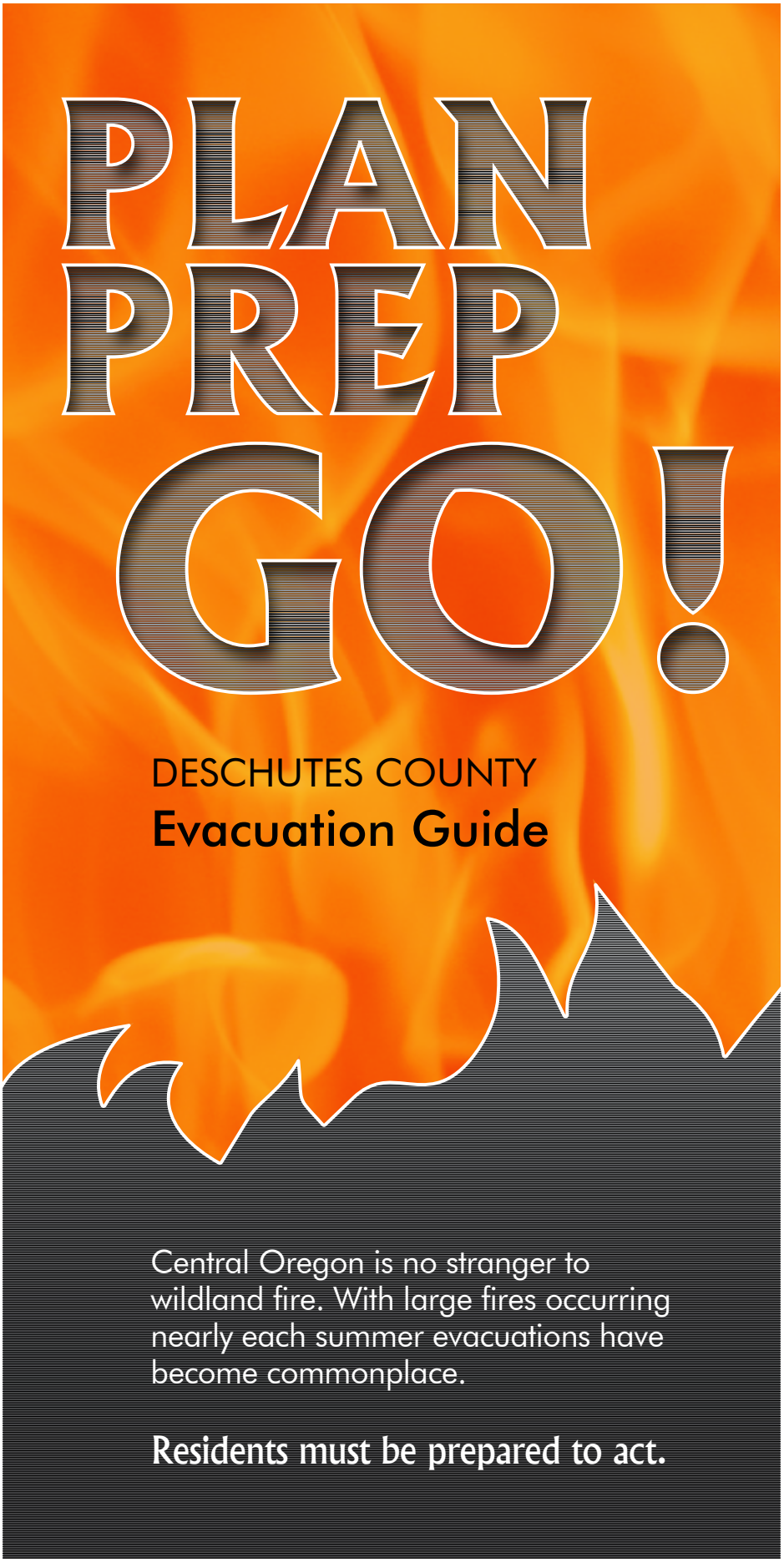
- Oregon Department of Forestry (ODF)
- Federal agencies (U.S. Forest Service and BLM)
- Other state and federal agencies
- County government
- Rural fire protection districts or other fire departments
- Non-government organizations

CFA volunteers can…

- Work with informally with neighbors to implement Firewise concepts
- Seek Firewise community recognition for their neighborhood
- Work in or with community organizations to promote actions leading to fire-adapted communities
- Take part in community wildfire protection planning

Questions to consider

- What does "Living in a Fire Environment" mean to you?
- What does a CWPP do? Does your community or county have a CWPP?
- Who are the main players in wildfire protection planning and other pre-fire activities (such as fuels reduction) in your community?
- What are some of the ways community members or volunteers can help neighbors better prepare for wildfire? Do you see a role for yourself in working with neighbors in your community, subdivision, or homeowner's association? What are some of the challenges?


PLAN
PREP
GO!
DESCHUTES COUNTY
Evacuation Guide
Central Oregon is no stranger to wildland fire. With large fires occurring nearly each summer evacuations have become commonplace.
Residents must be prepared to act.

Planning is key to surviving wildfire.

Start today by making sure you have the following plan in place:

PLAN

- Create at least 30 feet of defensible space around your home. (Learn more at **FIREFREE**.org)
- Make a list of your **5P's**. Keep it handy and practice gathering them. (People, Pets, Pills, Photos, important Papers)
- Prepare a 72-Hour kit:
  - Flashlight with plenty of extra batteries
  - First aid kit, prescription medications, eyeglasses, all essential equipment and devices for infants/elderly residents
  - Water (at least one gallon per person), and food that does not require refrigeration or cooking
  - Sleeping bag and clothing for each family member
  - Important documents such as proof of residence, insurance policies, birth certificates, prescriptions, wills, and deeds
  - This guide and your **5P's** (listed above)
- Educate yourself and your family about wildfire and evacuation procedures.
- Identify and learn alternate ways out of your neighborhood.
- Know the evacuation plans for your family members in school, assisted living and childcare facilities.
- Designate an out-of-area contact through whom family members can relay information. Make sure your whole family has that person's phone number.
- Plan how you will transport your pets.
- Keep the car fuel tank at least half full during wildfire season.

GO EARLY During an evacuation, roads become congested with vehicles, dust and smoke, making evacuation a slow process. Long before evacuation seems likely, PREPARE and GO!

PREP

ESSENTIALS:

- Take a deep breath and remember your plan. Life safety always takes priority over property.
- Face your car toward the street and close all windows. Keep the keys handy.
- Load your **5P's** and 72-Hour Kit into the car (page 1).
- Wear clothes to shield you from heat, embers and flames: sturdy shoes, long-sleeved shirt and pants (wool or cotton), hat, handkerchief, and light colored goggles.
- As you leave, post a visible form of notification that identifies that you have evacuated. Write EVACUATED on a pillow case and hang it at the end of your driveway.

ONLY IF THERE'S TIME - PREPARE YOUR HOME:

- Close all windows and doors (inside and outside).
- Close window blinds.
- Remove curtains from windows.
- Leave exterior and interior lights on.
- Remove combustibles (patio furniture, firewood, etc.) within 30 feet of your home.
- Remove vegetation that touches any part of the home where combustible building materials are used (wood siding, shake roof, wood decking, wood fence, etc).
- Place metal (not wooden) ladder against side of house.
- Shut off natural gas and propane.

DON'T WAIT If you feel threatened, GO! In some cases, there is no time for formal evacuation notification due to quickly changing conditions and you may need to make this decision yourself.

GO!

- Tune into a local radio station and listen for instructions.
- Obey orders of law enforcement and fire department officials.
- Follow the emergency instructions regarding evacuation routes. Your normal route may not be the safest.
- Drive with your headlights on for visibility and safety.
- Drive calmly, obey the rules of the road and pay special attention to fire trucks.
- Do not block access to roadways for emergency vehicles or other evacuees. Do not abandon vehicles on the roadway. Do not stop to let pets have a break.

- If you are caught by fire while evacuating, see next page ≫

AFTER EVACUATION

- Check in at an emergency shelter. Whether you stay there or not, your checking in will help others know that you are safe.
- Take pets to a Pet Evacuation Center.
- Do not attempt to re-enter the fire area until it is declared safe by Law Enforcement.

9-1-1 IS FOR EMERGENCIES ONLY

- For road information: Dial 5-1-1 or ask Law Enforcement Officers or Firefighters in the area.
- For general information: Stay tuned to local news radio and television stations.
- If you're unsure whether or not to evacuate: Be safe, not sorry, EVACUATE.

EMERGENCY
WILDFIRE SCENARIOS

If you are caught by fire while evacuating DO NOT ATTEMPT TO OUTRUN IT. You are safer and more likely to survive by doing the following:

CAUGHT INSIDE AN AUTOMOBILE

- Move your vehicle to bare ground or areas where vegetation is sparse. Face the wind and close all doors, vents and windows.
- Turn engine off, leave lights on.
- Lie on the floor and cover yourself with a jacket or blanket. The fuel tank of the car will normally not explode.
- Stay calm and remain in your vehicle until after the flame front passes or until you are forced out of your vehicle by toxic fumes.
- If you are forced out of your vehicle, cover with a wool blanket and lie flat under the vehicle.

CAUGHT ON FOOT, ALONG ROAD

- Seek shelter: under bridges, in ditches, in rivers or lakes, on burned over areas, and on green grass flats.
- Lie face down along the road cut or the ditch on the uphill side (less vegetation and less convective heat).
- Cover yourself with anything that will shield you from the heat of the fire.

CAUGHT ON FOOT, IN THE OPEN

- Seek shelter where vegetation is sparse and find a depression in the ground (if possible).
- While the fire is approaching, clear as much vegetation as you can and lie face down in the depression, covering yourself with anything that will shield you from the intense heat and toxic smoke.

Next Page: *Caught At Home* »

EMERGENCY WILDFIRE SCENARIOS

CAUGHT AT HOME : "SHELTERING-IN-PLACE"

During some wildfire events, you may not be able to evacuate in time and you will be faced with no other option than to shelter-in-place. Careful planning and action on your part can help protect you during a wildfire.

Sheltering-in-place is a LAST RESORT alternative if you cannot evacuate in time.

AS THE FIRE APPROACHES

- Wear protective clothing to shield you from heat, embers and flames: sturdy shoes, long-sleeved shirt and pants (wool or cotton), hat, handkerchief, and light colored goggles.
- Close windows and doors to the house to prevent sparks and embers from blowing inside. Close all doors inside the house to prevent draft. Open the damper on your fireplace to help stabilize outside-inside pressure, but close the fireplace screen so sparks will not ignite the room.
- Take down your drapes and curtains. Close all blinds.
- Fill all bathtubs, sinks and other containers with water.
- Back your car into the garage, keeping the windows closed and keys in the ignition. Close garage doors and disconnect the automatic garage door opener (so you can still remove your car in the event of a power failure).
- Place your **5P's** (page 1) inside your car in the garage for quick departure, if necessary.
- Turn on lights in every room and porch lights.
- Turn off pilot lights.
- As the fire front approaches, STAY INSIDE, take a deep breath and remain calm.

AFTER THE FIRE PASSES

- Check the roof immediately. Extinguish any sparks or embers.
- Check inside the attic for hidden burning embers. Extinguish any fires.
- Over the next several hours continue monitoring your home for signs of smoke and embers.
- Contact the Non-Emergency Dispatch Center (541-693-6911) and notify authorities that you are still in your home.

CAUGHT AT HOME : "SHELTERING-IN-PLACE"

SOME FACTS ABOUT SHELTERING-IN-PLACE YOU SHOULD KNOW:

- Sheltering-in-place is always a LAST RESORT alternative if you cannot evacuate in time.
- A fire within sight or smell is a threat.
- More people are injured and killed in the open than in houses.
- Once embers start falling, it may be too late to evacuate.
- Remember, no matter how hot it is inside your home, it is ALWAYS worse outside. Stay inside!
- You must have 30-100 feet of space around your home (defensible space) that is free of any combustible vegetation and materials that can spread fire to your home.

SHELTERING-IN-PLACE EMERGENCY KIT ITEMS

- Clothing
  - Natural fabrics, such as heavy denim or pure wool
  - Long sleeved shirt that covers neck and is tucked into pants
  - Wool socks tucked over pant legs and sturdy boots with Vibram-type soles
  - Thick canvas or leather gloves
- Accessories
  - Thick, pure wool blanket, large enough to cover a person completely when crouched or lying down
  - Smoke filtering mask made from cotton or wool (handkerchief)
  - Goggles with side protection and a strap to wrap around the head
  - Eye drops to prevent eyes from becoming dried out
  - Plenty of drinking water
  - First aid kit
  - Battery operated radio
  - Flashlight and plenty of extra batteries
  - Fire extinguisher
  - Shovels and rakes for putting out spot fires
  - Metal buckets for water

Across the country, injuries and deaths are increasing during wildland fire evacuations.

The purpose of this guide is to allow residents to act responsibly and safely in the event of a wildland fire.

Fire departments are responsible for determining when the need for evacuation exists and the Deschutes County Sheriff's Department and other law enforcement agencies are responsible for carrying out an ordered evacuation.

During a major wildland fire, despite the best efforts of fire protection and law enforcement agencies, there still may not be enough equipment and manpower to go door-to-door advising you to evacuate; you should be ready to make this decision and GO! yourself.

The fire departments and law enforcement agencies of Deschutes County assume no liability for the use or misuse of this information, which is intended to provide fire safety and emergency guidelines for residents.

PROJECT WILDFIRE
PARTNERSHIPS IN MITIGATION

ProjectWildfire.org / 541.322.7129

Be Red Cross Ready

Wild Fire Safety Checklist

More and more people are making their homes in woodland settings, rural areas or remote mountain sites. There, residents enjoy the beauty of the environment but face the very real danger of wild fires. Wild fires often begin unnoticed. They spread quickly, igniting brush, trees and homes. In a wild fire, every second counts!

Supplies to take with you if you need to evacuate:

• Water—one gallon per person, per day (3-day supply) • Food—non-perishable, easy-to-prepare items (3-day supply) • Flashlight • Battery-powered or hand-crank radio (NOAA Weather Radio, if possible) • Extra batteries • First aid kit • Medications (7-day supply) and medical items • Multi-purpose tool • Sanitation and personal hygiene items • Copies of personal documents (medication list and pertinent medical information, deed/lease to home, birth certificates, insurance policies) • Cell phone with chargers • Family and emergency contact information • Extra cash • Emergency blanket • Map(s) of the area • Other essential items that could not be replaced if they were destroyed

What should I do to prepare ahead of time?

❒ Learn about wild fire risks in your area.

❒ Talk with members of your household about wild fires—how to prevent them and what to do if one occurs.

❒ Post emergency phone numbers by every phone in your home.

❒ Make sure driveway entrances and your house number or address are clearly marked.

❒ Identify and maintain an adequate water source outside your home, such as a small pond, cistern, well or swimming pool.

❒ Set aside household items that can be used as fire tools: a rake, ax, hand saw or chain saw, bucket and shovel. You may need to fight small fires before emergency responders arrive.

❒ Select building materials and plants that resist fire.

❒ Regularly clean roofs and gutters.

Plan ahead and stay as safe as possible during a wild fire.

❒ Plan and practice two ways out of your neighborhood in case your primary route is blocked.

❒ Select a place for family members to meet outside your neighborhood in case you cannot get home or need to evacuate.

❒ Identify someone who is out of the area to contact if local phone lines are not working.

What should I do if there are reports of wild fires in my area?

❒ Be ready to leave at a moment's notice.

❒ Listen to local radio and television stations for updated emergency information.

❒ Always back your car into the garage or park it in an open space facing the direction of escape.

❒ Confine pets to one room so that you can find them if you need to evacuate quickly.

❒ Arrange for temporary housing at a friend or relative's home outside the threatened area.

Limit exposure to smoke and dust.

❒ Listen and watch for air quality reports and health warnings about smoke.

❒ Keep indoor air clean by closing windows and doors to prevent outside smoke from getting in.

❒ Use the recycle or re-circulate mode on the air conditioner in your home or car. If you do not have air conditioning and it is too hot to stay inside with closed windows, seek shelter elsewhere.

❒ When smoke levels are high, do not use anything that burns and adds to indoor air pollution, such as candles, fireplaces and gas stoves. Do not vacuum because it stirs up particles that are already inside your home.

❒ If you have asthma or another lung disease, follow your health care provider's advice and seek medical care if your symptoms worsen.

Returning home after a wild fire ...

❒ Do not enter your home until fire officials say it is safe.

❒ Use caution when entering burned areas as hazards may still exist, including hot spots, which can flare up without warning.

❒ Avoid damaged or fallen power lines, poles and downed wires.

❒ Watch for ash pits and mark them for safety—warn family and neighbors to keep clear of the pits also.

❒ Watch animals closely and keep them under your direct control. Hidden embers and hot spots could burn your pets' paws or hooves.

❒ Follow public health guidance on safe cleanup of fire ash and safe use of masks.

❒ Wet debris down to minimize breathing dust particles.

❒ Wear leather gloves and heavy soled shoes to protect hands and feet.

❒ Cleaning products, paint, batteries and damaged fuel containers need to be disposed of properly to avoid risk.

Ensure your food and water are safe.

❒ Discard any food that has been exposed to heat, smoke or soot.

❒ Do NOT ever use water that you think may be contaminated to wash dishes, brush teeth, prepare food, wash hands, make ice or make baby formula.

Let Your Family Know You're Safe

If your community has experienced a wild fire, or any disaster, register on the American Red Cross Safe and Well Web site available through RedCross.org to let your family and friends know about your welfare. If you don't have Internet access, call 1-866-GET-INFO to register yourself and your family.

Copyright © 2009 by the American National Red Cross | Stock No. 658599

Module 4:
Home Protection Strategies

Introduction

This module provides information and skill development on assessing fire risk, creating defensible space, and learning how home fire risk assessments are done. However, it is not the purpose of this module to make participants experts in home assessments.

The information in this module will help the participant in preparing their wildfire preparedness plan for their property, which is a requisite for all participants in the CFA training. This module will motivate them to complete activities that will make their home and property more fire safe.

Finally, the concepts, terminology, and information regarding fire risk, defensible space, and home protection strategies will help participants communicate more competently to others when doing outreach.

Room setup

Facilitator should secure a room large enough to comfortably accommodate the number of participants. Organize the room in a U-shape fashion with long tables and chairs (See "Room setup," page 7). The room should have a large screen to display the PowerPoint presentation and the room should have Internet access. Internet access is needed to show a video online for an in-class demonstration.

Total time needed

Classroom: 3 hours

Field: 3 hours

Equipment needed

Classroom

- Computer with PowerPoint
- Projector and screen
- Internet access or DVD to view in-class video demonstration

Field

- Handouts for home assessment exercise
- Area maps of fire risk
- Fire equipment (shovel, Pulaski, fire extinguisher) in vans if field tour is conducted during fire season

Background resources

- *Reducing Fire Risk on Your Properties* (PNW 618) https://catalog.extension.oregonstate.edu/pnw618
- Firewise Home and Landscape page: http://www.firewise.org/wildfire-preparedness/be-firewise/home-and-landscape.aspx
- *Fire-resistant Plants for Home Landscapes* (PNW 590) https://catalog.extension.oregonstate.edu/pnw590
- Institute for Business & Home Safety "Wildfire Ember Highlights" video: https://www.youtube.com/watch?v=_Vh4cQdH26g
- *Examining Home Destruction in the WUI* (2013) DVD by Dr. Jack Cohen
- *Your Home Can Survive a Wildfire* (2015) DVD by Dr. Jack Cohen
- "A Home's Safety Zone" graphic
- SB 360 Evaluation or HIZ Forms
- Local maps of fire risk, fire hazard for the area and region
- Firewise website: www.firewise.org
- Oregon Department of Forestry fire page http://www.oregon.gov/ODF/Fire/Pages/default.aspx or local state forestry agency page

Host prep

- Recruit instructor(s) and panelists

- Familiarize instructors and panelists with objectives, content, agenda, and structure of session
- Communicate with CFA participants to confirm location and time
- Make sufficient copies of all handouts
- Reserve classroom
- Confirm projector and laptop for the video
- Set up room
- Prepare refreshments (if applicable)
- Acquire DVDs or download videos from the internet to show
- Identify field sites
- Organize field tour transportation
- Do a practice field tour with instructor(s)

Class prerequisites

There is no prework for this module as designed, although some reading could be assigned.

Learning objectives

Participants will:

- Discuss components of risk
- Employ basic approaches of fire risk assessment around homes
- Identify the Home Ignition Zone (HIZ) and define "defensible space"
- Determine effective strategies to reduce fire risk
- Assess how a home's construction and surrounding landscape vegetation affect its combustibility

Behavior objectives

Participants will:

- Conduct a homesite fire risk assessment on their own home and use this in developing their wildfire preparedness plan for their home and property. (Participants are not expected to be competent in conducting official SB 360 home assessments after this module. In order to do official home assessments, CFA volunteers would need to complete a more intensive ODF training on this subject.)
- Communicate HIZ and defensible space principles to others so they will be motivated to take action
- Recommend fire-resistant landscaping techniques
- Point out where homes are vulnerable to fire and embers (vents, decks, roofs, etc.)
- Take measures to decrease fire risk on their own property
- Perform an HIZ assessment and develop an action plan, then explain that plan to CFA peers and include it in their wildfire preparedness plan

Delivery methods

- Video
- Guided discussion
- Field tour
- Instructor guidance

This module is important for building knowledge about Firewise and defensible space concepts. The instructor should be enthusiastic and make this module practical and fun. The information participants learn and the skills they attain will be vital as they develop their wildfire preparedness plans and as they work and communicate with homeowners in their neighborhoods during volunteer activities.

The field tour will be very important in bringing some real-world application to this module. One challenge for the instructor is that it is difficult to bring to life the idea of "risk" or give it meaning when there is no immediate threat from fire. Therefore, the instructor may want to have homeowners who have experienced a fire firsthand speak to the trauma and emotions they felt. Fire risk does have a face, so to speak, in the people and the properties that are devastated by wildfire.

Also, having CFA participants conduct a fire risk assessment around a home as a guided field exercise will help them better quantify risk in a systematic way and communicate strategies and techniques to their neighbors in reducing that risk. Remember, though, that the purpose isn't to make them experts on risk assessment.

