

A publication of the
National Wildfire
Coordinating Group



Wildland Urban Interface Wildfire Mitigation Desk Reference Guide

PMS 051

June 2019



Wildland Urban Interface Wildfire Mitigation Desk Reference Guide

June 2019
PMS 051

The *Wildland Urban Interface Wildfire Mitigation Desk Reference Guide* provides basic background information on relevant programs and terminology for those, whether community members or agency personnel, seeking to enhance their community's wildfire mitigation efforts.

The four primary objectives of this reference guide are to:

- Provide a reference to assist with integrating wildland urban interface mitigation principles into national wildland fire training;
- Promote common wildfire mitigation language and culture;
- Establish an authoritative source for wildland urban interface mitigation information; and
- Provide consistent definitions for use by all media.

The National Wildfire Coordinating Group (NWCG) provides national leadership to enable interoperable wildland fire operations among federal, state, tribal, territorial, and local partners. NWCG operations standards are interagency by design; they are developed with the intent of universal adoption by the member agencies. However, the decision to adopt and utilize them is made independently by the individual member agencies and communicated through their respective directives systems.

Table of Contents

Wildland Urban Interface (WUI)	1
What is Wildland Urban Interface?.....	1
What is Mitigation?.....	1
Why is Mitigation Important in the Wildland Urban Interface?.....	1
Mitigation Principles.....	1
Risk Assessment.....	1
Risk Reduction.....	2
Basic Components of WUI Mitigation	2
Fire Adapted Community.....	2
Community Wildfire Protection Plan.....	3
State/Tribal/Local Hazard Mitigation Plan.....	3
Homeowner Wildfire Mitigation.....	4
WUI Mitigation Resources	5
Fire Adapted Communities Coalition.....	5
Fire Learning Network.....	5
Fire Safe Councils.....	5
Firewise Communities.....	6
Hazard Mitigation Assistance.....	6
Living with Fire.....	6
Ready, Set, Go!.....	6
Background Materials – Policy and Research	7
Healthy Forests Restoration Act (HFRA) of 2003.....	7
National Cohesive Wildland Fire Management Strategy.....	7
Presidential Policy Directive.....	7
Quadrennial Fire Review.....	8
Research Efforts.....	8
Whole Community.....	8

Wildland Urban Interface (WUI)

The effects of wildland fire on communities have become more intense, frequent, and far-reaching. Increased development in the wildland urban interface (WUI) means higher wildfire risk and more suppression needs, costing billions every year. A comprehensive approach to preparedness and mitigation is an effective way to address increasing suppression costs and reduce risk to communities.

Mitigation happens at all levels – local, state, tribal, and federal. A combined approach helps achieve fire adapted communities. Individuals, communities, and organizations working together to share and leverage resources and build partnerships are the keys to success. This guide defines terms and identifies resources that are useful in mitigation planning efforts for all lands.

What is Wildland Urban Interface?

Generally speaking, WUI refers to the zone of transition between unoccupied land and human development. It is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Communities adjacent to and surrounded by wildland are at varying degrees of risk from wildfires.

What is Mitigation?

Mitigation is the effort to reduce loss of life and property by lessening the potential impact of disasters.

Why is Mitigation Important in the Wildland Urban Interface?

Undertaking wildfire mitigation in the WUI can reduce or eliminate the risk of damages caused by wildfire to the human environment (homes, neighborhoods, communities). These actions offer multiple benefits including:

- Contributing to firefighter and public safety by reducing fuels and lessening the risk of structures igniting.
- Creating communities that are more resilient by reducing loss of life and property damage.
- Allowing individuals and communities to minimize post-disaster disruptions and recover more rapidly.
- Lessening the financial impact on individuals, communities, and society as a whole.
- In many cases, mitigation work also enhances other important values such as ecological benefits and aesthetics.

Mitigation Principles

A comprehensive mitigation approach based on a risk assessment is important for decision making in order to distinguish among various risk management options for accepting, avoiding, reducing, or transferring the risk. Resiliency, or fire adaptation, is a continual process that results in effective risk management.

Risk Assessment

Risk assessment is a systematic process for identifying and assessing the range of elements that could lead to undesirable outcomes for a specific situation.