When selecting sites for both parts of the field tour, consider the following:

Part 1 – The field tour should illustrate wildfire risk in the area or region. Maps of fire risk would be helpful to have on hand for this field trip. If a recent fire burnt through an area with homes, bring participants there with the idea of having one or more affected homeowners explain what it was like during the fire from their perspective. However, finding a homeowner willing to talk about such a traumatic, emotional event may be difficult.

Part 2 – For this portion of the field tour, it is important to find a homeowner willing to have his or her home assessed and to listen to CFA participants' comments during that process. It is also important not to lay any blame on the homeowner but, rather, to be encouraging and provide helpful tips for reducing fire risk. One of the CFA participants may be willing to volunteer his or her home for this part of the field tour.

Sample agenda

Location: Auditorium

9:00 a.m. Welcome, review agenda and objectives for the day, introductions

9:30 a.m. Presentation and video demonstration

10:30 a.m. Refreshment break

10:45 a.m. Presentation

11:45 a.m. Lunch

1:00 p.m. Field trip

4:00 p.m. Field trip concludes

4:30 p.m. Arrive back at the classroom

Content outline

- ■ Home protection strategies
  - ❏ Very brief review of fire triangles and how they are relevant to homes and landscapes in the WUI
    - Fire triangle
    - Fire behavior triangle
  - ❏ Fuel (natural and unnatural) and topographic characteristics around the home
    - Continuity and arrangement
    - Quantity
    - Availability
    - Slope and terrain
  - ❏ Defensible space
    - What is it?
    - Why do you need it?
    - How do you create it?
    - Defensible space versus survivable space
      - Goal of survivable space: for home to survive the majority of wildfires without fire department intervention
  - ❏ Home Ignition Zone (HIZ) concept
    - Defined zones: 1) 0 to 30 feet, 2) 30 to 100 feet 3) 100 feet or more away from the home
    - Concept of discontinuous fuels
    - Highlight zones 1 and 2 and how they could include an adjacent home or outbuilding
    - Management strategies
  - ❏ Fire-resistant landscaping
    - Management strategies
      - Hardscape
      - Lawn
      - Mulch
      - Plant selection
    - Plant selection
    - Materials
  - ❏ Building materials and retrofitting
    - Roofing
    - Siding
    - Windows and doors
    - Vents (preventing ember entry)
    - Decks
    - Gap management in log cabins, pseudo-stucco, etc.
    - In-class videos
      - "Wildfire Ember Highlights" video produced by Steve Quarles, Institute for Business and Home Safety: https://www.youtube.com/watch?v=_Vh4cQdH26g
      - All or segments of Dr. Jack Cohen's DVD, *Examining Home Destruction in the WUI* (2013)

- Show all or segments of Dr. Jack Cohen's DVD, *Your Home Can Survive a Wildfire* (2015)

❏ Water, access, and other concerns

❏ Working with your local fire district or ODF or state forestry agency

■ Evaluating fire risk

❏ Basic risk review

- Ignition potential (i.e., likelihood of fire)
- Hazard or potential for damage
- Values at risk

❏ Volunteer outreach and public education opportunities

- Evaluating homes and homesites with additional training
- Where to get information on county standards for new construction
- SB 360 guidelines and checklist review
- HIZ standards
- Demonstrate how different standards and evaluation guidelines can be applied to a hypothetical homesite using the graphic on the "A Home's Safety Zone" slide
- How to conduct an assessment

Exercises

There is one in-class video demonstration and one field exercise for this module. Below is a description of the setup for each demonstration and the facilitated discussion that should occur for each.

Ember and home ignition demonstration video

Part 1 – Embers are fire brands that have been lofted into the air by the upward movement of air or driven horizontally by wind from a wildfire. Embers can travel through the air and land ¼ mile or more from the fire front, often igniting additional spot fires ahead of the main fire.

During a fire storm, embers swirl around like snow and can accumulate on and around homes or enter through vents, igniting the inside of the home. Researchers estimate that 80 to 90 percent of all homes destroyed by wildfire are due to embers landing on something easily ignitable on, in, or near the home.

Show "Wildfire Ember Highlights" (https://www.youtube.com/watch?v=_Vh4cQdH26g), produced by the Institute for Business & Home Safety. The video illustrates how embers ignite outside fuel but also how they penetrate a home through vents.

Part 2 – Show all or segments of the following two DVDs by Dr. Jack Cohen:

■ *Examining Home Destruction in the WUI* (2013)

■ *Your Home Can Survive a Wildfire* (2015)

Field exercise #1 – Fire Risk in the WUI and Assessing Fire Risk Around Homes

Part 1 – Take participants to a part of the WUI where homes are situated in areas with high fuel loads and moderate to steep slopes. Discuss fire risk in this situation as well as how homeowners would be evacuated should a fire erupt in that location. If possible, invite a fire chief to talk about how he or she would attack such a fire and go about conducting an evacuation. If convenient, locate an area where homeowners have created some defensible space or other mitigating treatments.

Part 2 – Take the group to a home and conduct a fire risk assessment using SB 360 evaluation form (handout) or HIZ assessment form. This should be a guided discussion with an expert from ODF or local fire district. It is important to start from the house (roof, decks, etc.) and work your way outwards, evaluating the landscape around the home and beyond. The instructor should do the assessment with the entire group moving through and discussing each item on the checklist. Discuss other factors that either mitigate or increase the fire risk for the home in question.

Alternative delivery methods

This module works best with an indoor session followed by a field trip. Though it may be possible to deliver the content online, it is essential to have a field component and allocate enough time to it.

Suggested homework

The information presented in this module will give participants necessary knowledge to keep working on their wildfire preparedness plan at home.

Self-assessment questions

1. What does HIZ stand for? What does it entail?
2. What are some things homeowners can do to create defensible space?
3. What does fire-resistant landscaping mean?
4. What are some the most vulnerable portions of a home to wildfire?
5. Where are likely locations for embers to enter a home?
6. What are some examples of fire-resistant building materials?

Home Protection Strategies Materials

Photo: Washington Department of Natural Resources

slide deck

Citizen Fire Academy

Home Protection Strategies

Photo: Washington Department of Natural Resources

Oregon State University

Oregon State University Extension Service

Learning objectives (what to know)

You will learn to:

- Identify the HIZ and define defensible space
- Understand the principles of the HIZ and defensible space
- Determine effective strategies to reduce risk
- Differentiate between fire-resistant and fire-prone landscaping, and other materials

Illustration: Firewise.org

Behavior objectives (what to do)

You will be able to:

- Communicate HIZ/defensible space principles to others so that they will be motivated to take action
- Recommend fire-resistant landscaping techniques
- Take measures to decrease risk on their own property
- Perform an HIZ assessment; develop an action plan for your home and property

Illustration: Firewise.org

Section 1: Fire Behavior Review

- Remember the components of the fire triangle?
- Which is the component that you can affect?

Fuel! This overview will offer ways to make sure that your home and the surrounding area is not suitable fuel for a fire.

Illustrations: Kelly Brown, © Oregon State University. Adapted from wildfire.cr.usgs.gov

Fuel characteristics

- Continuity and arrangement
- Quality
- Availability

Image: Ed Smith, University of Nevada, used with permission

How and why homes burn

Home ignitions occur when a component of the home is exposed to one or more of the three basic wildfire exposures.

Types of fire exposures include:

1) burning embers (also called firebrands)
2) direct flame contact
3) radiant heat

Images: Ed Smith, University of Nevada, used with permission

Pay particular attention to EMBERS!

- Burning embers are the most important cause of home ignitions.
- When they land near or on a building they can ignite nearby vegetation or accumulated debris on the roof, in gutters or on decks.
- Embers can enter homes and buildings through openings (an open window or vent for example) and ignite furnishings inside or debris in the attic.

Image: Ed Smith, University of Nevada, used with permission

Studies in ember ignition

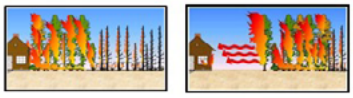
Embers vs. direct flame impingement
Ember shower:
https://www.youtube.com/watch?v=_Vh4cQdH26g

Listen to Jack Cohen describe the process of home combustion
https://www.youtube.com/watch?v=p0iR8o54hDU

"Most of the houses I've examined very likely ignited from small spot ignitions on or adjacent to the home—not from the big crown fire flames. That means a homeowner can easily do fuel reductions that can potentially save their homes."
— Jack Cohen

Direct flame and radiant heat

- Near-building ignitions will subject some portion of the building to either a direct flame contact exposure, where the flames actually touch the building, or a radiant heat exposure, the heat you feel when standing near a campfire or fireplace.
- The vulnerability of a building to radiant heat depends on the intensity and duration of the exposure, type of windows and siding, and the distance from the radiant heat source to the home.



Images: Ed Smith, University of Nevada, used with permission

All the research around home destruction and home survival in wildfires points to embers and small flames as the main way that a majority of homes ignite in wildfires

Photo: AP Photo/Blaine Thompson

Section 2: Defensible space and the Home Ignition Zone

- Defensible space is the area between your home and where the unmodified native forest/rangeland vegetation begins. This is the area where the professional firefighters can effectively and safely defend the home.
- The Home Ignition Zone (HIZ) concept was developed by USDA Forest Service fire scientist Jack Cohen in the late 1990s, following some breakthrough experimental research into how homes ignite due to the effects of radiant heat and embers.

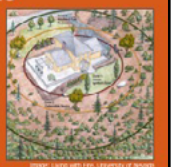


Image: Living with Fire, University of Nevada

Details of the Home Ignition Zone Concept

- Includes the home itself (more on the home later) and everything around it out to 100 to 200 feet.
- When the risk of wildfire is high, the home ignition zone extends out to 200 feet beyond the actual structure.
- Within this 200-foot area, there are three zones: 1, 2, and 3.

Image: Living with Fire, University of Nevada

Home Ignition Zone: Zone 1

- **Zone 1** encircles the structure and all its attachments (wooden decks, fences, and boardwalks) for at least 30 feet on all sides.
- *Note:* 30 feet represents minimum separation distance (on flat ground) of the radiant heat source to the home without causing ignition.

Home Ignition Zone: Zone 1

In this area:

- Create a 'fire-free' area within 5 feet of the home, using non-flammable landscaping materials and/or high-moisture-content annuals and perennials.
- Plants should be carefully spaced, low-growing, and fire-resistant (free of resins, oils, and waxes that burn easily).
- Space conifer trees 30 feet between crowns. Trim back trees that overhang the house by 10 feet and 15 feet from a chimney.

Home Ignition Zone: Zone 1

In this area (continued):

- Mow the lawn regularly. Prune trees up 6 to 10 feet from the ground.
- Water plants, trees, and mulch regularly.
- Remove dead vegetation from under deck and within 10 feet of house.
- Remove firewood stacks and propane tanks; they should not be located in this zone.

Home Ignition Zone: Zone 2

- **Zone 2** is 30 to 100 feet from the home. Plants in this zone should be low-growing, well irrigated, and less flammable.

In this area:

- Leave 30 feet between clusters of two to three trees, or 20 feet between individual trees.
- Encourage a mixture of deciduous and coniferous trees. Avoid planting fire-prone trees: junipers, cedars, cypresses, etc.
- Create 'fuel breaks', like driveways, gravel walkways and lawns.
- Prune trees up 10 feet from the ground.

Home Ignition Zone: Zone 3

- **Zone 3** is 100 to 200 feet from the home and this area should be thinned, although less space between trees is required than in Zone 2.
- *NOTE:* Because of other factors such as topography, the recommended distances to mitigate for radiant heat exposure actually extend between 100 to 200 feet from the home – on a site-specific basis.

Home Ignition Zone: Zone 3

In this area:

- Remove smaller conifers that are growing between taller trees.
- Remove heavy accumulation of woody debris.
- Reduce the density of tall trees so canopies are not touching.

Resources

Firewise publications on HIZ:
The basics of defensible space and the "home ignition zone"
http://firewise.org/wildfire-preparedness/be-firewise/home-and-landscape/defensible-space.aspx

Section 3: Building Materials and Retrofitting

Embers and small flames are major culprits

- Experiments sponsored by the insurance industry show that not only should the radiant heat exposure be mitigated in the home ignition zone, but exposure to embers and surface fire as well.
- For that reason, it is important to prepare homes to withstand ember attack and minimize the likelihood of small flames touching the home and any attachments (fences, decks, porches).

Building materials

The test building shows the near-building combustible mulch and vegetation, the pine needle accumulation in the valley of the asphalt composition roof shingles, and pine needle accumulation in the gutters. The gable end vent is also circled.

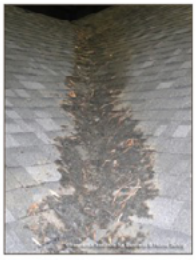
Watch the video on embers

https://www.youtube.com/watch?v=_Vh4cQdH26g

- Embers easily ignited both the pine needle debris that was placed in the gutters and the pine needle and bark mulch placed at the base of the exterior wall.
- The gutter on the left was vinyl and that on the right was metal. Once debris in the vinyl gutter ignited, it detached from the fascia and fell to the ground.
- The burning debris contributed to the fire that resulted from the ignited mulch. The metal gutter stayed in place, providing a flame contact exposure to the fascia and sheathing at the edge of roof.

Roofing materials

Wood shingles = not fire safe

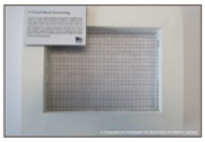


Roofing material should be Class A, B, or C

Vents

These are 1/4-inch screens, which are too large. However, this is better than no screen!

Use 1/8-inch (or less) mesh metal screens for roof, eaves, peaks, or foundation vents to prevent ember entry.



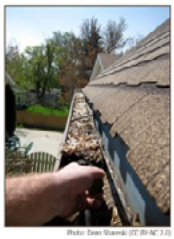
Use metal screening to block leaves and other dry debris from accumulating under the house or deck

Remove fuel sources close to the home

The perimeter of the home and attachments out to about 5 feet is vulnerable if there is anything there—organic mulch, woody shrubs and plants, juniper shrubs—that could ignite and thus allow flames to touch the house.

- Wind-driven fires create a blizzard of embers that pile up in corners and can ignite accumulations of leaves or needles around your home.
- These corners, nooks, and crannies should be clear of any flammables.
- Trim any limbs or branches overhanging the roof, or any branches close to/touching the house, to at least 10 feet from the house.
- Keep grass mowed low and well watered if possible.

Where leaves gather, so can embers!



In summary, property owners need to address the "little things" first

Start with the house and work your way out:

- Having a nonflammable roof covering and assembly adds an enormous safety measure. Keep roofs and gutters clear of leaves or needles.
- Keep decks and patios clear of debris, particularly where the siding meets the deck.
- Clean out any leaves, needles, or stored material that could burn from under decks or porches.
- During this high fire danger season, remove large potential heat sources such as piles of firewood, spare building materials, vehicles—anything that could catch embers or be ignite by flames.
- Download NFPA's Firewise Tips Checklist for Homeowners that includes these and other actionable steps residents can start working on today.

Section 4: Fire-Resistant Landscaping

- Strategies (hardscape, lawn, mulch, etc.)
- Plant selection
- Materials

Fire-resistant landscaping

- Fire-resistant landscaping is done in Zone 1, the first 30 feet around the home.
- In Zones 2 & 3, mostly fuel reduction is done, leaving reduced amounts of native plants and trees.

Landscape vegetation can convey fire directly to the home

Vegetation and fuel ladders

What you plant, its arrangement, and proximity to your home matters!

Fire-resistant plants:

- Leaves are moist and supple.
- Plants have little dead wood and tend not to accumulate dry, dead material within the plant.
- Sap is water-like and does not have a strong odor.
- Sap or resin materials are low.
- *Examples:* maple, oak, deciduous shrubs

Fire-prone plants:

- A lot of dry, dead material at center of plant.
- Resinous sap and leaves or needles.
- Plant ignites easily.
- *Examples:* juniper, mugo pine, cedar, and cypress

Fire-Resistant Plants for Home Landscapes (PNW 590)

https://catalog.extension.oregonstate.edu/pnw590

For more examples, look at these publications!

Fire-resistant landscape plants for the Willamette Valley (EM 9103)
https://catalog.extension.oregonstate.edu/em9103

Firewise landscaping and plant lists:
http://firewise.org/wildfire-preparedness/firewise-landscaping-and-plant-lists.aspx

Fire-resistant trees and shrubs for privacy screens:
http://extension.oregonstate.edu/sorec/sites/default/files/fireproof_shrubs_and_trees_book_7-2012.pdf

Photo: Stephen Fitzgerald, © Oregon State University

Other fire-resistant design features to consider:

- Use non-flammable features, such as rock or pavers, to break up vegetation.
- Use rock features on slopes below your home.

Photos: Stephen Fitzgerald, © Oregon State University

Fire-resistant landscapes…

- Fire-resistant plants can be used to break up or replace "fuel ladders" so fire is not conveyed to the home.
- Deciduous trees can block radiant heat directly to home.

Photo: Stephen Fitzgerald, © Oregon State University

An example

Photo: Stephen Fitzgerald, © Oregon State University

Photo: Stephen Fitzgerald, © Oregon State University

Photo: Stephen Fitzgerald, © Oregon State University

Photo: Stephen Fitzgerald, © Oregon State University

Well-maintained landscape = more fire-resistant

Photo: Stephen Fitzgerald, © Oregon State University

Section 5: Home Protection Strategies

- Defense – Potentials and limitations of home-based firefighting systems
- Water – cistern / sprinklers / hoses / catchment / pump chances ID in advance
- Access – gates on driveway / clear ID of home, number, and address

Photo: Roof Save Sprinklers

Home-based firefighting systems

Photo: Stephen Fitzgerald, © Oregon State University

- Remember, you will need power for the pump. Having a generator is a must as electrical power will be shut off during a wildfire.
- Train yourself on how to properly use this equipment and practice.

Home-based firefighting systems

Photo: Stephen Fitzgerald, © Oregon State University

Home-based firefighting systems

Foam-based systems:
https://www.youtube.com/watch?v=HsuIHO995d0

Photo: Dr. Mark Radtke at AmerCAFS

Water: cisterns, ponds, and catchments

Buried cistern

Cistern filled by rain water from roof

Landscape ponds

Photos: Stephen Fitzgerald, © Oregon State University

Access considerations

Photo: Stephen Fitzgerald, © Oregon State University

Fire trucks may not travel down the road pictured on the left. Clear vegetation and overhanging branches from above to provide a clear view and access for fire trucks.

Overhanging branches to allow fire truck access.

Thank you!

A Home's Safety Zone

HOME IGNITION ZONE: ASSESSMENT DETAILS

Zone 1: Overview of Surroundings

What is the overall landscape?

How is the structure positioned in relationship to severe wildfire behavior?
- Topographic features? Exposure?
- Vegetation – condition & density?
- Weather?

Proximity of home to fuels, and to other homes and out-buildings?
- Adjacent homes?

Type of construction?
- Wood siding?
- Mobile home?

Zone 2: Chimney to Eaves

Roofing materials and assembly
- Non-combustible?
- Gaps under tiles where litter or embers could collect?
- Bird's nests?

Condition of the roof
- Shingles flat with no gaps?
- Shingles missing?

Roof litter, gutters, chimneys, roof vents
- Litter/leaves on roof or in gutters?
- Non-combustible gutters? Clean?
- Spark arrestor on chimney, overhanging tree limbs?
- All vents screened?

Zone 3: Eaves to Foundation

Type of construction/siding material?
- Wood, brick, stucco, vinyl or aluminum?

Attic, eaves, soffit vents and crawl spaces
- Do all openings have at least ¼" screening, skirtings?

Walls and attachments
- Condition of siding?
- Attachments Flammable? (Decks, balconies, porches, fences)
- Flammable material under decks, porches or balconies?

Windows, doors and screens
- Double-paned windows or tempered glass?
- Metal screens or fiberglass?
- Flammable materials or vegetation close to doors and windows?

Zone 4: Foundation to Immediate Landscaped Area

Landscaped (managed) vegetation
- First 30 feet clean and green?
- Irrigated? Flammable plants? Wood mulch?

Materials next to home
- Firewood? Patio cushions? Doormats?

Propane tanks
- Large tanks maintained, clear around site? NFPA compliant?
- Small tanks inside or away from the house?

Vehicles, and out-buildings or sheds
- Minimum of 30 feet away from home?
- Vehicles on a clean surface?

Zone 5: Immediate Landscaped Area to Extent of Home Ignition Zone

Vegetation managed from 30 feet out to 100 – 200 feet
- Inspect vegetation for crown spacing and tree spacing
- Thinned to prevent high-intensity fire spread?
- Ladder fuels?

Do other "fuels" provide continuous line of fuel to the home?
- Fields, fences, out-buildings or other homes?

Exposure, weather
- South exposure thinned?
- Prevailing wind direction?

Final "definition" of this "Home Ignition Zone"

HDE Evaluation form for forestland-urban interface properties classified "High-Density Extreme"

Checking "Y" means "yes, the standard or step has been met or satisfied. Checking "N" is equivalent to "no," meaning the step or standard has not been met or satisfied. Checking "N/A" means the step or standard does not apply to this property or situation.

1. 30-FOOT PRIMARY FUEL BREAK: The intent of this fuel break is to reduce the intensity of a wildland fire, slow its rate of spread, and create an area in which fire suppression operations may more safely take place.			
1a. Is the area substantially composed of nonflammable ground cover?	Y	N	N/A
1b. If dry grass is present, has it been mowed to a height of 4 inches or less?	Y	N	N/A
1c. Have continuous beds of fine fuel been eliminated?	Y	N	N/A
1d. Are trees and shrubs maintained in a green condition?	Y	N	N/A
1e. Are trees and shrubs substantially free of dead plant material?	Y	N	N/A
1f. Have ladder fuels been removed?	Y	N	N/A
1g. Have trees and shrubs been thinned to discourage the transfer of fire from plant-to-plant?	Y	N	N/A
2. 20-FOOT ROADSIDE FUEL BREAK: The intent of this fuel break is to reduce the intensity of a wildland fire, slow its rate of spread, and create an area in which fire suppression operations may more safely take place.			
2a. Is the area substantially composed of nonflammable ground cover?	Y	N	N/A
2b. If dry grass is present, has it been mowed to a height of 4 inches or less?	Y	N	N/A
2c. Have continuous beds of fine fuel been eliminated?	Y	N	N/A
2d. Are trees and shrubs maintained in a green condition?	Y	N	N/A
2e. Are trees and shrubs substantially free of dead plant material?	Y	N	N/A
2f. Have ladder fuels been removed?	Y	N	N/A
2g. Have trees and shrubs been thinned to discourage the transfer of fire from plant-to-plant?	Y	N	N/A
3. 20-FOOT PROPERTY LINE FUEL BREAK: The intent of this fuel break is to reduce the intensity of a wildland fire, slow its rate of spread, and create an area in which fire suppression operations may more safely take place.			
3a. Is the area substantially composed of nonflammable ground cover?	Y	N	N/A
3b. If dry grass is present, has it been mowed to a height of 4 inches or less?	Y	N	N/A
3c. Have continuous beds of fine fuel been eliminated?	Y	N	N/A
3d. Are trees and shrubs maintained in a green condition?	Y	N	N/A
3e. Are trees and shrubs substantially free of dead plant material?	Y	N	N/A
3f. Have ladder fuels been removed?	Y	N	N/A
3g. Have trees and shrubs been thinned to discourage the transfer of fire from plant-to-plant?	Y	N	N/A
4. SECONDARY FUEL BREAK: This fuel break is to increase the total size of the area around a structure in which a wildfire's rate of spread will be reduced and fire-fighting operations may more safely occur.			
4a. Does the structure have flammable roofing? If so, a 70-foot secondary fuel break is required. If the structure has nonflammable roofing, then a 20-foot secondary fuel break is required.	70	20	
4b. Are trees and shrubs maintained in a green condition?	Y	N	N/A
4c. Are trees and shrubs substantially free of dead plant material?	Y	N	N/A
4d. Have ladder fuels been removed?	Y	N	N/A
4e. Have trees and shrubs been thinned to discourage the transfer of fire from plant-to-plant?	Y	N	N/A

5. DRIVEWAY FUEL BREAK: This standard is to ensure that there is sufficient vertical and horizontal clearance alongside and above the driving surface for fire trucks, and to create areas adjacent to the driveway in which fire intensity will be reduced and fire suppression operations may more safely take place.			
5a. Is the driveway 150 feet long or longer? If "N/A," then a driveway fuel break isn't required.	Y		N/A
5b. Is there at least 12 horizontal feet of clear space above the driving surface?	Y	N	N/A
5c. Within the 12-foot-wide clearance area, is there at least 13 ½ feet of vertical clearance?	Y	N	N/A
5d. Within an area that is 10 feet from both sides of the driveway's centerline:			
5d(1). Is the area substantially composed of nonflammable ground cover?	Y	N	N/A
5d(2). If dry grass is present, has it been mowed to a height of 4 inches or less?	Y	N	N/A
5d(3). Have continuous beds of fine fuel been eliminated?	Y	N	N/A
5d(4). Are trees and shrubs maintained in a green condition?	Y	N	N/A
5d(5). Are trees and shrubs substantially free of dead plant material?	Y	N	N/A
5d(6). Have ladder fuels been removed?	Y	N	N/A
5d(7). Have trees and shrubs been thinned to discourage fire's transfer from plant-to-plant?	Y	N	N/A
6. Have tree branches or other vegetation within 10 feet of a chimney or stovepipe been removed?	Y	N	N/A
7. Are trees that overhang the structure substantially free of dead plant material?	Y	N	N/A
8. Is the area beneath a deck substantially free of flammables?	Y	N	N/A
9. During fire season, are there firewood or lumber piles on the property?	Y		N/A
7a. If "Y" is checked, has each pile been moved 20 feet or farther from the structure? OR	Y	N	N/A
7b. Has each pile been fully enclosed?	Y	N	N/A

Line-by-line instructions and explanations for forestland-urban interface properties classified "High-Density Extreme."

1. A 30-foot primary fuel break is required on all properties with a structure sited within a forestland-urban interface area, regardless of fire-risk classification. The primary fuel break is measured along the slope, and begins at the furthest extension of the structure, such as the outer edge of the roof eave or the outside edge of an attached deck, and continues for the full distance of 30 feet, or to the roadside, or to the property line. The fuel break may be entirely human-made or use natural features.

1a. Nonflammable ground cover includes, but is not limited to, green grass, clover, wildflowers, succulent ground cover, ivy, mulches, rock, concrete or asphalt. This measure strives to limit opportunities for combustion.

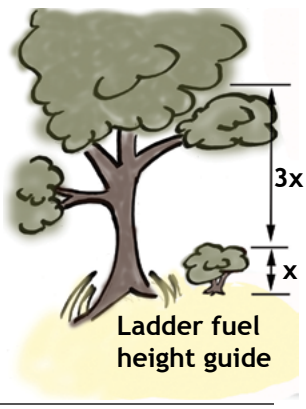
1b. Dry grass is an easily ignited fuel. Trimming it greatly reduces the intensity and rate of spread should fire occur.

1c. A continuous bed of fine fuel is cut grass, leaves, needles, twigs and other similar flammable materials in an arrangement that would allow fire to travel unabated. To make such a fuel bed discontinuous, install fuel breaks. A fuel break may be, but is not limited to, a raked path a few inches wide, a gravel walkway, or a patch of green grass (lawn). The purpose of this standard is to reduce the probability that a ground fire will make a significant run in any direction without encountering a fire break.

1d. A green condition means that trees and shrubs are healthy and well-watered. Plants maintained in a green condition are less vulnerable to fire.

1e. Dead plant material refers to dead branches, dead tops, and clumps of dead leaves or needles trapped in foliage. Trees and shrubs without dead plant material are less vulnerable to fire.

1f. Ladder fuels are shrubs and trees branches that can carry fire from the ground into tree crowns. Removing ladder fuels may mean to prune a tree's lower branches if the branches are above shrubs or other ground-level fuels. Alternately, the fuels beneath the branches could be removed. As a rule, the vertical distance between ladder fuels should be three times the height of the shrub beneath the tree. For example, a tree's branches should be pruned six feet from the top of a two-foot-tall shrub; or, the shrub should be removed, in which case pruning of the tree's branches would be unnecessary.

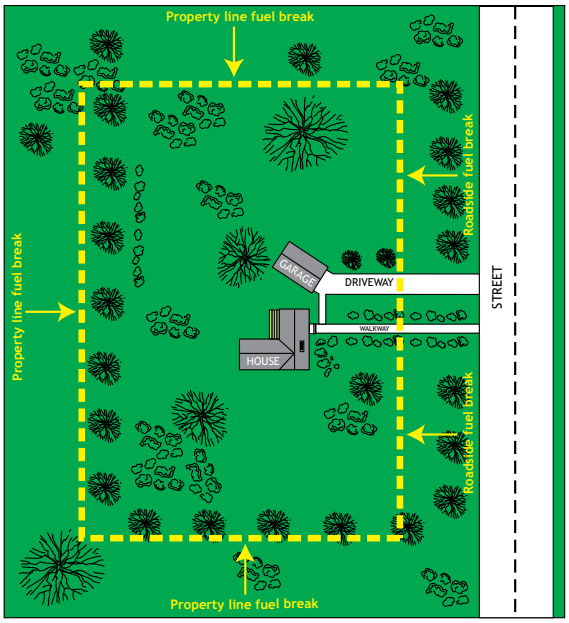


Ladder fuel height guide

1g. Thinning trees and shrubs may be necessary if the risk is high that fire will transfer laterally from plant-to-plant. However, it must remembered that healthy, mature, fire-resistant species of trees can shield homes from firebrands and radiant heat, and such specimens should be favored. Trees and shrubs selected for removal should be of poor vigor, and their removal should benefit the favored individuals.

2. A 20-foot roadside fuel break is required on all properties sited within a forestland-urban interface area classified "High-Density Extreme." This fuel break is required on properties with and without structures (improvements). The fuel break is measured along the slope, begins at the road edge (the edge of the driving surface) and continues into the property for the full distance of 20 feet, or to the property line. The fuel break may be entirely human-made or use natural features. The fuel-reduction measures inside the fuel break area must meet the standards below:

2a-2g. Follow the instructions and guidelines for 1a-1g, above.



3. A 20-foot property line fuel break is required on all properties sited within a forestland-urban interface area classified "High-Density Extreme." This fuel break is required on properties with and without structures (improvements). The fuel break is measured along the slope, begins at the property line and continues into the property for the full distance of 20 feet, or to another property line. The fuel break may be entirely human-made or use natural features. The fuel-reduction measures inside the fuel break area must meet the standards below:

3a-3g. Follow the instructions and guidelines for 1a-1g, above.

4. A secondary fuel break begins where the primary fuel break ends. The distance must be measured along the slope, and need not continue beyond roadsides and property boundaries.

4a. Flammable roofing means roofing material that is not fire resistant, such as cedar shakes. Nonflammable roofing is roofing material that is rated Class A, B or C by Underwriters Laboratory, or is metal, and has been installed and maintained to the roofing material manufacturer's specifications. For a structure with flammable roofing material, the secondary fuel break must extend 70 feet beyond the end of the primary fuel break. A structure with nonflammable roofing must have a 20-foot fuel break.

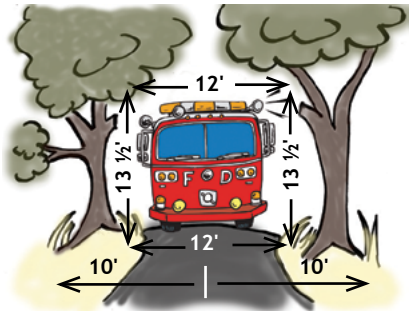
4b - 2e. See guidelines in 1d-1g above.

5. The driveway fuel break's horizontal distances are measured along the slope, and shall encompass an area not less than 20 feet in width, or to the property boundary. The 13 ½-foot vertical clearance standard must be maintained throughout the 12-foot horizontal clearance standard's distance.

5a. A driveway means the primary, privately owned vehicle access road that serves a dwelling, and which is controlled by the owner of the dwelling. It must be 150 feet long or longer before clearance or fuel break measures are required.

5b. The 12 feet of horizontal clearance are to accommodate an average fire truck.

5c. The 13 ½ feet of vertical clearance are to allow an average fire truck to pass beneath overhead branches and other vegetation.



5d(1)-(7). See guidelines in 1a-1g above.

6. Tree branches or other vegetation within 10 feet of a chimney or stovepipe need to be cleared away.

7. Dead plant material includes, but is not limited to, branches, foliage, tops and boles.

8. Flammables include, but are not limited to, piles or stacks of firewood or lumber, dry needles and leaves, cans of gasoline or paint, bottles of propane, charcoal briquets and lighter fluid.

9. Firewood and lumber piles can be sources of fuel during a wildland fire and can generate intense, sustained heat. The intent of this standard is to move the fuel source far enough from a structure to minimize the chance of damage to the structure should the pile catch fire.

9a. Twenty feet of distance is the minimum safe distance between a firewood or lumber pile and a structure.

9b. A fully enclosed firewood or lumber pile is one that has a nonflammable structure that completely protects the firewood or lumber from radiant heat and firebrands.

HOME IGNITION ZONE STRUCTURE ASSESSMENT GUIDE

Note: The assessment is designed to help determine "how vulnerable the structure" will be during the wildfire and to convey recommendations that should be taken so that the home will have a better chance to survive a wildfire.
Remember, the following assessment items are for <u>prevention/mitigation</u> measures to be done <u>well in advance</u> of wildfire season.

Date of Assessment:	Property Address:	Resident Name:	Property Owner:

	Assessment Items	Mitigation Recommendations
1.	**OVERVIEW OF SURROUNDINGS**	
	How is the structure positioned in relationship to severe fire behavior?	
	Type of Construction.	
2.	**CHIMNEY TO EAVES**	
	Inspect the roof – noncombustible? Shingles missing? Shingles flat with no gaps?	
	Gutters – present? Noncombustible?	
	Litter on roof, in gutters and crevices.	
3.	**TOP OF THE EXTERIOR WALL TO FOUNDATION**	
	Attic, eave, soffit vents and crawl spaces.	
	Inspect windows and screens – metal screens? Multi-paned windows? Picture windows facing vegetation?	

3.	**TOP OF THE EXTERIOR WALL TO FOUNDATION** *(Continued)*	
	Walls and attachments – non-combustible? Will they collect litter?	
	Decks – combustible materials?	
	Fences.	
	Flammable material next to or under the structure.	
	Combustible materials near or on the structure where walls meet roof or decking surfaces.	
	Crawl space, attic vents, soffits.	
	Nooks and crannies and other small spaces.	
4.	**FOUNDATION TO IMMEDIATE LANDSCAPED AREA**	
	Landscaped (managed) vegetation – separation distances, maintenance, plant selection? Firewise Landscaping Zones?	
	Propane Tanks.	
	Vehicle and RV use and parking, including lawn mowers, etc.	
5.	**IMMEDIATE LANDSCAPED AREA TO EXTENT OF THE HOME IGNITION ZONE**	
	Inspect vegetation clearance and crown separation.	

Copyright © 2012 NFPA. Reprinted from NFPA 1144, 2013 Edition

Module 5:
Fuels Reduction Strategies

Introduction

This module covers fuels reduction concepts and practices. The main focus is on strategies for HIZ Zone 3 and beyond (away from the defensible space), but the material is also relevant to practices in HIZ Zones 1 and 2. The module builds on the Fire Science and Home Protection Strategies modules. The content is most directly applicable to CFA participants who are landowners with acreage in Zone 3, but it is also relevant to all CFA participants in their capacity as volunteers.

Key topics include objectives and methods of fuels reduction, principles of fire-resistant forests, maintenance, planning and prioritization, integration with other objectives, and where to go for help. Basic principles and methods are similar across the state, but there are significant local variations in fuels types and treatment methods.

Room setup

Typical schoolroom setup or half-moon/cabaret style if small-group exercises are used. (See "Room setup," page 7)

Total time needed

Classroom: 2 hours

Field: 4 to 5 hours

Equipment needed

Classroom

- Computer with PowerPoint
- Projector and screen

Field

- Flip chart and easel

Background resources

- Videos
  - ❏ "Forest Fact Break: Forest Fire" (1:40): A quick and simple explanation of current wildfire issues. Entertaining! https://www.youtube.com/watch?v=zNoqpqbeJ3M
  - ❏ "Yosemite Sequoias Need Fire" (2:55): Nice, short National Geographic introduction to the use of prescribed fire to manage fuels and restore giant sequoia forests. http://video.nationalgeographic.com/video/yosemite-sequoias-fire
  - ❏ "Federal Forestland in Oregon" (6:47): Featuring OSU's Stephen Fitzgerald among others, this video focuses on wildfire and treatments to reduce fire severity on federal lands in central and eastern Oregon. http://www.youtube.com/watch?v=Nr2qU2kBPWs
- Narrated PowerPoint presentations covering the main topics in the CFA fuels reduction module
  - ❏ Intro
  - ❏ Objectives
  - ❏ Fuels reduction methods for forests and rangelands
  - ❏ Fuels reduction: where?
  - ❏ Integrating fuels reduction with other objectives
  - ❏ Roads, access, and water
- Unscripted presentations
  - ❏ *Fuels Reduction Effectiveness Case Studies*: Brief, unscripted PowerPoint presentation that focuses on how different types of fuels reduction treatments affect fire behavior, based on recent wildfires around the American west.
- Publications
  - ❏ *Reducing Fire Risk on Your Forest Property* (PNW 618) https://catalog.extension.oregonstate.edu/pnw618

- ❑ *A Land Manager's Guide for Creating Fire-Resistant Forests* (EM 9087) https://catalog.extension.oregonstate.edu/em9087

Host prep

- ■ Recruit instructor(s) and panelists
- ■ Familiarize instructors with objectives, content, agenda, and structure of session
- ■ Communicate with CFA participants to confirm location and time
- ■ Make sufficient copies of all handouts
- ■ Reserve classroom
- ■ Confirm projector and laptop for the video
- ■ Set up room
- ■ Prepare refreshments (if applicable)
- ■ Identify field sites
- ■ Select desired in-class exercises, field demonstrations, and field exercises
- ■ Organize field tour transportation
- ■ Do a practice field tour with instructor(s)

Class prerequisites

Prework should consist of reviewing the background resources listed in this lesson plan. In particular, participants should review the videos "Yosemite Sequoias Need Fire," "Forest Fact Break: Forest Fire," and "Federal Forestland in Oregon." They should also scan *A Land Manager's Guide to Fire-Resistant Forests* (EM 9087). The self-assessment worksheet in the Fuels Reduction Strategies materials is a good way to help participants retain what they have learned.

Learning objectives

Participants will:

- ■ Analyze objectives for fuels reduction
- ■ Describe the four principles of fire-resistant forests
- ■ Compare and contrast typical fuels reduction and slash disposal methods and some of their pros and cons
- ■ Recognize the importance of location and spatial context in fuels reduction
- ■ Brainstorm ideas for how fuels reduction can be integrated with other objectives

Behavior objectives

Participants will:

- ■ Explain basic fuels reduction concepts and options to home- and landowners and the public, and refer those interested to additional sources of information
- ■ Assess fuels reduction needs and develop a plan of action to address these needs as part of their wildfire preparedness plan

Delivery methods

- ■ Lecture
- ■ Discussion
- ■ Field tour and site visits
- ■ Large-group or small-group exercises
- ■ Demonstrations

Instructor guidance

We recommend that most of this module be spent in the field. Participants are likely to be more engaged and retain more information in a field setting than if they learn about the topics in the classroom. However, the recommended agenda includes an introductory lecture and discussion on fuels treatment strategies.

Sample agenda

Location: Designated meet-up location

9:00 a.m. Welcome, review agenda and objectives for the day, and introductions. Find out what questions participants have from the readings and other prework.

9:15 a.m. Introductory presentation on fuels treatment strategies

10:30 a.m. Break

10:45 a.m. Depart for field tour

Lunch at a convenient location

Stop #1) Treated and untreated forest

Stop #2) Fuels treatment methods on public lands, strategic locations

Stop #3) Fuels treatments on private lands

2:30 p.m. Demonstrations of fuels treatment techniques

3:00 p.m. Field exercise: fuels reduction assessment of a property

3:45 p.m. Wrap up and adjourn. Field tour concludes.

Content outline

- HIZ Zone 3 brief review
  - Away from the homesite
- Objectives are to modify fire behavior (reduce intensity and rate of spread, resulting in lower severity) and facilitate suppression. Contrast fire-resistance with "fire-proofing."
- Review the four principles for creating fire-resistant forests
  - Reduce surface fuels, increase height-to-crown base, reduce crown density, retain large trees of fire-resistant species
- Fuels reduction methods
  - Thinning, pruning, mechanical (slash buster, etc.), grazing. Discuss methods, equipment, costs, pros and cons.
  - Regionally important fuels types and treatment methods (forest, woodland, chaparral, range; eastern, southwest, northwest Oregon; etc.)
  - Slash disposal options: chipping, removal, pile and burn, lop and scatter, others
  - Prescribed underburning
  - Importance of location and surroundings (spatial context); priority locations for treatment in Zone 3 (e.g., ridges and upper slopes)—tie in with fire behavior concepts, role of topography
  - Importance of maintenance; life span of treatments, need and methods for re-treatments (e.g., sprout clump control)
- Integrating fuels reduction with other objectives
  - Forest grazing, wildlife, forest health, watershed function
- Where to go for help
  - Technical assistance
  - Cost share and other assistance
  - Finding contractors to do the work
  - Doing it yourself
- Volunteer opportunities
  - Discuss possible volunteer opportunities related to what was learned in the module
    - Facilitate neighborhood identification of fuels treatment needs
    - Organize neighborhood work parties
    - Work with agencies to address fuels concerns

Exercises

There are several options for exercises for this module, both in the classroom and outside in a field tour. Field tour demonstrations and exercises may be done in conjunction with a field tour for modules 1 through 3 or could stand alone. CFA facilitators and instructors should choose options that work best for their group but might not use every exercise.

Self-assessment worksheet

Participants complete the worksheet in class, answering self-assessment questions during interactive presentation.

Matchstick forest demonstration

This demonstration reviews and builds on concepts learned in the fire science module. Use the "matchstick" forests to demonstrate various aspects of fire behavior and fuels reduction. For example, create a denser arrangement of matches to simulate an unthinned forest next to a sparser arrangement that simulates the effects of thinning. This could be a demonstration or hands-on exercise.

Field tour demonstration #1

Illustrate concepts in the field by showing participants 2 to 4 sites that contain each of the following elements. Some may be combined.

1. Untreated forest, ideally one that has burned and shows variable fire effects including high-severity fire
2. Fire-resistant forest, ideally one that was treated and underburned in a wildfire
3. Examples of various fuels treatments such as mowing, mastication, piling and burning, or

underburning, focusing on regionally relevant fuels types and treatments

4. Examples of treatments with strategic placements, e.g., on ridgelines or along roads
5. Public land where large scale fuels treatments have taken place
6. Private property examples of fuels treatment
7. Include a discussion of factors that foresters consider when deciding which trees to remove and which trees to retain

Field tour demonstration #2

The instructor, host, and/or a volunteer demonstrate fuels treatment methods, especially those applicable to landowners. Examples: pruning, hand piling of slash, pile burning, chipping, using a brushcutter or other tools to cut re-sprouting vegetation, and using a weed wrench or similar tool to uproot Scotch broom or other highly flammable invasive weeds. The demonstration should include a discussion of proper techniques as well as equipment options. If feasible, give volunteers opportunities to try out the hand tools and perhaps construct a slash pile.

Field exercise (30 to 45 minutes) – Divide into small groups (3 to 6 people per group). Each group will complete a fuels reduction assessment and action plan for a property or other defined area. They should evaluate the relative fuel hazard and identify locations for and types of fuels reduction. See fuels reduction assessment form (page 90) for detailed instructions.

May combine with field visits for modules 1 through 3

Alternative delivery methods

In the hybrid approach, the main content is covered in the scripted PowerPoint on fuels reduction basics. Participants could review this presentation online, as well as video clips and other publications and presentations listed under "Background resources and Materials." The field trip topics and exercises could be covered during the onsite field session. Then, to complete the module, participants would fill out the self-assessment form and complete relevant sections of their wildfire preparedness plan.

You may combine this field tour with field visits for modules 1 through 3.

Suggested homework

For homework, participants should complete the Zone 3 section of their wildfire preparedness plan.

Self-assessment questions

A self-assessment worksheet is included in the materials for this module (page 89).