Quantitative risk assessments provide a method by which we can calculate risk based on measurements or estimates of various risk components such as likelihood of fire occurrence, intensity of fire should it occur, and susceptibility to fire of the various values being evaluated.

Qualitative risk assessment is the application of judgment based in knowledge and experience when assessing wildfire risk, the potential for ignitions and recommendations regarding possible ways to mitigate the risk.

Risk Reduction

The goal of risk reduction is to reduce the potential loss to life and property. This can apply to both existing and future conditions, and pre and post-disaster environments, through regulations, local ordinances, land use and building practices, and with wildfire mitigation projects.

Basic Components of WUI Mitigation

Fire Adapted Community

The NWCG definition of fire adapted community (FAC) is “A human community consisting of informed and prepared citizens collaboratively planning and taking action to safely coexist with wildland fire.” More fully, a FAC is a knowledgeable, engaged community where actions of residents and agencies in relation to infrastructure, buildings, landscaping, and the surrounding ecosystem lessen the need for extensive protection actions and enable the community to safely accept fire as part of the surrounding landscape. A successful FAC approach has the potential to save lives, homes and communities, and millions of dollars in suppression costs annually and allowing beneficial ecological processes of fire to take place.

The concept of FAC does not refer to a specific program but a dynamic state of being in which the community continually strives to reduce wildfire risk factors. Becoming a FAC is a continuous process that requires *maintenance* and *adaptation* to ensure actions are effective. Regular re-assessment of risk factors will be required to remain fire adapted.

Because all stakeholders share wildfire risk, a FAC strategy stresses that everyone shares responsibility for mitigating the risk. Stakeholders in a FAC include residents, businesses, policy-makers, land managers, and emergency responders, as well as local, state, tribal, and federal governments. Engaging in a FAC approach can be encouraged by all levels of government through:

- Support for outreach programs to engage the public in mitigation efforts;
- Mitigation incentives; and
- Improved application of relevant research findings on structural ignition, fuels reduction, and key social dynamics.

There is a range of actions communities can undertake to become more fire adapted. In general, the more elements that a community has addressed, the more fire adapted it will become. As every community is unique, not all elements listed below will be emphasized to the same degree in each community. Major elements of a FAC include:

- Community Wildfire Protection Plan or an equivalent plan that helps the larger community identify key values and ways to mitigate fire risk.
- Ignition-resistant homes, building materials, and landscapes.

- Local responder understanding of the complexities of preparing for and dealing with wildfire.
- Fuels treatments on public and private lands in and around communities to reduce hazardous fuels and create fuelbreaks.
- Science and research to help inform decision making.
- Codes, covenants, and ordinances to foster development in the WUI that minimizes fire risk.
- Cooperation and collaboration between jurisdictional authorities.
- Evacuation planning.
- Wildfire prevention and preparedness education.

Go to <https://www.fireadapted.org> for more information.

Community Wildfire Protection Plan

A Community Wildfire Protection Plan (CWPP), or equivalent plan, is developed by a community in an area at-risk from wildland fire. The CWPP is a collaborative product involving local government, local firefighting agencies, the state agency which oversees forest management, federal land management agencies (if present in the vicinity), and other interested parties. While plans do not need to be overly complicated, they should effectively address local forest and range conditions, values-at-risk, and priorities for action.

The minimum requirements for a CWPP are:

- **Collaboration** – A CWPP must be developed collaboratively. Local and state officials must meaningfully involve federal agencies that manage land in the vicinity of the community and other interested parties, particularly nongovernmental stakeholders.
- **Prioritized Fuel Reduction** – A CWPP must identify and prioritize areas for hazardous fuel reduction treatments on both federal and non-federal land and recommend the types and methods of treatment that, if completed, would reduce the risk to the community.
- **Treatment of Structural Ignitability** – A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

The first statutory definition of CWPPs appeared in the Healthy Forests Restoration Act (HFRA), which also specified that communities that had a CWPP in place were to be a priority for receiving hazardous fuels reduction funding administered by the U.S. Forest Service and the Bureau of Land Management.

For more information on CWPPs, visit the Wildland Fire Leadership Council website, <https://www.forestsandrangelands.gov/resources/communities/index.shtml>.