Fuels Reduction Strategies Materials

Photo: Dave Powell, Bugwood

slide deck

Citizen Fire Academy

Fuels Reduction

Max Bennett, OSU Extension, Oregon State University

Oregon State University

Oregon State University Extension Service

Presentation objectives

After this module, you will understand and be able to describe:

- The objectives of fuels reduction
- The four principles of fire-resistant forests and woodlands
- Typical fuels reduction methods for forests, woodlands, chaparral, rangelands
- Priority locations for fuels reduction
- Integrating fuels reduction with other objectives

We're focusing on fuels reduction *beyond* the HIZ/DF

Fuels reduction objectives

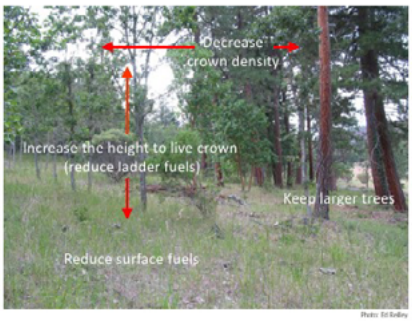
- Modify fire behavior
  - Reduce rate of spread
  - Reduce fire intensity (flame length)
- Make it easier for firefighters to suppress the fire
- Reduce damage to resources & property (trees, wildlife, watersheds, etc.)
- "Make your property less inviting to fire, and more inviting to firefighters"
- ~~"Fireproofing"~~

Example

Squire Fire, July 2002
Jackson County, Oregon

Untreated

Commercially thinned, piled, piles burned



Fuels reduction before and after

Before

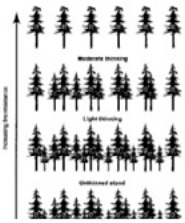
After

Fuels reduction in forests and woodlands

Thinning
Pruning
Slash treatment
Prescribed fire

Thinning

- Thinning subordinate trees mimics natural stand mortality (and mortality caused by natural surface fires).
- The larger codominant and dominant trees are left, which are more fire-resistant.

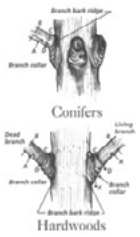


"Thinned from below"

Pruning

- Prune up to 8 to 10 feet or more
- Leave enough foliage for good tree vigor
  - Rules of thumb
- Treat slash
- Often combined with thinning

Pruning guidelines



- Use sharp tool
- Avoid flush cuts and coat hangers
- Prune conifers late summer through winter
- Prune hardwoods during dormant season
- No wound dressings

Slash treatment

Utilization
Lop and scatter
Pile and burn, swamper burn
Masticate
Chip
Haul away

Utilization

Sawlogs

Post and poles

Utilization summary

- Reduces woody material, but mostly pole size or larger
- Fine fuels left on site unless whole tree yarded
- Potential to offset cost of treatment
- Labor/cost tradeoffs between gathering material and leaving it in the woods

Lop and scatter

Pile and burn

Swamper burning

Pile and burn summary

- Effectiveness
- Costs
- Burn-day windows
- Risk of holdover fires
- A leading cause of wildfire!

Chipping

- Effectiveness
- Costs
- Slope and access
- Uses for chips

Haul Away

- Biomass
- Compost/landfill

Prescribed fire (underburning)

Before and after underburning

Prescribed fire key points

Fuels reduction in chaparral, rangeland, and grassland

Mastication
Mowing
Grazing
Prescribed fire

Brush – "mastication"

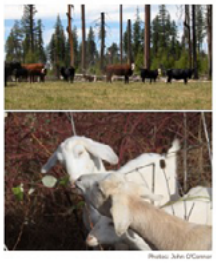
Mowing bitterbrush

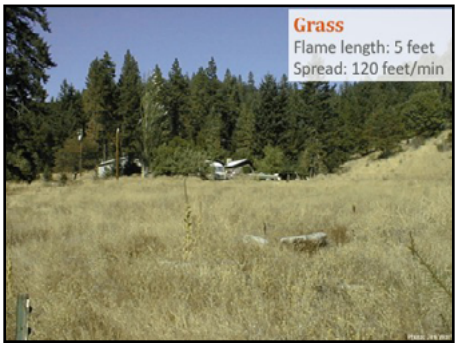
Mastication: What does the research say?

- Relatively cost effective
- Reduces crown fire potential
- May not reduce fire severity
- Equipment may result in soil displacement and compaction, but this can be mitigated
- Material acts as mulch
- No evidence of short-term effects on soil microbes or nitrogen
- Alteration of wildlife habitat

Grazing/browsing

- Cattle and sheep can help reduce grass and other fine fuels
- Goats and sheep browse woody vegetation
- Can be effective
- Require intensive management





Grass
Flame length: 5 feet
Spread: 120 feet/min

Grass

- Grazing
- Mowers or string trimmers
- Observe fire season restrictions

Mowed grass, timber litter
Flame length: 1 foot
Spread: 3 feet/min

Lifespan of fuels treatments can be short

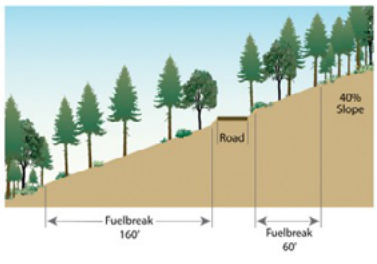
Maintenance methods

Fuels reduction: Where?

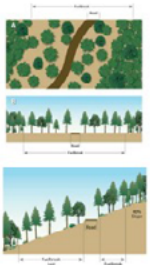
Because you probably can't afford to do it everywhere (if you have a larger property)

Along ridgelines

Above and below roads



Shaded fuelbreaks



Photos: Max Bennett, © Oregon State University

Diagrams: © Oregon State University

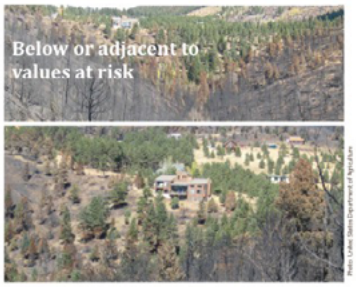


Figure 48. An example of a homeowner treating both canopy and surface fuels around their home that resulted in low burn severity to the vegetation. Note the low burn severity resulting from a surface fire to the left of the home even as an intense fire approached the home as shown in the top photo (photos: Dave Steensmann (middle and bottom), Mary Alston (top)).

Photo: Lolkes (State Department of Agriculture

Lower priorities

- Riparian corridors
- Other sensitive areas
- North slopes
- More remote locations

Photo: Max Bennett, © Oregon State University

Integrating with other objectives

Wildlife
Forest health
Aesthetics
Grazing

Wildlife patch retention

Break up continuity of fuels

Photo: Marty Main

Retain patches, break up fuel continuity

Photos: Ed Hildy

Retain deciduous shrub species

Photo: Max Bennett, © Oregon State University

Timber production

- Fuels reduction is usually compatible
- Focus fuels treatments in tactically important locations

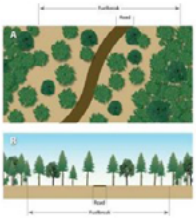


Diagram: © Oregon State University

Retain some snags and logs

Photo: Max Bennett, © Oregon State University

Photo: Chris Schnopf, Bugwood.org

Fuels reduction can promote tree vigor and resistance to pests

Photo: Stephen Fitzgerald, © Oregon State University

Aesthetics and privacy

In the eye of the beholder, but...

- Variation in tree sizes
- Retention patches
- Separate patches; reduce fuel continuity

Photo: Max Bennett, © Oregon State University

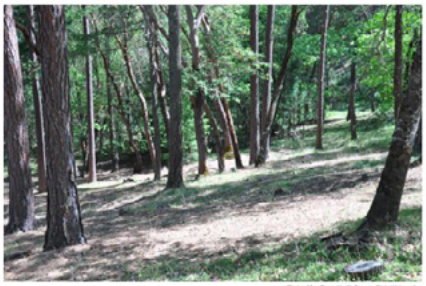


Photo: Max Bennett, © Oregon State University

Grazing

Fuels treatments promote grass growth and reduce slash.

Photo: Chris Schnepf, Bugwood.org

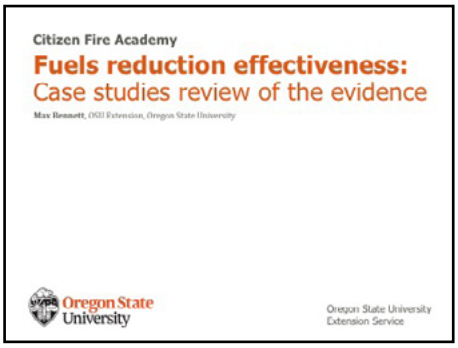
Review and wrap-up

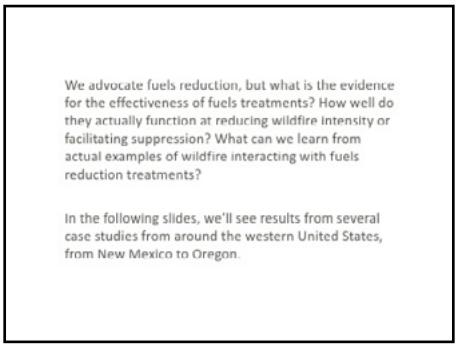
- Goal of fuels reduction is to modify fire behavior, reduce negative effects, make it easier to suppress, not to "fireproof"
- Make your forest/woodland or rangeland more fire-resistant by:
  - Reducing surface and ladder fuels
  - Spacing out tree crowns
  - Retaining the largest, most fire-resistant trees

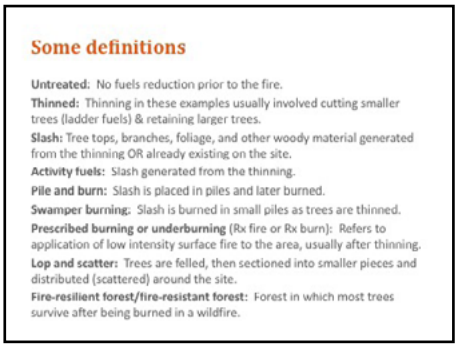
Review and wrap-up (2)

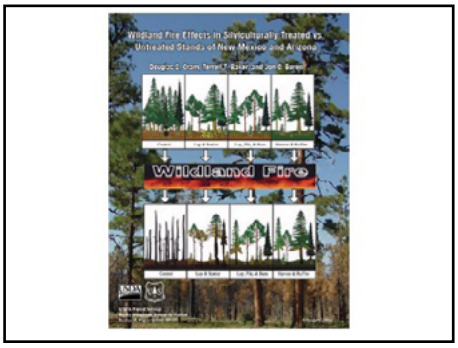
- Many fuels reduction methods, each with pros and cons
- Focus fuels reduction in priority areas
- Fuels reduction can be integrated and is compatible with many other objectives: wildlife, grazing, timber, forest health, aesthetics, privacy, etc.

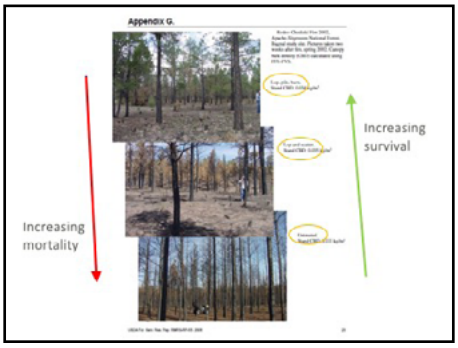
slide deck

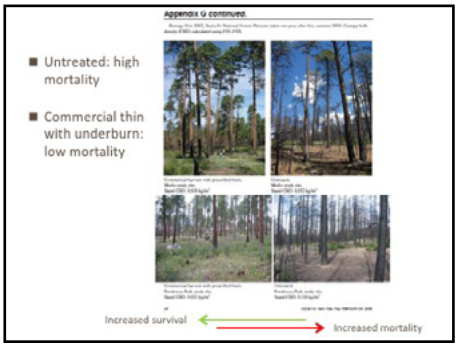

Citizen Fire Academy
Fuels reduction effectiveness:
Case studies review of the evidence
Max Bennett, OSU Extension, Oregon State University
Oregon State University
Oregon State University Extension Service

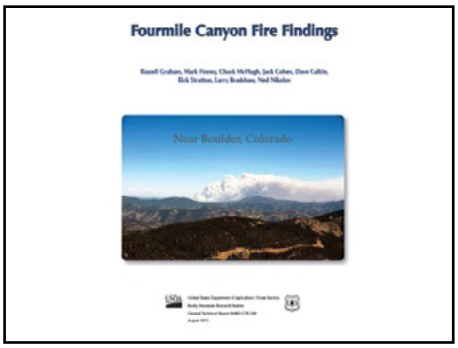

We advocate fuels reduction, but what is the evidence for the effectiveness of fuels treatments? How well do they actually function at reducing wildfire intensity or facilitating suppression? What can we learn from actual examples of wildfire interacting with fuels reduction treatments?
In the following slides, we'll see results from several case studies from around the western United States, from New Mexico to Oregon.

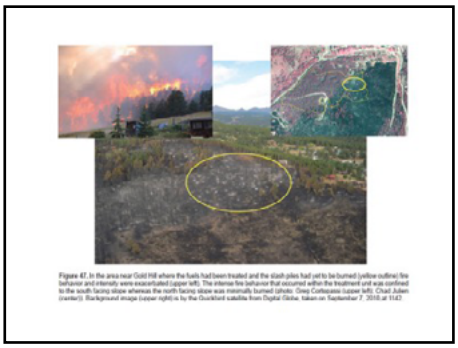

Some definitions
Untreated: No fuels reduction prior to the fire.
Thinned: Thinning in these examples usually involved cutting smaller trees (ladder fuels) & retaining larger trees.
Slash: Tree tops, branches, foliage, and other woody material generated from the thinning OR already existing on the site.
Activity fuels: Slash generated from the thinning.
Pile and burn: Slash is placed in piles and later burned.
Swamper burning: Slash is burned in small piles as trees are thinned.
Prescribed burning or underburning (Rx fire or Rx burn): Refers to application of low intensity surface fire to the area, usually after thinning.
Lop and scatter: Trees are felled, then sectioned into smaller pieces and distributed (scattered) around the site.
Fire-resilient forest/fire-resistant forest: Forest in which most trees survive after being burned in a wildfire.

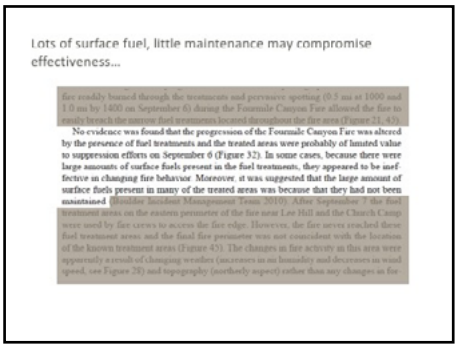

Wildland Fire Effects in Silviculturally Treated vs. Untreated Stands of New Mexico and Arizona
Wildland Fire

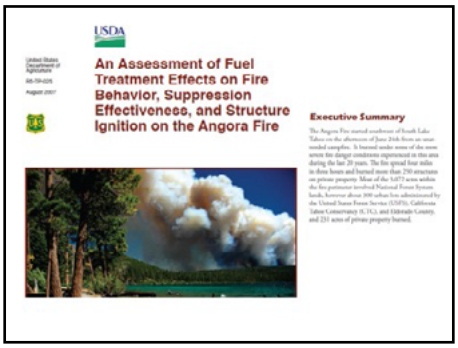

Appendix G.
Increasing survival
Increasing mortality

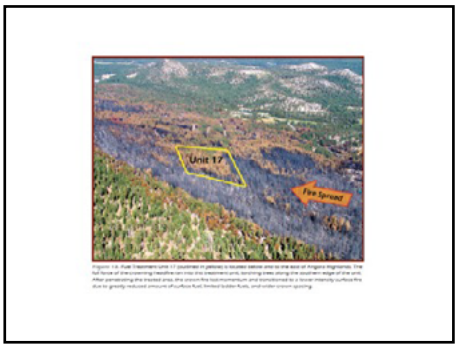

Appendix G continued.
Untreated: high mortality
Commercial thin with underburn: low mortality
Increased survival
Increased mortality

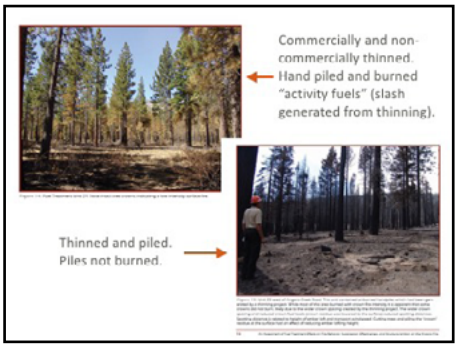

Fourmile Canyon Fire Findings
Near Boulder, Colorado

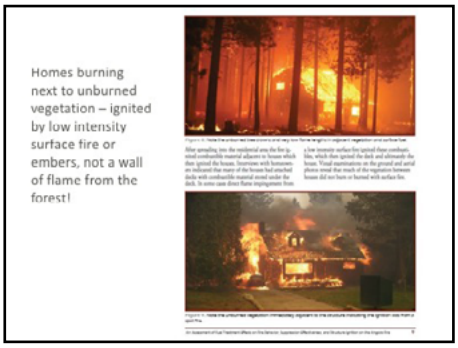


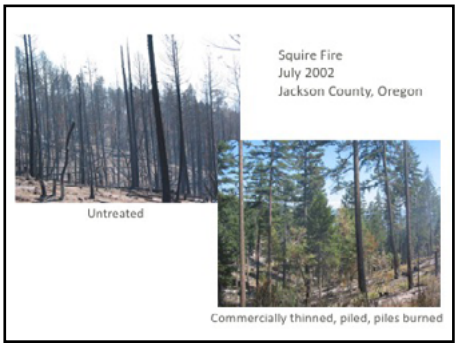

Lots of surface fuel, little maintenance may compromise effectiveness...


USDA
An Assessment of Fuel Treatment Effects on Fire Behavior, Suppression Effectiveness, and Structure Ignition on the Angora Fire
Executive Summary


Unit 17
Fire Spread







Conclusions from case studies

- In almost all cases, fire behavior was modified in treated (fuels reduction) stands compared to untreated stands.
- Thinning followed by prescribed underburning is the "gold standard" of fuels reduction. Intense wildfires including crown fires that entered forests that had been thinned and underburned generally dropped to the ground and even went out. Most of the trees in the treated area survived.
- Forests that were thinned, piled, and burned had significantly lower fire intensity and increased tree survival compared to untreated stands.
- Stands that were thinned and where the activity fuels were piled but not burned, or where the slash was lopped and scattered, generally showed a reduction in crown fire compared to untreated stands, but these stands often experienced intense surface fires and high levels of tree mortality.
- Thinning in the absence of surface fuel treatment sometimes increased tree mortality compared no treatment.
- **Conclusions:** Thinning alone may reduce crown fire but not necessarily tree mortality. Treatment of surface fuels is critical in creating fire-resilient stands.
- Treatments must be maintained!

Principles of fire-resilient forests emerging from these and other studies

To create and maintain a fire-resilient forest:

- Reduce surface fuels
- Reduce ladder fuels
- Reduce crown density
- Retain large, fire-resistant trees

Fuels Reduction Module Self-assessment

1. **Which of the following is typically NOT an objective of fuels reduction?**

a) Reduce the rate of fire spread
b) Make it easier to suppress a wildfire
c) Prevent fire from entering the property or treated area
d) Reduce damage to property or resources

2. **List at least four things you can do to make a forest more fire-resistant (better able to survive a wildfire):**

1._____
2._____
3._____
4._____
5._____

3. **Larger trees are generally more fire-resistant because _____**
_____

4. **Chipping, lop and scatter, prescribed burning, and pile and burn are methods of reducing surface fuels. Which of these will likely do the best (most complete) job of reducing surface fuels? Which will likely leave the most surface fuels?**

_____
_____

5. **Thinning always reduces fire intensity, compared to no treatment. True or false?**

6. **Since prescribed underburning is a very effective fuels reduction method, private owners should immediately begin to use this technique more frequently, in fact, as often as possible. True or false?**

_____

7. **What is one risk of piling and burning? _____**

8. **What are three (or more) good locations for fuels treatments?**

1. _____
2. _____
3. _____

9. **List at least three things you can do to integrate fuels reduction with other objectives (that is, to make fuels treatment more compatible with other objectives).**

1. _____
2. _____
3. _____
4. _____

Fuels Reduction Assessment and Action Planning Field Exercise

This is a small-group field exercise designed to reinforce fuels reduction concepts learned during the Fuels Reduction module and to prepare participants to complete relevant sections of their Wildfire Preparedness Plan. It gives participants a chance to evaluate the fuel hazard and crown fire potential of a wildland area and to develop a prescription for treatment.

Time: 30 to 45 minutes

Setting: Any wildland setting where there is a need and opportunity to complete fuels reduction. This could be done on a landowner's property in a wooded or brushy area, along a driveway or access road, etc. It could also be done on public lands—for example, in a dense, overstocked stand.

Materials needed: Clipboard, pencils, assessment sheet

Instructions: Discuss the objectives of the activity. Divide the class into small groups of 3 to 6 people. Give each person the form. Review the principles of fire-resistant forests. Give background on the setting (location, owner situation and objectives, past fuels treatments, etc.). Define the area to be considered, perhaps about 1 acre in size. You may want to flag it off in advance if the boundaries are not obvious. (10 minutes)

Groups then walk around the defined area, making observations and recommendations (if applicable) for each item on the form. Groups should develop an overall prescription and plan for the site with the objective of reducing the fuels hazard and crown fire potential while also protecting values at risk and maintaining important habitat features. (20 to 30 minutes)

Groups reconvene and report their results. Discuss. (15 minutes)

Fuels Reduction Assessment & Action Plan

Feature	Observations
Are there topographic features relevant to fire behavior (slope, aspect, elevation)?	
What are possible or likely sources of ignition on this site? What direction might a fire come from?	
Is there slash from prior practices? Should it be abated? If so, how?	
Describe surface fuels (type, arrangement, amount).	
Describe ladder fuels (type, arrangement, amount).	
Describe crown density and species.	
What is your assessment of the risk of crown fire on this site, given an ignition?	
What is the fuels situation around key areas or features (roads, trails, highly used areas)?	
Are there opportunities to tie fuels reduction treatments into natural or human-made features (ridges, roads, meadows, open areas)?	
Is there evidence of past fuels treatments?	

What important values are at risk on this site? How will they be protected?	
Are there important habitat features on this site? How will fuels treatments maintain or protect habitats?	

Objectives for site:

- Reducing fuels loads
- Reduce crown fire potential
- Protecting values at risk
- Maintaining important wildlife habitat features

What is your recommendation for this site? What type(s) of fuels treatments should be used? How will the objectives be achieved? What are the maintenance needs?

Module 6: **Effective Volunteering and Graduation**

Introduction

This is the culminating event for your Citizen Fire Academy. At this point, your CFA participants should be fairly knowledgeable on fire behavior and strategies. This module will give them an opportunity to present an individual or community wildfire preparedness plan and talk about volunteer opportunities.

The volunteering portion of the module should be viewed as the culmination of efforts to connect the class with what they need to be effective volunteers who improve community resilience to fire. It is not a stand-alone module mentioned only at the end. Throughout the program, the CFA facilitator should refer to the volunteer organizations, activities, and projects that are open to CFA participants.

In order to build capacity for fire resilience within the greater community, your class will need to learn how to use the information they have learned and share it with neighbors and friends. The volunteering portion of the module is designed to help participants hone the necessary skills for communicating with their communities, both friends and strangers. Additionally, exercises in this module should guide participants to meaningful volunteer activities that align with their talents and abilities.

After the end of the CFA program, it will be important for the facilitator to stay engaged with the class as participants complete their volunteer hours. The CFA facilitator should be ready to connect CFA volunteers with volunteer opportunities that they come across.

The wildfire preparedness plan presentations will vary depending on your students. Past experience shows that forest landowners will more likely focus on individual plans, whereas homeowners in neighborhoods will focus on neighborhood-scale preparedness planning. CFA participants may even present research projects on different fire-resistant plants or mulches. It is up to you to decide how flexible to be and how creative you want the participants to be!

This is also your opportunity to celebrate everyone's hard work and recognize participants for their efforts in this program and in the community, which is why we recommend closing this event either with a lunch or dinner. If funds are limited, you could even do this as a potluck. Consider inviting leaders from fire and forest-related management agencies to this event. It gives them the chance to see how capable your CFA graduates are, and the graduates will feel valued.

Room setup

There are a couple of setup options depending on your preferences. You will need enough space for presentations, discussion, and video. This module can be held in a traditional schoolroom layout, or, for a more conversational module, a half-moon/cabaret layout style is appropriate. (See "Room setup," page 7)

If you are serving a meal during the module, it is recommended that access to a kitchen be available.

Total time needed

Classroom: 4 to 5 hours

Equipment needed

- Computer with PowerPoint
- LCD projector
- Laptop and projector screen
- Internet connection for the online volunteer hours report form
- Flip chart, markers, stickers, and easel
- Handouts
- Graduation certificates or badges
- Refreshments or kitchen supplies

Background resources

- "Prior Collaboration Improves Wildfire Response and Recovery" https://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/WFRes_FS2_Raton.pdf
- "Homeowners Associations as Promising Structures for Wildfire Risk Reduction" https://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/WFRes_FS1_Caughlin.pdf
- "Private Forest Owners and Wildfire Risk" http://www.nwfirescience.org/sites/default/files/publications/NWFSC_RB2.pdf
- "Why People Don't Take Action" activity
- CFA volunteer service activities
- Volunteer hour report form
- Volunteer hour online report form https://docs.google.com/forms/d/160EBNgCgIHvUu27QHA1Il4f9PwmsBdfoJ1u9vq2ev9Y/viewform

Host prep

- Recruit panelists
- Familiarize instructors with objectives, content, agenda, and structure of session
- Communicate with CFA participants to confirm location and time
- Remind participants to bring their presentations
- Set up a meeting with local agencies, organizations, and districts to develop tangible options for CFA volunteers
- Edit volunteer jobs template to include locally developed volunteer options
- Recruit panelists from partnering organizations who are willing to discuss volunteer options. If possible, include Firewise community representatives to present on how to develop Firewise communities.
- Request that panelists prepare a 2- to 3-minute talk to discuss their agency and how volunteers can help
- Familiarize host and panelists with objectives, content, agenda, and structure of session
- Familiarize CFA participant presenters with presentation equipment and structure of session
- Reserve classroom
- Confirm projector, laptop, and microphone (if needed for presentations)
- Set up room
- Confirm catering (if applicable) or create an email list for a potluck

Class prerequisites

- Read one or more of the following documents
  - ❏ "Prior Collaboration Improves Wildfire Response and Recovery"
  - ❏ "Homeowners Associations as Promising Structures for Wildfire Risk Reduction" (good for groups where many CFA participants are a part of an HOA)
  - ❏ "Private Forest Owners and Wildfire Risk" (good for groups where many CFA participants are forest landowners)
- Prepare a 3- to 5-minute presentation on wildfire preparedness plans. Presentation times may be altered depending on the class size.
- Written volunteer plan
  - ❏ Prior to this module, participants should be encouraged to fill out the volunteer plan portion of the wildfire preparedness plan as much as possible and continue working towards its completion during the module.

Learning objectives

Participants will:

- Apply what has been learned throughout the program to a wildfire preparedness plan for their personal property or neighborhood
- Recognize factors that may influence public perception of local mitigation activities
- Recognize how learning styles affect group dynamics and how different people are best engaged
- Differentiate between communication techniques that motivate (safety, health, ecology) versus those that do not (fear) for

effective communication with neighbors whose perception of risk may vary

- Manage volunteer hours using the worksheet
- Prepare to serve as CFA volunteers

Participants will be recognized for their efforts in the program and be encouraged to continue learning.

Behavior objectives

Participants will:

- Present wildfire preparedness plans
- Use individual skills to contribute to CFA outreach and community fire resilience
- Develop volunteer opportunities that are effective and personally meaningful
- Support, engage, and report to appropriate agencies
- Effectively communicate with neighbors and friends on the dangers of and mitigation strategies for wildfire
- Instruct community members on how to access information, resources, and contacts to answer questions
- Develop a sense of ownership and responsibility to complete volunteer hour requirements through project-based work
- Effectively record hours and gauge impact

Delivery methods

- Presentations or video
- Panel discussion
- Break-out exercises

Instructor guidance

This should be one of the most fun modules of the course and an opportunity to get CFA participants excited about the next phase of the program. It is recommended that this module be conducted in a setting that facilitates discussion between participants, presenters, and panelists. The CFA facilitator should meet with forestry- and fire-related agencies, organizations, and community groups prior to this module to discuss possible volunteer options.

During CFA participant presentations, keep the environment light and positive, as it can be difficult for some adult learners to speak in public. Three to 5 minutes for presentation and 2 minutes for questions and answers are usually sufficient. If there are no questions from the group, it will be up to you to ask questions that tie concepts together from prior modules. Be strict on time so that boredom is not an issue.

Volunteerism is an important part of the program, even if the CFA facilitator opts to not make volunteer hours mandatory. As volunteers, participants solidify concepts learned throughout the course by putting them to use, whether helping friends and family conduct HIZ assessments, encouraging their communities to take proactive measures in wildfire preparedness, or assisting with fire preparedness projects in their community.

Assign one or more of the three short articles listed under "background resources" as a class prerequisite or use them in class to spark a discussion on how collaborative efforts can tangibly benefit wildfire preparedness and response.

Throughout this module, the CFA facilitator should encourage participants to offer to conduct informal assessments for their neighbors, friends, family, and larger community. Remind them that doing so can go towards completing their required volunteer hours.

Sample agenda

Location: Classroom

1:00 p.m. Introduction of agency panelists

1:15 p.m. Discussion on assigned reading material

1:30 p.m. "Why People Don't Take Action" and role-play activities

2:00 p.m. Participant presentations of wildfire preparedness plan

2:45 p.m. Refreshment break

3:00 p.m. Continuation of presentations

4:00 p.m. CFA volunteer video and/or a presentation from a former CFA volunteer

4:15 p.m. Facilitated discussion: Agency and Firewise community panel discussion with participants on volunteer opportunities

5:00 p.m. CFA participant recognition and graduation ceremony. Informal discussion of volunteers' plans, continuing education, and communication. May be done in conjunction with dinner to save time.

5:30 p.m. Dinner and program evaluations

6:30 p.m. Wrap up and adjourn

Content outline

- Introduction and overview of agenda
- Wildfire preparedness plan presentations
- Who is in your community: Communicating with and understanding your audience
  - ❏ Review one or more of the three short articles: "Prior Collaboration Improves Wildfire Response and Recovery," "Homeowners Associations as Promising Structures for Wildfire Risk Reduction," or "Private Forest Owners and Wildfire Risk"
  - ❏ Ask participants about responses they have heard when talking about fire
  - ❏ Write down perceptions and brainstorm methods to reach those who do not know or do not care
  - ❏ "Why people Don't Take Action" exercise
  - ❏ Role-play interactions with the public
- Making an impact in your community
  - ❏ Presentation or video of former CFA or Firewise volunteers regarding the work they completed and challenges they faced
  - ❏ Round robin conversation with CFA participants about what they want to do as volunteer projects
    - Additional CFA volunteer job descriptions
    - Presentation on possible volunteer ideas for those who haven't selected a project or who want or need additional hours

Exercises

"Why Don't People Don't Take Action"

Use the worksheet to go over several common reasons why landowners and homeowners do not take action to prepare for wildfire. Have participants suggest additional reasons if they know of any.

Write out the reasons on a chart or whiteboard and distribute stickers to participants. Have each participant put stickers next to what they consider to be the top three reasons why people in their neighborhood don't take action. The CFA facilitator should then go through the reasons that received the most dots. As a group, discuss possible solutions to these reasons.

After the exercise is completed, take some time to have participants role-play conversations between CFA volunteers and the public using reasons from the list.

Alternative delivery methods

This module may be split up in two shorter modules, one focused on effective volunteerism and one on wildfire preparedness plans and graduation.

If modules are done separately, the volunteer module will take about 2.5 to 3.5 hours, including the "Why People Don't Take Action" exercise, panel discussions with agency representatives, and discussion about volunteer plans. The written volunteer plan may be assigned as homework to be turned in during the graduation module, instead of being assigned as a class prerequisite.

A standalone graduation module's required time will vary depending on whether or not a meal is served. This module could last from a few hours to half a day. Completed wildfire preparedness plan presentations will be given at this module, including each CFA participant's volunteer plan. Agency representatives may not be available if they have already served as panelists during the volunteer module; however, it may still be a good idea to invite them to speak on CFA participant progress and future plans.

Suggested homework

There is no homework for this module.

Self-assessment questions

One question for each of the short documents if assigned as a class prerequisite.

"Prior Collaboration Improves Wildfire Response and Recovery": What were some of the factors that helped the community of Raton prepare for and respond to wildfire?

"Homeowners Associations as Promising Structures for Wildfire Risk Reduction": What are the ways that Homeowners Associations can help prepare for wildfire?

"Private Forest Owners and Wildfire Risk": What are the four types of forest landowners identified in the survey? What type of forest landowner category fits you the best?

Effective Volunteering and Graduation Materials

Photo: Carrie Berger, © Oregon State University

Ecosystem Workforce Program

HOMEOWNERS ASSOCIATIONS AS PROMISING STRUCTURES FOR WILDFIRE RISK REDUCTION

THE HAWKEN AND CAUGHLIN FIRES IN CAUGHLIN RANCH, NEVADA

FACT SHEET 1 • SUMMER 2014

Local organizations can play a prominent role in wildfire preparedness, response, and recovery. The Caughlin Ranch community experienced two destructive fires–the Hawken Fire in 2007 and the Caughlin Fire in 2011–which together burned a total of 4,645 acres. Both fires resulted in neighborhood evacuations, and the Caughlin Fire produced significant damage to homes in a nearby subdivision. The Caughlin Ranch Homeowners Association is a major community-level organization that plays a substantial role in regulating landscapes, building materials, and appropriate development in the Caughlin Ranch community. It operates within the context of other local, state, and national organizations, all of which play a role in fire response and risk mitigation. This case demonstrates the potential for homeowners associations to incentivize risk mitigation in wildfire-prone communities by assuming greater responsibility for wildfire protection in development and maintenance codes, covenants, and restrictions.

COMMUNITY CONTEXT

Caughlin Ranch is a subdivision located on the western fringe of Reno, NV. Native desert scrub vegetation, including rabbitbrush and sagebrush, extends throughout the community, but the neighborhood also contains many planted trees, watered lawns, ponds, and walking paths. Many residents feel strong place attachment and value the park-like landscape as a contrast to the surrounding desert environment, but some fail to see how the presence and layout of this vegetation can contribute to wildfire risk.

A number of different organizations have roles and responsibilities related to fire preparedness and safety in and around Caughlin Ranch, including the City of Reno Fire Department, Truckee Meadows Fire Protection District, the University of Nevada-Reno Cooperative Extension (via their "Living With Fire" project), and the Caughlin Ranch Homeowners Association (HOA). The HOA is particularly influential given its authority to shape the physical condition of individual properties and the community as a whole. Since the earliest days of the subdivision in the 1980s, HOA Covenants, Conditions, and Restrictions (CC&Rs) have required homeowners to plant and maintain evergreen trees and shrubs on their properties. While this policy contributed to the verdant setting for which Caughlin Ranch is locally famous, it also created

UNIVERSITY OF OREGON · WASHINGTON STATE UNIVERSITY · Portland State UNIVERSITY · University of Idaho

ewp.uoregon.edu/wfresilience

a potential fire hazard throughout the community. Other CC&Rs are better suited to fire safety, including a rule that prohibit wood shake roofing materials (a major fire risk factor); however, until recently the process required to remove existing vegetation remained onerous. Existing CC&Rs also require split wood fencing around every property and in common areas, further adding to potential fire danger. These examples demonstrate the power of CC&Rs to either improve or negate fire preparedness in communities with prominent HOAs.

THE HAWKEN AND CAUGHLIN FIRES

The Hawken Fire burned from July 16-24th, 2007. Originating from construction work occurring in a neighborhood of Caughlin Ranch, the blaze spread through scrub vegetation on Humboldt-Toiyabe National Forest and private lands west of the community. Although no structures were destroyed, the fire necessitated several neighborhood evacuations and road closures. In total, the fire burned 2,710 acres and cost 3.2 million dollars to suppress.

The Caughlin Fire ignited when a power line hit a tree on November 18th, 2011. Exceptionally windy conditions contributed to significant damage in the first few hours, but responders were able to contain the fire completely by November 22nd. Over 4,000 residents were evacuated, and several neighborhoods to the east and south of the community were significantly affected. As the fire burned, one resident died from a heart attack during evacuation, twenty-nine homes were demolished, and another eight were damaged. The fire burned almost 2,000 acres, the majority of which were on private land.

AFTERMATH

The Caughlin Fire was highly publicized in the media due to the significant level of property damage it caused. A study completed by the Reno Fire Department after the fire showed that existing vegetation proximate to structures, closeness of structures to one another, wood shake roofing, and location near a canyon were associated with wildfire damage and residential home loss during the fire. Investigators concluded that defensible space creation around residences was a powerful means for reducing the risk of wildfire damage. After the fire, the Caughlin Ranch HOA responded by instituting fuel reduction efforts in common spaces throughout the community, prohibiting the use of bark mulch in landscaping, and working with the University of Nevada-Reno Cooperative Extension to provide more resident outreach and education regarding wildfire risk and preparedness. The HOA also modified their CC&Rs so that flammable vegetation could more easily be replaced by "fire-safe" plant species identified in a UNR Cooperative Extension publication. While these are important steps toward greater fire preparedness, significant fuel loads and fire danger persist within the community, and mitigation efforts to substantially alter these conditions continue to rely on the knowledge and voluntary behavior of individual homeowners.

LESSONS LEARNED

HOAs can have substantial impacts on community wildfire preparedness due to their ability to design and enforce rules and regulations that affect all residents. The case of Caughlin Ranch demonstrates that in landscapes prone to wildfire risk, HOAs can be powerful players in driving physical conditions and resident activities. While they must often contend with challenging tensions between community fire safety and homeowner preferences and perceptions, their central structure and authority has high potential to ultimately reduce or intensify vulnerability to wildfires in many communities.

MOVING FORWARD

Despite successful efforts to reduce fuel loads in common spaces and nearly eliminate the use of wood shake roofing materials, dangerous vegetative fuel conditions persist throughout the community and much more work will need to be done to engage homeowners in understanding fire danger and taking proactive steps to reduce their vulnerability. It is likely that the Caughlin Ranch HOA will continue to be the most effective organization for accomplishing these efforts within the community. By strengthening its ties and working collaboratively with other community, state, federal, and academic organizations in the area, the HOA may further realize these goals.

LEARN MORE

For more information about the project and additional publications go to:
ewp.uoregon.edu/wfresilience

Contact: *ewp@uoregon.edu*

This fact sheet series is part of a research collaboration between University of Oregon, Washington State University, Portland State University, and University of Idaho, with funding from the USDA National Institute for Food and Agriculture, Grant #2011-67023-30695. Photo credits: header: Autumn Ellison; p.1: U.S. Forest Service Coconino National Forest; p.2: Jeff Clark, Oregon BLM.

Ecosystem Workforce Program

PRIOR COLLABORATION IMPROVES WILDFIRE RESPONSE AND RECOVERY

THE 2011 TRACK FIRE IN RATON, NEW MEXICO

FACT SHEET 2 • SUMMER 2014

Large wildfires can affect communities in many ways. For the city of Raton, New Mexico, the 2011 Track Fire posed a significant threat to the city's municipal watershed. Despite significant pre-suppression work to treat the forest within the watershed, the Track Fire burned with high severity through much of the area and necessitated immediate recovery actions to maintain the watershed as a primary drinking water source. The relationships, communication, and trust that were established between key partners during prior projects, however, initiated quick wildfire response and recovery actions, which helped save the watershed from the "worst case scenario fire." This case study demonstrates the value that prior collaboration can have in reducing the lasting impacts of a large, severe wildfire.

WILDFIRE PREPARATION

Sugarite Canyon State Park is one of the only parcels of public land in the Raton area and is highly valued for activities such as hiking, camping, fishing, and hunting. It contains dense ponderosa pine and mixed conifer stands and serves as the primary municipal watershed for Raton. In 2002, several key players from local- to national-level agencies involved in natural resource management started working with each other and with relevant NGOs to discuss, plan, and implement vegetation management projects in the Sugarite Canyon State Park area.

Thinning projects within the state park began in 2004. In 2006, the group was awarded a federal Collaborative Forest Restoration Program[1] grant to prepare a watershed stewardship plan and implement restoration projects on the New Mexico side of the border. Approximately 600 acres of dense forest were ultimately thinned from 2005 to 2007, and additional acres on the Colorado side brought the total area treated to around 2,700 acres by 2010.

THE TRACK FIRE

The Track Fire burned 27,792 acres in New Mexico and Colorado from June 12th through June 27th, 2011. Fire behavior was extreme and facilitated by high winds, low humidity, and dry conditions following extended drought. Within hours of ignition the fire jumped I-25, necessitating landowner evacuations on the fringes of Raton and surrounding lands. It quickly ran up and over surrounding mesas before spreading eastward to the basin containing lakes Maloya, Dorothey, and Alice, which provide the primary drinking water for the city of Raton.

UNIVERSITY OF OREGON · WASHINGTON STATE UNIVERSITY · Portland State UNIVERSITY · University of Idaho

ewp.uoregon.edu/wfresilience

The Raton Fire Department responded first to the fire, but local response capacity was quickly overwhelmed. A New Mexico state wildland fire crew arrived several hours after the fire started, and was followed by a Type II federal team the following day. Although there was little that local efforts could do to stop the spread of the fire in the extreme dry conditions, the partnerships that were established during the prior collaborative thinning projects helped promote efficient communication and organization around next steps. Networks and trust established between partners during previous efforts were widely credited for expediting action and facilitating a smooth transition from local to regional and federal efforts.

RECOVERY

Recovery efforts were urgent and extensive. In addition to the severity of the burn, large rainfall events forecasted soon after the fire was contained posed a significant threat to the municipal water supply. Watershed engineering work began immediately upon containment to prevent post-fire sedimentation from degrading the water supply.

Several preparatory considerations helped facilitate the necessary efficiency of this work. The City of Raton Water Works Department had set aside funds through a special user fee which could immediately be used as the required match for Natural Resource Conservation Service Emergency Watershed Protection funds. This funding was therefore able to get rehabilitation through seeding and contour logging started as soon as possible. In addition, although the fuels reduction efforts did not alter the fire behavior of the extreme fire event, the cooperative relations built during the reduction efforts helped greatly in the local post-fire recovery by facilitating quick decisions, action, and trust among partners to tackle rehabilitation efficiently.

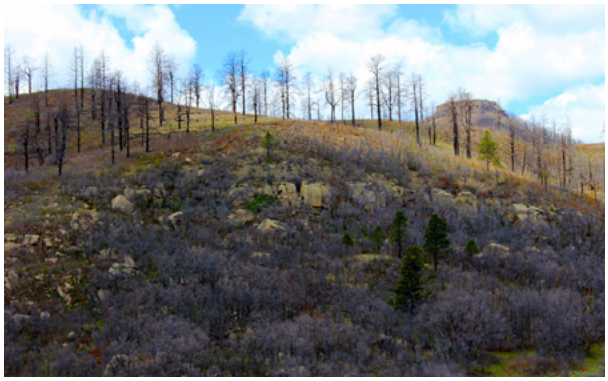
In general, the post-fire watershed rehabilitation work was highly successful. Although one of the three reservoirs had to be sacrificed for use as a sediment basin, the recovery effort was broadly seen as providing the best possible outcome from a worst-case scenario in the watershed. Efforts also succeeded in protecting the municipal and recreational values associated with Lake Maloya, the largest reservoir and centerpiece of the state park.

LESSONS LEARNED

Some disagreement and eventual compromise around how to treat forests in the state park may have resulted in less intensive treatments or prevented more acres from being treated prior to the fire. While some partners felt that chipping and leaving woody material on-site rather than removing it may have contributed to damage in treated areas, others felt that the chipped material had a negligible impact on damage given the large area of untreated acres, severe conditions, and wildfire intensity.