State/Tribal/Local Hazard Mitigation Plan

The Federal Emergency Management Agency's (FEMA) Federal Insurance and Mitigation Administration (FIMA) administers the National Hazard Mitigation Planning Program and provides guidance and technical assistance for developing hazard mitigation plans (<https://www.fema.gov/hazard-mitigation-planning-resources>).

State, tribal, and local governments engage their communities in multi-hazard mitigation planning to identify natural hazards that may affect them, identify strategies and activities to reduce any losses from those hazards, and establish a coordinated approach to implementing the plan. Currently, there are 22,700 jurisdictions across the nation that have FEMA-approved hazard mitigation plans, and most of the plans are available online. FEMA requires state, tribal, and local governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for mitigation projects.

In addition to defining the community's overall strategy for risk reduction, the hazard mitigation plan includes a list of prioritized initiatives, both structural and nonstructural, to reduce vulnerability to various hazards. For communities with high wildfire risk, the hazard mitigation plan is an opportunity for prioritizing wildfire risk reduction projects that are eligible for FEMA hazard mitigation funds as well as other state, tribal, or local funds. It is important that entities with local knowledge of the wildfire risk participate in the planning process to contribute expertise, analysis of risk reduction projects, input on how wildfire risk reduction activities might be mutually beneficial with other mitigation efforts, and to ensure that wildfire risk reduction projects are part of the hazard mitigation plan. Many communities at-risk for wildfire take an integrated planning approach and incorporate the jurisdiction's CWPP into their multi-hazard mitigation plan.

State, tribal, and local mitigation plans can advance numerous wildfire mitigation goals. The mitigation planning process enables state, tribal, and local governments to:

- Increase education and awareness around threats, hazards, and vulnerabilities;
- Build partnerships for risk reduction involving government, organizations, businesses, and the public;
- Identify long-term strategies for risk reduction that are agreed upon by stakeholders and the public;
- Identify cost effective mitigation actions, focusing resources on the greatest risks and vulnerabilities;
- Align risk reduction with other state, tribal, or community objectives; and
- Communicate priorities to potential sources of funding.

Ultimately, hazard mitigation planning enables action to reduce loss of life and property, lessening the impact of disasters.

Homeowner Wildfire Mitigation

Homeowners can undertake a number of mitigation measures that can decrease the potential destructive effects a wildfire might have on their property. Some measures are designed to modify the vegetation surrounding a structure to decrease potential ignition sources. Others focus on modifying the construction of a structure itself to make the structure more resistant to ignition. To reduce the risk for the long-term, actions need to be maintained over time.

Common Practices

- Managing vegetation near the home by reducing, maintaining, and/or replacing with ignition-resistant components (such as decorative stone at the base of a structure). Greater efforts are needed within close proximity of the structure and gradually decreasing efforts beyond that. For appropriate distances, contact your local state forestry or fire department.

- Removing leaves, needles, and other organic debris from decks, roofs, and near the base of exterior walls.
- Increasing ignition resistance of structures by actions such as using ignition-resistant roofing and protecting exterior openings of structures from ember entrance by covering with non-combustible wire mesh screening (attic vents, eaves/soffits, crawl spaces, etc.)
- Removing combustible materials from around structures and beneath decks. Locating firewood, fuel tanks, and LPG tanks at a safe distance from structures.

WUI Mitigation Resources

This section provides basic background on a range of larger scale wildfire mitigation opportunities. In addition, numerous programs exist at the state and local level throughout the country. All of the resources listed here are free, no-obligation programs.

Fire Adapted Communities Coalition

The Fire Adapted Communities Coalition is a group of partners committed to helping people and communities in the WUI adapt to living with wildfire and reduce their risk for damage, without compromising firefighter or civilian safety.

For more information about FAC visit the FAC Coalition website at <http://www.fireadapted.org>, The Nature Conservancy and The Watershed Center FAC program website and blog at <https://thewatershedcenter.com/programs/networks-and-coalitions/fire-adapted-communities-learning-network/>, and the International Association of Fire Chiefs' FAC program website at <https://www.iafc.org/topics-and-tools/wildland/fire-adapted>.