ONGOING EFFORTS

Overall, the success of local recovery efforts was largely attributed to strong partnerships formed around wildfire mitigation prior to the Track Fire. As one local official noted: "It's about trust. If you peronally know the person making decisions, where they are coming from, and you trust them, it makes all the difference in making efforts straightforward." Additional efforts have continued to utilize trust between partners in addition to volunteer resources for seeding and planting in the burned area, and for planning new projects and initiatives that continue to bolster local wildfire resilience.



LEARN MORE

For more information about the project and additional publications go to:
ewp.uoregon.edu/wfresilience

This case study is also elaborated further in Working Paper 50: *Community diversity and wildfire risk: An archetype approach to understanding local capacity to plan for, respond to, and recover from wildfires,* which can be found at: **http://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/WP_50.pdf**

Contact: *ewp@uoregon.edu*

---

[1] *The Collaborative Forest Restoration Program is unique to New Mexico, and is administered through the USDA Forest Service State and Private Forestry Program. For more information, visit: http://www.fs.usda.gov/detail/r3/workingtogether/grants/?cid=fsbdev3_022022.*

This fact sheet series is part of a research collaboration between University of Oregon, Washington State University, Portland State University, and University of Idaho, with funding from the USDA National Institute for Food and Agriculture, Grant #2011-67023-30695. All photos were taken by Autumn Ellison in and around Sugarite State Park in May 2014.

PRIVATE FOREST OWNERS AND WILDFIRE RISK

POLICY IMPLICATIONS IN A DIVERSE POPULATION

RESEARCH BRIEF 2 • WINTER 2014

Nonindustrial private forest (NIPF) owners control up to one-third of fire-prone forest lands in the West. Their lands are largely located between public wildlands and populated areas, in what is commonly referred to as the wildland-urban interface (WUI). The WUI is an area of higher potential risk for both natural and human-caused fires, and policies that encourage NIPF owners to reduce hazardous fuels are important for protecting landowner properties and the greater landscapes in which they reside. Private forest owners are diverse however, with varying circumstances and motivations, and creating policies to influence their behavior on a large scale is challenging.

To better understand NIPF owners, and subsequently the types of policies that are most likely to engage them in fuel mitigation strategies, researchers at the USFS Pacific Northwest Research Station and Oregon State University surveyed and interviewed private forest landowners living in fire-prone forests in eastern and central Oregon. Over 500 survey responses and 60 one-on-one interviews with NIPF owners helped the research team better understand different types of landowners, their distinct motivations, and policy suitabilities for hazardous fuels reduction.

KEY FINDINGS

- Four unique subgroups of NIPF owners were identified with unique motivations for hazardous fuels reduction and suitabilities for policy tools.
- The greater the risk of fire that landowners perceived on their property, the more likely they were to take actions to reduce that risk.
- Landowners who lived on their forested property were more likely to reduce hazardous fuels than absentee landowners.
- Landowners who held timber production as a very important goal were more likely to reduce hazardous fuels on their property.

The Northwest Fire Science Consortium is a regional fire science delivery system for disseminating knowledge and tools, and a venue for increasing researcher understanding of the needs of practitioners.

Oregon State University OSU · Ecosystem Workforce Program · University of Oregon · Joint Fire Science Program · Sustainable Northwest · Forest Service USDA · PNW

www.nwfirescience.org

RESULTS

Four groups of NIPF owners were identified. Landowner circumstances, relationships to their land, and motivations for fuel reduction were different for each group:

Commodity managers: 27% of owners, 40% of area

"If a fire came through the timber I would lose 50% of its value today, and I would lose all my baby trees…it's going to take another 80 years to get some trees on it"

Landowners in this group are motivated to harvest and sell timber for income, to protect assets, and to perpetuate a family legacy of forestry. They are concerned about fire risk and they own larger parcels, though they do not necessarily live on them. Policies that reinvigorate markets for small-diameter wood products could motivate these owners and provide economic justification for reducing fuel. This group may also respond to tax credits and cost-share programs that would provide alternative revenue streams if markets are not available. Commodity managers are not looking for a government "carrot"; however, they are more likely to manage if there are incentives that offset the costs of fuel reduction activities.

Amenity managers: 21% of owners, 10% of area

"Losing your home is the biggest thing, and losing a forest: the resource, the habitat for the animals…Losing half of my life and a place that would just break my heart to have destroyed. To manage it is OK, but to have it destroyed would be disastrous."

These landowners tend to actively reduce fuel out of a desire to protect things of sentimental and amenity value: habitat, aesthetics, their homes, and the forests that define where they live. They typically live on their properties and indicate they are likely to use *Firewise* practices to protect these values. Amenity managers are not necessarily seeking a monetary payoff, and constraints they experience in fuel reduction are generally due to their own limited capacity. Therefore, these managers could benefit from technical and financial assistance programs, coupled with campaigns that cast wildfire risk as a threat to home, habitat, scenery and privacy.

Recreational managers: 27% of owners, 26% of area

"To pass on to the kids an area that is beautiful and safe and something you can use, not to grow timber…for cross-country skiing and hiking in the summer time…and snowmobiling in the winter."

are absentee owners who manage for the recreational opportunities their land provides them. They are not as likely to take action to reduce fuels as often as commodity managers. If they do choose to reduce hazardous fuels they are motivated primarily by amenities such as scenery, privacy, and as a legacy for future generations, and often use *Firewise* strategies. They rarely take these actions more than once. Providing public incentives through third-party contractors or consultants who can help recreational managers plan future fuel reduction may increase the frequency and scale of their treatments. Complimenting incentives with campaigns about the risks of wildfires to recreational opportunities, scenery, and privacy may also be effective.

Passive managers: 25% of owners, 24% of area

"The risk is high but probability is low. If it starts, it's going to go. But how much prevention do you want to do?"

Passive managers are absentee owners of large parcels. They hold few significant management goals and tend not to be very concerned about wildfire. They are unlikely to reduce fuel on their own or respond to incentives. More research is needed to determine whether the forest conditions on the lands owned by this group are hazardous, and if so, why owners are not concerned. It may be necessary to allow this group to respond to policies designed for other manager types, until more is known about the forest conditions on lands owned by passive managers and why they are not concerned.

IMPLICATIONS

NIPF landowners are a diverse population with many different objectives, management styles, and reasons for owning land. This study suggests that fuel reduction may be inconvenient for those NIPF owners who do not live on their land, and may be viewed as unnecessary by those who are not focused on timber production, residential protection, or providing a family legacy. It can be helpful to segment this population into management types when designing campaigns for wildfire mitigation. Using financial incentives, educational opportunities, campaigns that appeal to landowner values, or a combination of these strategies, may increase the likelihood that forest owners will take steps to reduce hazardous fuels on their properties.

MORE INFORMATION

This brief is based on the following article :

Fischer PA, Kline JD, Charnley S, and Olsen C. Identifying policy target groups with qualitative and quantitative methods: the case of wildfire risk on nonindustrial private forest lands. Forest Policy and Economics. 2013 (28).

Contact: *nw.fireconsortium@oregonstate.edu*

This research brief was funded by the Joint Fire Science Program. Photo credits: All photos by Emily Jane Davis

Citizen Fire Academy Volunteer Accomplishments and Homeowner Fire Preparedness

CFA Volunteers,

The goals of Citizen Fire Academy are to help communities better prepare for fire, reduce the risk of losing lives and property if a wildfire occurs, and increase the outreach of local wildfire agencies. The only way we can measure the impact of CFA volunteers and, by extension, the CFA program is through what YOU report to us!

Using the information you submit about your volunteer work and work on your own property, we are able to work with our partners to find funding for the program, which keeps costs down for participants and ensures the continuation of CFA. Your reports also help us determine how better to assist you in what you want to accomplish for wildfire preparedness.

Your volunteer reports are essential to moving this program forward and improving wildfire preparedness throughout the state. You may submit your hours using this form or online at http://goo.gl/forms/GmSztlMP4K.

We sincerely appreciate your service and dedication, and the time you spend reporting hours.

Thank you,

Citizen Fire Academy Facilitator

Please submit reported hours to:

Southern Oregon Research and Extension
569 Hanley Road
Central Point, OR 97502
CitizenFire@oregonstate.edu

Oregon State University

Citizen Fire Academy 2018

Volunteer Accomplishments

	Type (See below)	Description of activity	Hours	# People assisted	# Acres impacted
EXAMPLE	2	Created an evacuation phone tree with neighbors	2	10	--

Volunteer Activity Types

1– Homeowner or landowner education (HIZ inspections, property tours, one-on-one interaction, etc.)
2 – Direct assistance (Fuels reduction in community, phone tree, neighborhood evacuation plan, etc.)
3 – Service (develop a Firewise Community or work with an existing one; perform emergency assistance; host field tours; assist with publications and outreach for local fire district or Oregon Department of Forestry, OSU Extension, etc.)
4 – Public outreach (teach youth, information booths, write articles and letters to the editor, etc.)

Homeowner Fire Preparedness

Property size: _____ (acres)

	Type (See below)	Description of activity	Hours	# Acres impacted
EXAMPLE	1	Removed all ornamental junipers from HIZ Zone 1	3	0.25

Volunteer Activity Types

1– Defensible space (reduce fuels in HIZ Zones 1, 2, 3; replace fire prone plants; install fire resistant building materials; etc.)
2 – Fuel reductions on own rangeland or forested property (thinning, limbing, pile burns, etc.)
3 – Emergency preparedness (family evacuation plan, evacuation kit, etc.)

Citizen Fire Academy 2018

Volunteer Accomplishments

Which volunteer activities did you feel were particularly successful? What organizations did you typically work with? Use the space below to provide more details.

_____

_____

_____

_____

_____

_____

_____

Homeowner Fire Preparedness

Property size: _____ (acres)

Which activities done on your property have been most beneficial in preparing your home and family for wildfire? Are there any activities you decided to do as a direct result of what you learned through CFA? Use the space below to provide more details.

_____

_____

_____

_____

_____

_____

_____

Any additional comments?

_____

_____

_____

Your Name:_____ Date:_____

Thank you!!!

Citizen Fire Academy Volunteer Service Activities

Now that you've finished your coursework with Citizen Fire Academy (CFA), it is time to go out and put that knowledge to use! As a CFA volunteer, it is your job to spread awareness of wildfire risks and work with local agencies to help your community prepare for fire.

Each CFA volunteer is encouraged to complete volunteer service in the way that best fits his or her individual skills and interests. Below are some guidelines on how to complete effective volunteering and a few suggestions of ways you can serve and make an impact on your community, but the possibilities are endless.

Volunteer guidelines:

1) Do not mix volunteer time with your time at work. If you are performing a service professionally, for a fee, it is not considered volunteering.
2) Follow the rules of the agency or organization for which you are volunteering.
3) When engaging in neighborhood or public outreach, say what you know, but don't be afraid to say "I don't know" if you can't answer a question. By now, you should have a good idea who you can turn to for an answer.

Volunteer activity:	**Emergency response communication**
Responsibilities:	Serve as a liaison between firefighting agencies and organizations and the public during a wildfire; share updates with the community and help agencies to spread real-time information on wildfires
Needed skills:	Ability to communicate in a calm manner with all members of the public during a wildfire situation, a good knowledge of local geography
Who to work with:	Your local fire district, Oregon Department of Forestry (ODF)
Next steps:	Contact your local fire district or branch of ODF and indicate your interest in assisting during wildfire events to find out what to do next

Volunteer activity:	**Firewise Community development**
Responsibilities:	Gather neighbors, local fire district, and/or Firewise Coordinator and facilitate a conversation about creating a Firewise Community; or volunteer to join an existing Firewise Community
Needed skills:	Leadership, ability to communicate with and facilitate a group of neighbors, creativity to develop local outreach projects and work days
Who to work with:	Your local fire district, your neighbors
Next steps:	Contact your local Firewise Coordinator to find out if there is a Firewise Community in your area or ask about next steps for creating your own. If you don't know who the coordinator is, your local fire district will.

Continued on next page

Volunteer activity:	**One-on-one engagement with family, friends, and neighbors**
Responsibilities:	Conduct informal Home Ignition Zone (HIZ) inspections, discuss evacuation plans, create a phone tree, explain need for wildfire preparedness
Needed skills:	One-on-one communication skills, teaching skills
Who to work with:	Your family, your friends, your neighbors, and other community members
Next steps:	Make contact with people and offer to do a HIZ inspection, join a phone tree, or talk about wildfire preparedness

Volunteer activity:	**Public education**
Responsibilities:	Present on wildfire preparedness concepts to local audiences and describe what the community can do to prepare
Needed skills:	Public speaking, familiarity with PowerPoint
Who to work with:	Local groups including homeowners' associations (HOAs), community groups, Firewise Communities, Citizen Emergency Response Team, and others
Next steps:	Connect with your local fire district to see if they have a need for public speaking and outreach, or reach out directly to the groups you wish to present to; contact city and county leaders to present to the public

Volunteer activity:	**Youth education**
Responsibilities:	Do presentations and activities with children on wildfire, fire resistant plants, and how to encourage their parents to develop a family evacuation plan
Needed skills:	Ability to work well with children, creative mind to develop activities
Who to work with:	Local schools, 4-H, Girl and Boy Scouts, etc.
Next steps:	Connect with schools or youth organizations. Start where you may already have connections. Discuss your plans for a youth activity with teachers or group leaders. Local fire districts or departments may already have youth activities available. Contact them to find out if you can use their materials.

Volunteer activity:	**Fuels reduction workdays**
Responsibilities:	Work with neighbors to develop group field work days; assist in thinning, limbing, pruning, slash removal, pile burning, chipping, and improving defensible space around common areas and the properties of those seeking assistance in your neighborhood
Needed skills:	Physical endurance; knowledge of proper techniques and regulations, where applicable; coordination
Who to work with:	HOAs, elderly or disabled neighbors, Firewise Communities
Next steps:	Contact your local Firewise Community, HOA, or neighbors who may need help maintaining a Firewise property. Develop a neighborhood work day with multiple people participating, or offer assistance individually.

Continued on next page

Volunteer activity:	**Serve as a host and use your property for forestry and fire preparedness classes**
Responsibilities:	Host Extension or other field tours at your property, provide facilities and parking, discuss work on fuels reduction and fire preparedness on your property
Needed skills:	Hospitality, speaking to small groups
Who to work with:	OSU Extension or local university Extension office, local fire districts, Firewise Communities, others
Next steps:	Contact your local Extension Forestry Agent, fire district, or any other organization that might like to do a field tour on wildfire preparedness and let them know you are interested in hosting

Volunteer activity:	**Organize neighbors to develop a neighborhood evacuation plan, phone tree, etc.**
Responsibilities:	Host and facilitate a meeting with neighbors; coordinate necessary tasks to complete the objective
Needed skills:	Hospitality, facilitation and communication skills
Who to work with:	Your neighbors
Next steps:	Speak with your neighbors—either directly in one-on-one conversations and calls or indirectly through fliers and mailings—about organizing a meeting to collaborate on wildfire preparedness

Volunteer activity:	**Written community outreach**
Responsibilities:	Write editorials and articles on wildfire preparedness for local newspapers and newsletters; develop and run a blog on Firewise activities and fuels reductions
Needed skills:	Writing skills, internet skills if blogging
Who to work with:	Local newspapers, fire preparedness organizations, HOAs, Firewise Communities, fire districts, your own blog
Next steps:	Contact local newspapers about how to submit letters to the editor or articles; contact local fire districts, Firewise Communities, HOAs, or other groups who might be interested in including an article on fire preparedness from you; look into starting your own blog and contact local organizations (HOAs, Firewise Communities, fire districts) to see if they are interest in distributing it

Volunteer activity:	**(Develop your own local volunteer activity here)**
Responsibilities:	
Needed skills:	
Who to work with:	
Next steps:	

Continued on next page

Volunteer activity:	**(Develop your own local volunteer activity here)**
Responsibilities:	
Needed skills:	
Who to work with:	
Next steps:	

Why People Don't Take Action

Below is a list of common reasons people give for not preparing their homes and properties for wildfire. Think about which reasons you have come across and mark the three most common. If you have heard some reasons not listed here, include them at the end.

- ☐ **Unaware**..... "I didn't know there was a wildfire threat."
- ☐ **Denial** ..... "It's not going to happen to me."
- ☐ **Futility**..... "It won't make a difference."
- ☐ **Irresponsibility**..... "It's not my responsibility."
- ☐ **Insurance** ..... "So what, I've got insurance."
- ☐ **Unnatural or wrong** ..... "It's wrong to cut trees."
- ☐ **Aesthetics and function** ..... "It won't look good."
- ☐ **Discomfort**..... "I don't like working outdoors."
- ☐ **Absentee owners** ..... "I don't want to work on my vacation."
- ☐ **Foreclosure**..... "My lender foreclosed on my house."
- ☐ **Undesirable**..... "If all the trees were gone, I wouldn't want to live here anyway."
- ☐ **Cost** ..... "I don't have the money."
- ☐ **Time** ..... "I don't have time."
- ☐ **Unknowledgeable** ..... "I don't know what to do."
- ☐ **Disposal**..... "I don't have an easy way of getting rid of the vegetation."
- ☐ **Unable**..... "I can't physically do it."
- ☐ **Maintenance**..... "It's hard to keep up with."
- ☐ **Illegal**..... "It's against the law to remove vegetation."
- ☐ **Lack of ownership**..... "I don't own the property where the work needs to be done."
- ☐ **Other**_____
- ☐ **Other**_____

Using a Hybrid, or Blended Learning Approach to CFA

Introduction

In some cases, it might be useful to provide the Citizen Fire Academy curriculum in a blended learning style, i.e., offer some of the module content and interaction online and then apply concepts and information face-to-face via field activities. This is especially true in situations where participants need to travel long distances to meet in person or it is difficult to find dates where everyone can gather at the same time. The existing curriculum supplies all the content and instructional design, and a hybrid template is available that will help you with online interaction, formatting, and flow.

The hybrid learning template we developed is available to all instructors wishing to use this format. Please contact your local OSU Forestry and Natural Resource Extension agent or the CFA coordinator to preview and gain access to this technology. Just like the traditional curriculum, this hybrid curriculum covers all the same learning objectives and guides participants through their wildfire preparedness plans.

If you are new to hybrid learning, view the Oregon State University Hybrid Course Initiative Resources website for more information: http://oregonstate.edu/ctl/hybrid-course-initiative

Each online module contains the following:

- One or more measurable learning outcomes
- A set of directions from the facilitator
- Content (subject matter or information) provided in a variety of formats, including narrated presentations, videos, documents, website links, and virtual multimedia tools
- One or more online learning activities—these range from having participants complete assignments and forum discussions to them applying something they've learned to their own home or property
- Clear pathways for interaction using 3 types of connections:
  - ❏ Learner with content
  - ❏ Learner-to-learner
  - ❏ Learner-to-facilitator
- One or more assessments to gauge achievement of learning outcomes. These include self-assessments and forum discussions.

At Oregon State University Extension, we use an online learning platform called Canvas to offer Citizen Fire Academy online.

Learn a little more about Canvas at http://www.canvaslms.com/higher-education/.

You can either use our Citizen Fire Academy Canvas course template or create your own using your learning management system of choice.

Sample CFA Hybrid Learning Training Schedule

Week 1

Introductory session and dinner (in person, 3 to 4 hours)

An in-person session where participants meet the host, each other, and key fire personnel from the community. Introduce participants to fire issues and history in the area. Make sure everyone can use the technology. Use the conventional lesson plan in this curriculum where appropriate.

Week 2

Online module 1: Fire Science

At the end of this module participants will:

- Know the common ignition sources in Oregon
- Know the components of the fire triangle and fire behavior triangle
- Interpret how fuels (and their arrangement), weather, and topography interact to affect fire behavior
- Describe to neighbors, family, or friends how fuel loading, continuity, and chemical makeup affects fire behavior
- Apply knowledge to other modules and topics, including home assessments
- Understand and describe which factors can and cannot be mitigated when it comes to fire severity, intensity, and subsequent effects

Office hours (optional)

A 1-hour conference call at the end of the week to answer questions and have a discussion.

Week 3

Online module 2: Living in a Fire Environment

At the end of this module participants will:

- Develop a basic understanding of wildfire suppression practices including detection, initial attack, and how response to wildland and WUI fire differs
- Identify which fire agencies are responsible for various types of fire protection and how they coordinate
- Know how to access current information about wildfire
- Develop a basic understanding of the various local and state laws and rules pertaining to fire and fuels reduction and know where to get more information
- Know basic aspects of safe evacuation procedures and shelter-in-place
- Become familiar with locally relevant community wildfire protection planning efforts (e.g., CWPPs, Firewise communities)

Field tour 1: Fire Ecology, Fire Science, and Living in a Fire Environment

Week 4

Online module 3: Evaluation Fire Risk and Home Protection Strategies

At the end of this module participants will:

- Understand components of risk
- Understand basic approaches of fire risk assessment around homes

- Understand and identify the HIZ and define defensible space
- Determine effective strategies to reduce fire risk
- Understand how a home's construction and surrounding landscape vegetation affects its combustibility and risk to wildfire
- Conduct a homesite fire-risk assessment on their own home and use this in developing their wildfire preparedness plan for their home and property. (Participants are not expected to be competent in conducting official SB 360 home assessments after this module. In order to do official home assessments, CFA volunteers would need to complete a more intensive ODF training on this subject.)
- Communicate HIZ and defensible space principles to others so they will be motivated to take action
- Recommend fire-resistant landscaping techniques
- Point out where homes are vulnerable to fire and embers (vents, decks, roofs, etc.)
- Take measures to decrease fire risk on their own property

Office hour conference call, end of week 4 (optional)

Week 5

Online module 4: Fuels Reduction

At the end of this module participants will:

- Analyze objectives behind fuels reduction
- Describe the four principles of fire-resistant forests
- Compare and contrast typical fuels reduction and slash disposal methods and some of their pros and cons
- Recognize the importance of location and spatial context in fuels reduction
- Brainstorm ideas for how fuels reduction can be integrated with other objectives

Field tour 2: Evaluation Fire Risk, Home Protection Strategies, and Fuels Reduction

Final session

Participant Presentations, Effective Volunteering, and Graduation (in person)

This is a chance to wrap up any final questions and motivate participants into their coming roles as volunteers. Use the conventional lesson plan in this curriculum where appropriate.