Fire Learning Network

The Fire Learning Network aims to restore the nation's forests and grasslands. This makes communities safer from fire through public-private partnerships that engage in collaborative planning and implementation, experiential training, and by supporting communication and public outreach about fire and restoration.

For more information, visit The Nature Conservancy's Fire Learning Network website at <http://www.conservationgateway.org>.

Fire Safe Councils

Fire Safe Councils (FSC) are grassroots, community-based organizations that share the objective to protect homes, communities, and environments from wildfire. FSCs accomplish this objective through education programs and projects such as shaded fuel breaks to protect area residents against an oncoming wildfire and to provide firefighters with a place to fight the fire. The fire agency and local government representatives may be members of the FSC, or may serve in an advisory capacity, depending on local needs.

All FSCs are independent entities. Some are organized as non-profit 501(c) (3) corporations; others operate under a memorandum of understanding with a county, city, and/or local fire protection district; some have no formal structure. FSCs vary in size and focus. Some are countywide, while others involve only the homeowner's association in a subdivision. There are also several regional associations of FSCs.

For more information on FSCs in California visit <https://www.firesafecouncil.org>; for Councils in Montana visit <http://firesafemt.org/>.

Firewise Communities

The Firewise Communities program teaches people how to adapt to living with wildfire and encourages neighbors to work together and take action to prevent losses. The program encourages local solutions for wildfire safety by involving homeowners and others in reducing wildfire risks by promoting defensible space and resilient structures for homes and communities.

Elements of the Firewise Communities program include the Firewise Communities/USA Recognition Program, Home Ignition Zone (HIZ) Workshops, online training courses, an interactive website, public education, and support for fire organizations and community groups.

For more information, visit the National Fire Protection Association's Firewise Communities website at <http://www.firewise.org>.

Hazard Mitigation Assistance

The FIMA administers FEMA's Hazard Mitigation Assistance (HMA) programs. Funding is available to mitigate at-risk structures and associated loss of life from the threat of future wildfire through creation of defensible space, application of ignition-resistant construction, and hazardous fuels reduction. Wildfire mitigation projects can be funded under both the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) programs. Further information on the programs and eligibility requirements can be found at <https://www.fema.gov/>, search "HMGP" or "PDM."

Information specific to wildfire mitigation projects can be found on page 31 of the Guidance Addendum: <https://www.fema.gov/>, search "guidance addendum".

Living with Fire

The purpose of Living with Fire is to provide homeowners living in fire prone areas with wildfire threat reduction recommendations developed by firefighting experts. This program also provides suggestions about what to do during and after a fire.

The program has many tools available for educators, homeowners, community groups, FSCs, and firefighting professionals to help educate and inform others about mitigating Nevada's wildfire threat. The information has been shared with thousands of homeowners living in fire prone areas throughout the country. Handout materials include tips on pre-fire mitigation actions such as creating defensible space, safe evacuation practices, and what to do when returning home after a wildfire threat has passed.

For more information, visit the Living with Fire website managed by University of Nevada Cooperative Extension at <https://www.livingwithfire.info/>.

Ready, Set, Go!

The Ready, Set, Go! (RSG!) Program seeks to develop and improve the dialogue between fire departments and the residents they serve. The program helps fire departments teach residents in the WUI how to best prepare themselves and their properties against wildfire threats. The RSG! Program tenets help residents be Ready with preparedness understanding, be Set with situational awareness when fire threatens, and to Go, evacuating early when a fire starts.

For more information, visit the International Association of Fire Chiefs' Ready, Set Go! website at <https://www.wildlandfirersg.org/>.

Background Materials – Policy and Research

Healthy Forests Restoration Act (HFRA) of 2003

HFRA authorizes the Secretaries of Agriculture and the Interior to expedite the development and implementation of hazardous fuel reduction projects on federal lands managed by the U.S. Department of Agriculture (USDA) Forest Service and the U.S. Department of Interior (DOI) Bureau of Land Management when they meet certain conditions. Other DOI bureaus are not addressed in the statute but have generally adopted policies and practices based on HFRA. The WUI is one of the identified priority areas that qualify for the use of these expedited environmental review authorities.