Citizen Fire Academy Hybrid Version: Sample field tour #1

Fire Science and Living in a Fire Environment (6.5 hours)

Meeting place: TBD by host

Vans needed: TBD by host

Hard hats: CFA facilitator will provide if appropriate

8:30 a.m.–9 a.m.

Welcome and review

Social time, overview of what has been covered so far, questions and discussion from online modules, and an introduction to the day

You might start in a classroom. Allow some time for folks to mingle, drink some coffee, and discuss what they have learned so far. Remember, this relationship building time is important!

9:00 a.m.–9:45 a.m.

Parking lot demonstrations (from Fire Science module)

Review "Exercises" in the Fire Science module (page 24) to see how to accomplish these demonstrations. You do not have to complete all of them if time is limited.

- Demonstration #1: Fire Triangle
- Demonstration #2: Modes of Heat Transfer
- Demonstration #3: Fuel Size Examples and Their Contribution to Fire Behavior
- Demonstration #4: Matchstick Forest Fire Behavior

Site visits (from Living in a Fire Environment module)

Can be done with fewer sites, as long as topics are covered.

10:15 a.m.–10:45 a.m.

SITE 1: WUI landscape

Choose an area with a view of a WUI landscape. Where does wildland end and urban begin? Discuss landscape context, landowner diversity, and value diversity. If you have fire risk maps or maps with prior fires overlaid, those will be helpful to really show why this work is important!

10:45 a.m.–11:45 a.m.

SITE 2: Local rural fire district or city fire department

Introduce participants to some fire officials. Discuss local fire protection infrastructure. Explain the forest/urban fire protection complex, including who does what (city, rural fire district, ODF, USFS/BLM), zones of overlap, wildland versus structure protection, and how the agencies coordinate.

12:00 a.m.–12:30 p.m.

Lunch

Can be done in the field or at a nearby park. Allow time for socializing and questions and answers.

1:00 p.m.–2:00 p.m.

SITE 3: Recent burn site

Visit a recent or past burn. If you can, get someone who was involved in fire suppression to tell the story of this fire, fuels condition prior to the fire, how the fire started, suppression efforts, etc. Have small groups go out to assess following factors:

1. Are there any indicators of fire severity?
2. Which environmental factors affected this fire (topography, vegetation, etc.)?
3. What is current vegetation composition?
4. What would happen if it were to burn again?
5. How does the current status compare to historic forest status?

2:15 p.m.–2:45 p.m.

SITE 4: Firewise community or a neighborhood close to prior fire

Meet with an HOA representative, Firewise community leader, or other community leader. Discuss community values and current management goals (recreation, aesthetics, wildlife, fire safety). If there was an experience with fire, discuss the community's response from a neighborhood level to a watershed level. Share evacuation or shelter-in-place experiences. Talk about the organizing process, opportunities and barriers, and lessons learned.

This is your opportunity to discuss CWPPs, fire-adapted communities, any other locally relevant organizations, and how a future CFA volunteer might be involved in starting or working with a Firewise community or supporting one of these organizations.

2:45 p.m.–3:00 p.m.

Travel and adjourn

Citizen Fire Academy Hybrid Version: Sample field tour #2

Home Protection Strategies and Fuels Reduction (6.5 hours)

Meeting place: TBD by host

Vans needed: TBD by host

Hard hats: CFA facilitator will provide, if appropriate

8:30 a.m.–9 a.m.

Welcome and review

Social time, overview of what has been covered so far, questions and discussion from online modules, and an introduction to the day

9:30 a.m.–11:30 a.m.

SITE 1: Neighborhood in WUI (from Home Protection Strategies module)

Part 1 – Take participants to a part of the WUI where homes are situated in areas with high fuel loads and moderate to steep slopes. Discuss fire risk in this situation as well as how homeowners should evacuate if a fire erupted in that location. If you have fire hazard maps, those would be helpful here. If convenient, locate an area where homeowners have created some defensible space or other mitigating treatments.

Part 2 – Take the group to a home and conduct a fire-risk assessment using SB 360 evaluation form (handout) or HIZ assessment form. This should be a guided discussion with an expert from ODF or local fire district. It is important to start from the house (roof, decks, etc.) and work your way outwards, evaluating the landscape around the home and beyond. The instructor should do the assessment with the entire group moving through and discussing each item on the checklist. Discuss other factors that either mitigate or increase the fire risk for the home in question. Also discuss opportunities for CFA volunteers to help neighbors, friends, HOAs, and other organizations with their home assessments, fuels reduction, and defensible space efforts.

11:30 a.m.–12:00 p.m.

Lunch

This can be a good time to talk to participants about the service component of their work. Are they currently part of an organization or HOA? What challenges or opportunities do they see? Have they engaged with an organization or agency via this training that they would like to work with? What motivates individuals and communities to prepare for an emergency?

Review volunteer module (page 93) for more information and resources on this topic.

12:30 pm–2:45 pm

SITE 2: Fuels Reduction Site

Visit a private woodland property or public forest where fuels reduction has occurred, ideally right next to an untreated area.

The instructor, host, and/or a volunteer demonstrate fuels treatment methods, especially those applicable to landowners. Examples: pruning, hand piling of slash, pile burning, chipping, using a brushcutter or other tools to cut re-sprouting vegetation, and using a weed wrench or similar tool to uproot Scotch broom or other highly flammable invasive weeds. The demonstration should include a discussion of proper techniques

as well as equipment options. If feasible, give volunteers opportunities to try out the hand tools and perhaps construct a slash pile.

Field exercise (30 to 60 minutes) – Divide into small groups (3 to 6 people per group). Each group will complete a fuels reduction assessment and action plan for a property or other defined area. They should evaluate the relative fuel hazard and identify locations for and types of fuels reduction. See fuels reduction assessment form (page 90) for detailed instructions.

2:45 p.m.–3:00 p.m.

Travel and adjourn

Evaluation

Ideally, the CFA curriculum can be used as an ongoing program that fosters and continually improves the capacity for communities to prepare for and respond to wildfire. It is especially important to receive feedback from participants, partners, and benefiting organizations about the program and subsequent volunteer service. Any evaluation data CFA facilitators wish to share with OSU, so that the CFA program can continue to improve, should be sent to CitizenFire@oregonstate.edu.

CFA class evaluations

These evaluations should be conducted following the end of coursework and field tours. Evaluations should focus on what participants found the most useful in the course, how coursework and field tours have impacted their behavior, and what they would have liked to learn about in greater depth. Information from these evaluations can be used to improve subsequent CFA programs, inspire additional stand-alone workshops, and promote future programs.

Template class evaluation forms are included as a part of this section.

Partnering organization evaluations

Informally or through an email survey, the CFA facilitator should follow up with partnering organizations that have contributed to the program as instructors, panelists, or placements for CFA volunteers. Questions may include the following:

- How satisfied are you with the instructor recruiting process? Were you given enough time and support to teach your portion of the program?
- Do you feel that CFA participants were well prepared to ask questions and engage in discussion with you as an instructor or panelist?
- Have CFA volunteers played a role in your organization? If so, how satisfied are you with the work they have completed?

Volunteer evaluations

Volunteer experiences offer valuable evidence of the CFA program's impact on the larger landscape. When volunteers improve the capacity of their communities to prepare for and respond to fire through service, they are demonstrating the effectiveness of the CFA program.

Volunteers will report on their experiences when they report their hours. In addition to hours, volunteers should be asked about their experiences and where they felt they made the most impact.

Citizen Fire Academy Course Evaluation

1. Please rate the overall CFA course.

Excellent	Very good	Fair	Poor
❍	❍	❍	❍

2. What did you value most about the program? (If there is more than one thing you valued about the program, please describe.)

3. What is one thing you would change about the program? (If there is more than one thing you would change, please describe.)

4. Please rate the modules in terms of their quality of content.

	Excellent	Very Good	Fair	Poor	N/A
Introduction	❍	❍	❍	❍	❍
Fire Science	❍	❍	❍	❍	❍
Living in a Fire Environment	❍	❍	❍	❍	❍
Home Protection Strategies	❍	❍	❍	❍	❍
Fuels Reduction	❍	❍	❍	❍	❍
Effective Volunteering	❍	❍	❍	❍	❍
Presentations	❍	❍	❍	❍	❍

5. Of all the modules you attended, which did you find most valuable?

_____

What made this module valuable?

6. Please rate the following reasons for attending the Citizen Fire Academy training in terms of their importance to you.

	Extremely Important	Very important	Moderately Important	Low Importance	Not at all Important
Learn new wildland fire information	❍	❍	❍	❍	❍
Learn about wildfire resources in my area	❍	❍	❍	❍	❍
Meet other people with similar interests	❍	❍	❍	❍	❍
Learn how to stay safer from wildfire	❍	❍	❍	❍	❍
Learn how I can contribute to Firewise communities	❍	❍	❍	❍	❍
See what others are doing on their land	❍	❍	❍	❍	❍
Learn new skills to prepare my property for fire	❍	❍	❍	❍	❍

7. Please rate how much you agree or disagree with the following statements after attending the Citizen Fire Academy training.

	Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
I feel more confident about preparing myself for fire season	❍	❍	❍	❍	❍
I feel more confident about making my property more resistant to fire.	❍	❍	❍	❍	❍
I know who to contact with wildfire related questions	❍	❍	❍	❍	❍
I better understand wildfire-related terms	❍	❍	❍	❍	❍
I am excited to be part of this community	❍	❍	❍	❍	❍
I know what I need to do to when there is a wildfire in my area.	❍	❍	❍	❍	❍
I am excited to share what I know	❍	❍	❍	❍	❍
I can confidently conduct informal home assessments for others	❍	❍	❍	❍	❍

8. In the next 6 months, how likely are you to do the following?

	Definitely	Very Likely	Possibly	Unlikely	Very Unlikely
Implement my Wildfire Preparedness Plan	❍	❍	❍	❍	❍
Reduce the fuel load on my property	❍	❍	❍	❍	❍
Create a neighborhood phone tree	❍	❍	❍	❍	❍
Develop an evacuation plan for my family	❍	❍	❍	❍	❍
Contact a forestry professional	❍	❍	❍	❍	❍
Host a neighborhood planning event	❍	❍	❍	❍	❍
Make my home structure more fire resistant	❍	❍	❍	❍	❍
Visit the Firewise.org website for more information or resources	❍	❍	❍	❍	❍
Encourage my friends and neighbors to prepare for wildfire season	❍	❍	❍	❍	❍
Volunteer during a wildfire event	❍	❍	❍	❍	❍
Organize a new Firewise community	❍	❍	❍	❍	❍

9. Please describe anything specific you plan to do on your property for fire preparedness in the next 6 months.

10. How do you think you might provide volunteer service as part of this program?

We appreciate your feedback. Please include any additional comments here.

Appendix A

Photo: Carrie Berger, © Oregon State University

2018 Citizen Fire Academy

Syllabus

Southwest Oregon

Date/Time	Topic	Instructor	Class location
April 15th 1:00 p.m. – 5:00 p.m.	**Welcome!** Course overview	Rhianna Simes, Coordinator, OSU Extension Jenny Hall, JC Emergency Management Shayne Maxwell, Foots Creek Fire & Emergency	**OSU Extension: Jackson County** Auditorium
April 22nd 9:00 a.m. – 4:00 p.m.	**Fire Science** Fire behavior	Stephen Fitzgerald, OSU Forestry Craig Harper, Host	**Applegate: Jackson County** Craig Harper's property (Squire Fire)
April 29th 1:00 p.m. – 5:15 p.m.	**Living in a Fire Environment** Who does what Planning	Brian Ballou, Oregon Dept. Forestry Chris Chambers, Ashland Fire & Rescue Bob Plummer, Host	**Ashland: Jackson County** Tolman Creek Community Bob Plummer's property (Siskiyou Fire)
May 6th 9:00 a.m. – 4:30 p.m.	**Home Protection Strategies** Defensible space & HIZ	Brian Ballou, Oregon Dept. Forestry Brett Fillis, Fire District 9 Jeff Vineyard, Rural Fire Fighter Sandy Shaffer and Jon Phillips, Hosts	**Applegate: Jackson County** Sandy Shaffer's property Jon Phillips' property
May 13th 1:00 p.m. – 4:45 p.m.	**Fuels Reduction Strategies** Vegetation and forest health	Max Bennett, OSU Extension Mike & Diane Smith, Host	**Grants Pass: Josephine County** Mike and Diane Smith's property
May 20th 1:00 p.m. – 6:30 p.m.	**Effective Volunteering and Graduation** Outreach and motivation Safety and outreach plans (Dinner included!)	Rhianna Simes, OSU Extension Paula Trudeau, Firewise All Citizen Fire Academy participants	**Central Point: Jackson County**

Citizen Fire Academy Facilitator:
Rhianna Simes
Rhianna.simes@oregonstate.edu or call 541.776.7371

Oregon State University

2018 Citizen Fire Academy

Hybrid Syllabus

Northeast Oregon

Dates	Topic	Class location/Method
February 25th	**Introductory session and dinner** Course overview	**OSU Extension** Conference Room, Union County 5:30 p.m. – 8:00 p.m.
February 26 – March 9	**Online module #1: Fire Science** Fire behavior	**Canvas/ Online**
March 10th	**Office hour**	**Conference call** 12:00 p.m. – 1:00 p.m.
March 11 – March 23	**Living in a Fire Environment** Who does what and planning	**Canvas/ Online**
March 24th	**Office hour**	**Conference call** 12:00 p.m. – 1:00 p.m.
March 25 – April 13	**Home Protection Strategies** Defensible space and HIZ	**Canvas/ Online**
April 1st	**Field tour #1: Fire Science, Living in a Fire Adapted Ecosystem, and the Wildland Urban Interface**	**Meet up location:** **OSU Extension** Parking lot, Union County 9:00 a.m. – 4:00 p.m.
April 14th	**Office hour**	**Conference call** 12:00 p.m. – 1:00 p.m.
April 15 – May 4	**Fuels Reduction Strategies** Vegetation and forest health	**Canvas/ Online**
May 5th	**Office hour**	**Conference call** 12:00 p.m. – 1:00 p.m.
May 6th	**Field tour #2: Evaluating Fire Risk around Homes and Neighborhoods, Fuels Reduction Treatments**	**Meet up location:** **OSU Extension** Parking lot, Union County 9:00 a.m. – 4:00 p.m.
May 20th	**Effective Volunteering and Graduation and Dinner** Outreach and motivation Safety and Outreach plans	**OSU Extension** Conference Room, Union County 1:00 p.m. – 6:30 p.m.

Citizen Fire Academy Facilitator:
Paul Oester
Paul.Oester@oregonstate.edu or call 541-963-1010

Oregon State University

Appendix B

Photo: Kara Baylog, © Oregon State University

Oregon State University Union County Extension presents

Photo: A. Steinmetz

Citizen Fire Academy

Month/Date/Year – Month/Date/Year

We live in a fire-prone environment, but that doesn't mean we can't prepare. Are you and your community ready for next fire season?

The Citizen Fire Academy volunteer education program is a joint effort of many statewide and local firefighting and forestry agencies to put wildfire preparedness into the hands of landowners and the community. Through this program, you will develop skills and knowledge that you can put to use to help reduce the risk of catastrophic effects of wildfire for your home, neighborhood, and community.

You will learn about the about the fundamentals of fire behavior and fire preparedness through a combination of online coursework, interactive discussion, and engaging field tours. Following graduation, you will contribute to wildfire preparedness in your community through volunteer service.

Oregon State University

CITIZEN FIRE ACADEMY

Be a leader for wildfire preparedness in your community!

REGISTER BY DATE

REGISTER AT:

Location
Email
Phone

Or online at oregonstate.edu/website

SPACE IS LIMITED! REGISTER EARLY!

Oregon State University Extension Service offers educational programs, activities, and materials without discrimination based on age, color, disability, gender identity or expression, genetic information, marital status, national origin, race, religion, sex, sexual orientation, or veteran's status. Oregon State University Extension Service is an Equal Opportunity Employer.

CFA Location Schedule

Introductory Session and Dinner
Date, Time

Fire Science
Date, Time

Living in a Fire Environment
Date, Time

Field Tour: Fire Science, Living in a Fire Adapted Ecosystem and the Wildland-Urban Interface
Date, Time

Home Protection Strategies
Location
Date, Time

Fuels Reduction Methods
Location
Date, Time

Effective Volunteering in Your Community
Location
Date, Time

Field Tour: Evaluating Fire Risk around Homes and Neighborhoods, Fuels Reduction Treatments
Date, Time

Graduation Session
Location
Date, Time

Company Name
Street Address
City, ST ZIP Code

Recipient Name
Address
City, ST ZIP Code

Be a leader for wildfire preparedness in your community!

Citizen Fire Academy

Date – Date
20XX

Oregon State University

Creating fire-resilient communities through an engaged and informed citizenry

Be a Part of the CFA Class of 20XX!
Submit your registration to:

Organization
Address
City, State, Zip code
Phone number
email@address.com

Or register online at
www.websiteforregistration.org

The cost is $XX per person or $XX per family and includes materials and field-tour transportation. Submit payment with registration or by DATE.

Yes! I want to join the Citizen Fire Academy Class of 20XX to help prepare my property and neighbors for wildfire!

Name: _____

Address: _____

_____

City: _____ State: _____

Zip: _____ Phone: _____

Email: _____

Number of people registering: _____

My registration fee of $XX (1) or $150 (2+):

- ☐ is enclosed
- ☐ will be paid on or before DATE

What is Citizen Fire Academy?

The Citizen Fire Academy (CFA) volunteer education program represents a joint effort of many statewide and local agencies. The goal of this program is to develop your skills and knowledge so that you can help reduce the risk of catastrophic effects of wildfire for your home, neighborhood, your community.

Learn about wildfire from local experts and fire professionals alongside a diverse group of classmates...

Join in on interactive modules that help you learn about important concepts in wildfire science, home protection strategies, and community resources though discussions, demonstrations, and practical exercises. CFA participants come from all walks of life—from homeowners and forest landowners to community leaders and professionals—offering a variety of perspectives and experiences that will contribute to your learning. Throughout the course, you will work on your own wildfire preparedness plan and present your final plan at the final graduation session.

...Then apply your knowledge in interactive field tours

Reinforce concepts by visiting the site of a wildfire burn and put your knowledge to practical use by learning how to conduct fire preparedness evaluations at homes during field tours.

> "Citizen Fire Academy gave me the tools to speak with confidence to my neighbors about fire." – *Ciara McCarthy, 2015 Central Oregon*

Prepare your community for wildfire through volunteering

After completing the course, it is expected that CFA participants will contribute to wildfire preparedness within their community. This might look like helping your neighbors assess their homes and properties for wildfire preparedness, reaching out to the community at public events, writing articles, or helping at community fuels reduction events. How you serve will depend on your personal interests and abilities.

Registration required by MONTH, DATE.

Register early. Space is limited.

Oregon State University Extension Service offers educational programs, activities, and materials without discrimination based on age, color, disability, gender identity or expression, genetic information, marital status, national origin, race, religion, sex, sexual orientation, or veteran's status. Oregon State University Extension Service is an Equal Opportunity Employer.

CFA Location Schedule

*Modules are done online at *your* pace

Introductory Session
Date, Time

Online Module 1: Fire Science
Date–Date
Office hour: Date, Time

Online Module 2: Living in a Fire Environment
Date–Date
Office hour: Date, Time

Online Module 3: Home Protection Strategies
Date–Date
Office hour: Date, Time

Online Module 4: Fuels Reduction Methods
Date–Date
Office hour: Date, Time

Field Tour: Fire Science, Living in a Fire Adapted Ecosystem and the Wildland-Urban Interface
Date, Time

Field Tour: Evaluating Fire Risk around Homes and Neighborhoods, Fuels Reduction Treatments
Date, Time

Graduation Session
Date, Time

Company Name
Street Address
City, ST ZIP Code

Recipient Name
Address
City, ST ZIP Code

Be a leader for wildfire preparedness in your community!

Citizen Fire Academy

Date – Date
20XX

Oregon State University

Creating fire-resilient communities through an engaged and informed citizenry

Be a Part of the CFA Class of 20XX!
Submit your registration to:

Organization
Address
City, State, Zip code
Phone number
email@address.com

Or register online at
www.websiteforregistration.org

The cost is $XX per person or $XX per family and includes materials and field-tour transportation. Submit payment with registration or by DATE.

Yes! I want to join the Citizen Fire Academy Class of 20XX to help prepare my property and neighbors for wildfire!

Name: _____

Address: _____

_____

City: _____ State: _____

Zip: _____ Phone: _____

Email: _____

Number of people registering: _____

My registration fee of $XX (1) or $150 (2+):

- ☐ is enclosed
- ☐ will be paid on or before DATE

What is Citizen Fire Academy?

The Citizen Fire Academy (CFA) volunteer education program represents a joint effort of many statewide and local agencies. The goal of this program is to develop your skills and knowledge so that you can help reduce the risk of catastrophic effects of wildfire for your home, neighborhood, and community.

Learn about wildfire from the comfort of your home...

[Insert LOCATION] CFA's online coursework means that you can learn important concepts about wildfire science, home protection strategies, and community resources at a time and pace right for you. Each online module includes reading and video tutorials, review exercises, and discussion boards. Then visit us in person or call in during an "office hour" session to get your questions answered about the course material. Throughout the course, you will work on your own fire preparedness plan and present your final plan at the graduation session.

...Then apply your knowledge in interactive field tours

Reinforce concepts by visiting the site of a wildfire burn and put your knowledge to practical use by learning how to conduct fire preparedness evaluations at homes during field tours.

> "Citizen Fire Academy gave me the tools to speak with confidence to my neighbors about fire." – *Ciara McCarthy, 2015 Central Oregon*

Prepare your community for wildfire through volunteering

After completing the course, it is expected that CFA participants will contribute to wildfire preparedness within their community. This might look like helping your neighbors assess their homes and properties for wildfire preparedness, reaching out to the community at public events, writing articles, or helping at community fuels reduction events. How you serve will depend on your personal interests and abilities.

Registration required by MONTH, DATE.

Register early. Space is limited.

Oregon State University Extension Service offers educational programs, activities, and materials without discrimination based on age, color, disability, gender identity or expression, genetic information, marital status, national origin, race, religion, sex, sexual orientation, or veteran's status. Oregon State University Extension Service is an Equal Opportunity Employer.

Press Release

DATE
For Immediate Release

Citizen Fire Academy
Organization
Name
Title
Phone:
Email:

Citizen Fire Academy
Now Taking Applications!

Be a Part of Citizen Fire Academy. Be a Leader for Wildfire Preparedness in Your Community!

Registration due by DATE

We live in a wildfire-prone area, but that doesn't mean we have to live in fear of our homes and communities burning down in front of us. Now is the opportune time, before fire season begins, to learn about why wildfire occurs, what you can do to protect your home and property, and how you can help your community prepare for wildfire.

This SEASON, ORGANIZATION is pleased to offer the Citizen Fire Academy statewide program to proactive forest landowners, concerned residents in fire-prone communities, and interested members of the public. Learn how to create safer, more fire-resilient homes and neighborhoods through online or classroom sessions, interactive field trips, and producing your own personalized Wildfire Preparedness Plan.

The Citizen Fire Academy is an education and service program that seeks to increase the outreach capacity of wildfire agencies, help local residents safely prevent and prepare for wildfire, and create more fire-adapted communities. Over the course of the training, you will learn about important topics such as fire science, home protection strategies, fuels reduction, evaluating fire risk, fire-adapted communities, and emergency preparedness.

Register by contacting ORGANIZATION at PHONE or online at WEBSITE.COM.

The program begins with a meet-and-greet introductory session on DATE/TIME at LOCATION. Coursework will generally be conducted online at your own pace over a two-month period. Or, weekly classes will be held until DATE. Two field trips delving into fire behavior and risk assessment will take place on DATES.

Following coursework, Citizen Fire Academy participants are expected to volunteer at least 30 hours of their time to support and expand programs and projects that improve community wildfire preparedness. Citizen Fire Academy volunteers will work within their communities, cultivating public awareness of fire risks and supporting the projects of local forest, firefighting, and emergency agencies and nonprofit organizations. This might include outreach at events, presentations to community groups,

working with neighborhood groups, hands-on fuels reduction work, and coordination with your neighborhood during an emergency. How you serve is up to you, based on your personal interests and skills.

Funding and support for this program is provided by Oregon Department of Forestry. Other partners include: Oregon State University Extension Forestry & Natural Resources Program, United States Forest Service Pacific Northwest Research Station, Northwest Fire Science Consortium, National Fire Protection Association, Project Wildfire, Firewise, and proactive community members like yourself.

Appendix C

Photo: Carrie Berger, © Oregon State University

Title Page

Name

_____
FIRST AND LAST NAME

Contact information

_____
MAILING ADDRESS

_____
BEST PHONE

_____
EMAIL ADDRESS

Property address (if different than mailing address)

_____
PHYSICAL LOCATION OF PROPERTY

Legal description of property

_____
TOWNSHIP, SECTION, RANGE, TAX LOT NUMBER

Acreage

____ Home site
____ Irrigated *(pasture, crops, orchard, etc.)*
____ Non-irrigated *(pasture, other)*
____ Wooded or natural *(acres of forest, oak woodland, brush, or other natural or non-farm vegetation)*
____ **Total acreage**

Fire protection district

_____
FIRE PROTECTION DISTRICT

Property Map

For your property map, you can create a simple sketch or use a plat map or aerial photo as a starting point. Google Earth Pro is a free and easy way to create maps. Developing a map is fundamental to creating an action plan since it shows you the relationship between your property features and the greater landscape.

Google Maps: http://www.google.com/earth/download/gep/agree.html

See your CFA Instructor for additional mapping tools available in your area.

To include on the map:

- Scale, north arrow
- Property boundaries, corners, fence lines, gates, utilities and other rights-of-way
- Building footprints, paved areas, other improvements
- Roads, driveways, footpaths, skid trails (note which are accessible to fire trucks)
- Water sources: rivers, perennial creeks, seasonal creeks, intermittent creeks, lakes, ponds, ditches, wet areas
- Gardens, lawns, orchards, pastures, row crops, other cultivated land
- Wooded areas, brush, other natural vegetation
- Buried irrigation pipes, wires, or cables
- Evacuation route
- Power and utility lines
- Fuel and chemical storage
- Roads and bridges (including weight limitations)
- Water sources
- Gates
- Thinned areas
- Fuel breaks and firebreaks (completed and planned)
- Other relevant information

Insert map here

Evacuation Plan

Develop your Personal Wildfire Evacuation Plan, make copies, and share one with every member of your family.

Emergency contacts:

EMERGENCY	POLICE (NON-EMERGENCY)	FIRE (NON-EMERGENCY)	PUBLIC WORKS (NON-EMERGENCY)
NEAREST HOSPITAL	PHONE	NAME	PHONE
NAME	PHONE	NAME	PHONE

School contacts:

NAME	PHONE	NAME	PHONE

Family contacts:

NAME	PHONE	NAME	PHONE
NAME	PHONE	NAME	PHONE

Friends or neighbors:

NAME	PHONE	NAME	PHONE

WHEN to go:

WHERE to go *(meeting location for all family members. What will you do if separated?):*

HOW to get there:

WHAT to bring *(insurance papers, important documents, photos, prescriptions, etc. Where is the 72-hour emergency kit?):*

WHO to tell *(before leaving and after arrival to new location):*

Home Ignition Zone and Defensible Space

Assessment and Action Plan

Assess the status for each component below. Think about what is realistic for you to change. Consider taking photos before and after to document some of your work. If you cannot change something, what can you do to mitigate the risk?

Around your house, deck, and other structures

Component	*Status*	*Action plan*
Roof material and condition		
Siding material and condition		
Chimney spark arrestor		
Windows and screens material and condition		
Deck construction materials and condition		
Needles and leaves removed from roof and gutters		
1/8" wire mesh covering attic, soffit vents, and crawl space vents		
Mulch removed from below wooden structures		

Home Ignition Zone 1 (0 to 5 feet around house)

Component	*Status*	*Action plan*
Home location and topography		
Fence(s) construction materials and condition		
Trees pruned 10 feet up from base of trunk, 10 feet away from roof, and 15 feet laterally from chimney		
Firewood and other combustible items (including propane tank, RV and other vehicles) at least 30 feet from home		

Fire-prone plants such as ornamental juniper and scotch broom adjacent to building		

Home Ignition Zone 2 (5 to 30 feet around house)

Component	*Status*	*Action plan*
Adequate clearing of weeds, dried grasses, and brush		
Fallen leaves and needles removed		
Dead woody material (leaves, branches, sticks, etc.) and other debris cleared beneath trees and around structures		
Firewood and other burnable items (including propane tank, RV and other vehicles) located at least 30 feet from home		
Power lines buried and not susceptible to fire		

Home Ignition Zone 3 (30 to 100 feet around house—your property or neighborhood common areas)

Component	*Status*	*Action plan*
Remove slash from prior practices		
Reduce surface fuels		
Remove ladder fuels		
Thin dense stands of trees in landscape context		
Fire-resistant trees protected (thinning around)		
Fuels situation around key areas (roads, trails, highly used areas)		

100 feet and beyond fuels reduction (your property or neighborhood common areas)

Component	*Status*	*Action plan*
Remove slash from prior practices		

Reduce surface fuels		
Remove ladder fuels		
Thin dense stands of trees in landscape context		
Fire-resistant trees protected (thinning around)		
Fuels situation around key areas (roads, trails, highly used areas)		

Access

Component	*Status*	*Action plan*
Access to home for emergency vehicles (Can emergency vehicles get in, turn around, and exit safely?)		
House number signs are reflective and visible		
Road grade and condition		
Area around the home that can be easily raked or plowed for a fireline		
Fuels situation around key areas (roads, trails)		
Bridges, cattle guards, and culvert able to support fire vehicles (if applicable)		

Water supply

Component	*Status*	*Action plan*
Pressurized hydrants available, cleared of debris and vegetation, visible, and marked on map		
Non-pressurized or dry hydrants available, visible, and marked on map		
Water sources, such as ponds or streams, accessible and marked on map		

Well pumps maintained with uninterrupted electricity		

In case of evacuation

Component	*Status*	*Action plan*
Phone tree complete		
Evacuation plan for household		
Evacuation plan for neighborhood and community		
Evacuation plan for livestock and pets		
72-hour emergency kit		
Predetermined meeting place chosen		

Additional notes:

Volunteer Plan

Fill out as much as you can related to your vision for volunteering.

Volunteer activity location
(e.g., county, city, town, neighborhood, family, school, HOA):

Impact goal
What change are you hoping to see as a result of your efforts?

Volunteer plan narrative
Give a brief description of the activities you would like to conduct to accomplish your goal:

_____

_____

_____

_____

_____

Volunteer method
Circle the types of volunteer activities you plan to do:

Written outreach Creative outreach One-on-one education Public education Youth education

Emergency response Physical work Leadership Other: _____

Timeline
Start date: _____ Month _____Year Completion date: _____ Month _____Year

Project partners
List any organizations, agencies, and businesses you will work with in order to complete your volunteer service or project:

Title Page

Name

Jane and John Doe
FIRST AND LAST NAME

Contact information

555 Grand Oaks Road, Corvallis, OR 97435
MAILING ADDRESS

541-555-5555
BEST PHONE

jjdoe@oregonstate.edu
EMAIL ADDRESS

Property address (if different than mailing address)

Same as above
PHYSICAL LOCATION OF PROPERTY

Legal description of property

T 11 S R 5 W S 20 Tax Lot: 12345AB54321
TOWNSHIP, SECTION, RANGE, TAX LOT NUMBER

Acreage

0.5	Home site
0.0	Irrigated (*pasture, crops, orchard, etc.)*
1.0	Non-irrigated *(pasture, other)*
7.5	Wooded/natural *(acres of forest, oak woodland, brush, or other natural or non-farm vegetation)*
9.0	**Total Acreage**

Fire protection district

Corvallis Rural Fire Protection District
FIRE PROTECTION DISTRICT

EXAMPLE

Property Map

For your property map, you can create a simple sketch or use a plat map or aerial photo as a starting point. Google Earth Pro is a free and easy way to create maps. Developing a map is fundamental to creating an action plan since it shows you the relationship between your property features and the greater landscape.

Google Maps: http://www.google.com/earth/download/gep/agree.html

See your CFA Instructor for additional mapping tools available in your area.

To include on the map:

- Scale, north arrow
- Property boundaries, corners, fence lines, gates, utilities and other rights-of-way
- Building footprints, paved areas, other improvements
- Roads, driveways, footpaths, skid trails (note which are accessible to fire trucks)
- Water sources: rivers, perennial creeks, seasonal creeks, intermittent creeks, lakes, ponds, ditches, wet areas
- Gardens, lawns, orchards, pastures, row crops, other cultivated land
- Wooded areas, brush, other natural vegetation
- Buried irrigation pipes, wires, or cables
- Evacuation route
- Power and utility lines
- Fuel and chemical storage
- Roads and bridges (including weight limitations)
- Water sources
- Gates
- Thinned areas
- Fuel breaks and firebreaks (completed and planned)
- Other relevant information

EXAMPLE


Doe Property
The property of Jane and John Doe
Legend
Dirt Road, Not Accessible to Fire Trucks
Driveway, Not Fire Truck Accessible
Forest Area
Grand Oaks Road (Evacuation Route)
Irrigated Lawn
Powerlines
Ridgeline Road
Unfilled Polygon
Water Pump
Google earth
600 ft
N

EXAMPLE

Evacuation Plan

Develop your Personal Wildfire Evacuation Plan, make copies, and share one with every member of your family.

Emergency contacts:

9-1-1	*541-766-6924*	*541-766-6476*	*541-766-6916*
EMERGENCY	POLICE (NON-EMERGENCY)	FIRE (NON-EMERGENCY)	PUBLIC WORKS (NON-EMERGENCY)
Good Samaritan Regional Medical Center	*541-768-5111*		
NEAREST HOSPITAL	PHONE	NAME	PHONE
NAME	PHONE	NAME	PHONE

School contacts:

Garfield Elementary School	*541-757-5941*	*Linus Pauling Middle School*	*541-757-5971*
NAME	PHONE	NAME	PHONE

Family contacts:

Jillian Doe (daughter)	*541-555-5554*	*Jordan Doe (son)*	*541-555-5556*
NAME	PHONE	NAME	PHONE
Jenna Black (Jane's mom)	*541-999-9999*	*Tom Black (Jane's dad)*	*541-999-9998*
NAME	PHONE	NAME	PHONE

Friends or neighbors:

Jen Smith (friend)	*541-888-8888*	*Joel Davis (neighbor)*	*541-777-7777*
NAME	PHONE	NAME	PHONE

WHEN to go:

We plan to evacuate when the evacuation order is given by the city or fire protection district.

WHERE to go *(meeting location for all family members. What will you do if separated?):*

If we are separated we will all meet up at the elementary school attended by Jillian.

HOW to get there:

The school can be accessed by vehicle via Highway 99 to NW Circle Blvd, left onto NW 9th and right on NW Garfield. 5-minute trip from the house. If at school, Jillian will be picked up and Jordan can walk down NW 11th St. to the elementary school. 6 minutes.

WHAT to bring *(insurance papers, important documents, photos, prescriptions, etc. Where is the 72-hour emergency kit?):*

72-hour emergency kit is in the garage, on the middle shelf nearest to the door from the house. Passports, insurance, medical records, and financial information are kept in Jane and John's bedroom desk, lower right drawer, and can be quickly retrieved in the event of an evacuation. Extra doses of heart medication and insulin are kept in the 72-hour emergency kit for Jenna and Tom.

WHO to tell *(before leaving and after arrival to new location):*

Call Linda and Gary Doe (John's parents), 503-555-5555

EXAMPLE

Home Ignition Zone and Defensible Space

Assessment and Action Plan

Assess the status for each component below. Think about what is realistic for you to change. Consider taking photos before and after to document some of your work. If you cannot change something, what can you do to mitigate the risk?

Around your house, deck, and other structures

Component	*Status*	*Action plan*
Roof material and condition	*Composite roof under 5 years old*	*Check every year for maintenance*
Siding material and condition	*Vinyl siding, good condition*	*Check every year for maintenance*
Chimney spark arrestor	*Installed, cleaned*	*Check every month when wood stove is in use and clean or replace as needed*
Windows and screens material and condition	*All windows on the house are tempered glass with metal screens*	*Window in the garage needs to be replaced with tempered glass*
Deck construction materials and condition	*Deck is constructed of pressure treated wood and underneath is enclosed with a 1/8" metal screen*	*Consider changing deck building materials*
Needles and leaves removed from roof and gutters	*Gutters are clean*	*Check gutters every spring and fall and clean accordingly*
1/8" wire mesh covering attic, soffit vents, and crawl space vents	*Mesh installed*	*Check mesh yearly for disrepair*
Mulch removed from below wooden structures	*No mulch*	

Home Ignition Zone 1 (0 to 5 feet around house)

Component	*Status*	*Action plan*
Home location and topography	*Home sits on top of a slight hill, surrounded by forest land*	*Consider thinning sloped area closest to the house*
Fence(s) construction materials and condition	*No fence*	*If a fence is installed, will use materials such as metal and stone instead of wood*
Trees pruned 10 feet up from base of trunk, 10 feet away from roof, and 15 feet laterally from chimney	*No trees within this zone*	*Monitor tree growth adjacent to house*

EXAMPLE

Firewood and other combustible items (including propane tank, RV and other vehicles) at least 30 feet from home	*Firewood has been moved to 30 ft. away from home; gas grill kept in the garage unless in use*	*Ensure grill and firewood are properly stowed when not in use; build covered shelter for firewood*
Fire-prone plants such as ornamental juniper and scotch broom adjacent to building	*Removed all ornamental juniper; one rosemary bush is growing along the north wall of the house*	*Keep rosemary well irrigated, trimmed and free of dead material*

Home Ignition Zone 2 (5 to 30 feet around house)

Component	***Status***	***Action plan***
Adequate clearing of weeds, dried grasses, and brush	*Grass is mowed weekly and irrigated to keep green*	*Continue maintenance*
Fallen leaves and needles removed	*Needles and leaves are raked every autumn*	*Check every spring to determine if needles and leaves need to be raked again*
Dead woody material (leaves, branches, sticks, etc.) and other debris cleared beneath trees and around structures	*Cleaned every autumn*	*Limb dead or sickly branches in early spring*
Firewood and other burnable items (including propane tank, RV and other vehicles) located at least 30 feet from home	*Firewood has been moved to 30 ft. away from home; gas grill kept in the garage unless in use*	*Ensure grill and firewood are properly stowed when not in use; build covered shelter for firewood*
Power lines buried and not susceptible to fire	*Powerlines are currently overhead; trees near powerlines have been removed*	*Consider costs to bury powerline*

Home Ignition Zone 3 (30 to 100 feet around house—your property or neighborhood common areas)

Component	***Status***	***Action plan***
Remove slash from prior practices	*No slash from prior activities*	*Maintain no slash*
Reduce surface fuels	*Some fallen branches litter the ground*	*Collect branches, may be used for fire starting*
Remove ladder fuels	*There are several dead or dying branches and most trees are not limbed up*	*Limb all trees up to 10 ft. or up to 2/3rds of a sapling*
Thin dense stands of trees in landscape context	*Behind the house, this area has been thinned similar to the 100 ft.+ zone*	*Requires additional thinning—thin trees in this zone, prioritize legacy hardwoods over young conifers*
Fire-resistant trees protected (thinning around)	*Stand is dense currently*	*Thin small trees around legacy trees*

EXAMPLE

Fuels situation around key areas (roads, trails, highly used areas)	*3 well-kept oak trees are adjacent to the main driveway, but do not overhang; driveway is too small for fire trucks*	*Consider widening driveway and maintain oak trees*

100 feet and beyond fuels reduction (your property or neighborhood common areas)

Component	***Status***	***Action plan***
Remove slash from prior practices	*In the far corners of the property there are several burn piles from thinning 2 years ago*	*Burn piles after fire season when conditions allow*
Reduce surface fuels	*Portions of the property have a lot of dead branches*	*Do an autumn forest clean-up and pile burn*
Remove ladder fuels	*Few trees are limbed in this zone*	*Prioritize tree limbing closer to the house*
Thin dense stands of trees in landscape context	*Further away from the house the forestland is very dense with Douglas fir saplings*	*Reduce stand density by thinning*
Fire-resistant trees protected (thinning around)	*Fire-resistant trees have not been protected*	*Identify some legacy hardwoods and thin around where possible*
Fuels situation around key areas (roads, trails, highly used areas)	*Dirt road on the far side of the property is impassable and one way.*	*Thin fuels on either side of dirt road; consider extending the road network to provide access to more of the property and serve as an additional egress*

Access

Component	***Status***	***Action plan***
Access to home for emergency vehicles (Can emergency vehicles get in, turn around, and exit safely?)	*No—ingress and egress are currently a one-way driveway that is too small for emergency vehicles*	*Consider widening driveway and adding a turnaround*
House number signs are reflective and visible	*Driveway grade is gentle and in excellent condition; dirt road is impassable, but grade is gentle.*	*Clear dirt road; consider extending the road network to provide access to more of the property and serve as an additional egress*
Road grade and condition	*Home area has few trees and is mostly irrigated lawn; the few trees that exist are large*	*Maintain larger oak trees and keep surrounding area free of sprouts and debris*
Area around the home that can be easily raked or plowed for a fireline	*Fuels around driveway and road are well maintained*	*Continue to maintain*
Fuels situation around key areas (roads, trails)	*No—ingress and egress are currently a one-way driveway that is too small for emergency vehicles*	*Consider widening driveway and adding a turnaround*

EXAMPLE

Bridges, cattle guards, and culvert able to support fire vehicles (if applicable)	*Driveway grade is gentle and in excellent condition; dirt road is impassable, but grade is gentle.*	*Clear dirt road; consider extending the road network to provide access to more of the property and serve as an additional egress*

Water supply

Component	***Status***	***Action plan***
Pressurized hydrants available, cleared of debris and vegetation, visible, and marked on map	*No hydrant on property*	
Non-pressurized or dry hydrants available, visible, and marked on map	*No hydrant on property*	
Water sources, such as ponds or streams, accessible and marked on map	*No ponds or streams on property*	
Well pumps maintained with uninterrupted electricity	*Well pump currently operates on main electrical line*	*Purchase and install a generator for use of the well in the event of a power failure*

In case of evacuation

Component	***Status***	***Action plan***
Phone tree complete	*Have gotten several neighbors to sign up for the phone tree*	*Continue outreach to additional neighbors*
Evacuation plan for household	*Evacuation plan for family completed*	*Update when needed, review no less than once a year*
Evacuation plan for neighborhood and community	*Begun talking with neighbors about a community evacuation plan*	*Continue holding meetings with interested neighbors and start work*
Evacuation plan for livestock and pets	*Two cats and a dog, no livestock*	*Called local animal shelter for information on animal safe havens*
72-hour emergency kit	*Completed 72-hour emergency kit*	*Keep stored in garage for easy access when evacuating; check kit at the start of every fire season to replace anything expired or no longer needed*
Predetermined meeting place chosen	*Have gotten several neighbors to sign up for the phone tree*	*Continue outreach to additional neighbors*

Additional notes:

EXAMPLE

Volunteer Plan

Fill out as much as you can related to your vision for volunteering.

Volunteer activity location
(e.g., county, city, town, neighborhood, family, school, HOA):

Neighborhood

Impact goal
What change are you hoping to see as a result of your efforts?

We wish to raise the awareness of the risk of wildfire in our community, and get our neighborhood to take action, develop a Firewise community, an evacuation plan, and plan on the ground work for neighbors that are unable to keep their defensible space clear.

Volunteer plan narrative
Give a brief description of the activities you would like to conduct to accomplish your goal:

We have begun meeting informally with some neighbors and conducting home assessments using our training from CFA. Several neighbors have agreed to come to a meeting we are planning for later this month, to discuss firewise and evacuation planning. The Rural Fire Protection District has been contacted and will be there at the meeting. We plan to identify which areas of our neighborhood needs work and offer help reducing fuels and improving access if wanted.

Volunteer method
Circle the types of volunteer activities you plan to do:

Written outreach (Creative outreach) (One-on-one education) (Public education) Youth education

Emergency response (Physical work) Leadership Other: _____

Timeline
Start date: *March* Month *2017* Year Completion date: *Ongoing*

Project partners
List any organizations, agencies, and businesses you will work with in order to complete your volunteer service or project:

- *Corvallis Rural Fire Protection District*
- *Firewise Coordinator*

EXAMPLE