For more information on HFRA, visit the Wildland Fire Leadership Councils website at <https://www.forestsandrangelands.gov/resources/policies.shtml>.

National Cohesive Wildland Fire Management Strategy

Developed in response to requirements of the Federal Land Assistance and Enhancement (FLAME) Act of 2009, the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) is a collaborative effort to examine growing wildfire challenges across all lands regardless of ownership. The process is a collaborative, all-hands, all lands approach to wildfire management. All members of the wildland fire community, including federal, tribal, state, local, and nongovernmental partners, are active participants.

The Cohesive Strategy focuses on three elements: (1) restore and maintain landscapes, (2) fire adapted communities, and (3) wildfire response.

For more information, visit the Cohesive Strategy website, <https://www.forestsandrangelands.gov/>.

Presidential Policy Directive

Presidential Policy Directive-8 (PPD-8) was released in March 2011 with the goal of strengthening the security and resilience of the nation through systematic preparation within five mission areas: prevention, protection, mitigation, response, and recovery. The directive considers the full spectrum of threats and hazards, including natural, technological/accidental, and adversarial/human-caused. As part of the National Preparedness System required by this directive, a National Mitigation Framework was created which establishes a common platform for coordinating and addressing how the nation manages risk from all threats and hazards through mitigation capabilities. To implement the National Mitigation Framework, a Federal Interagency Operations Plan was developed and a Mitigation Framework Leadership Group (MitFLG) has been established. The MitFLG serves as the central coordination point for interagency mitigation activities across the federal government by facilitating information exchange, coordinating policy implementation, and overseeing successful implementation of the National Mitigation Framework.

For more information on PPD 8, visit the Homeland Security website, <https://www.dhs.gov/presidential-policy-directive-8-national-preparedness>.

Quadrennial Fire Review

The Quadrennial Fire Review (QFR) is a strategic assessment process that is conducted every four years to evaluate current mission strategies and capabilities against best estimates of the future environment for fire management. This integrated review is a joint effort of the five federal natural resource management agencies and their state, local, and tribal partners that constitute the wildland fire community. The objective is to create an integrated strategic vision document for fire management.

For more information on QFR, visit the National Interagency Fire Center website, https://www.nifc.gov/policies/pol_ref_QFR.html.

Research Efforts

For the latest findings in social science, fuels treatments, and other research efforts, visit the Joint Fire Science website at <https://www.firescience.gov/> and the U.S. Forest Service Research and Development publication system at <https://www.treesearch.fs.fed.us/>.

Whole Community

In 2011, FEMA initiated a national dialogue on a Whole Community approach to emergency management. The Whole Community concept is a lens through which residents, emergency management practitioners, organization leaders, and government officials can understand and assess the needs of local residents and the best ways in which to organize and strengthen their assets, capacities, and interests. The Whole Community approach involves increasing individual preparedness and using communities as force multipliers to enhance the resiliency of our nation as a whole. The three core principles of Whole Community include:

- 1) Understand and meet the actual needs of the Whole Community;
- 2) Engage and empower all parts of the community; and
- 3) Strengthen what works well in communities on a daily basis.

These three principles provide a foundation for pursuing a Whole Community approach to emergency management through which resiliency can be attained.

For more information on Whole Community, visit the FEMA website, <https://www.fema.gov//whole-community>.

The *Wildland Urban Interface Wildfire Mitigation Desk Reference Guide* is developed and maintained by the Wildland Urban Interface Mitigation Committee (WUIMC), an entity of the National Wildfire Coordinating Group (NWCG).

Previous editions: 2017, 2014.

While they may still contain current or useful information, previous editions are obsolete. The user of this information is responsible for confirming that they have the most up-to-date version. NWCG is the sole source for the publication.

This publication is available electronically at <https://www.nwcg.gov/publications/051>.

Comments or questions regarding the guide should be directed to the appropriate agency representative on WUIMC. The WUIMC roster is available at <https://www.nwcg.gov/committees/wildland-urban-interface-mitigation-committee>.

Publications and training materials produced by NWCG are in the public domain. Use of public domain information, including copying, is permitted. Use of NWCG information within another document is permitted if NWCG information is accurately credited to NWCG. The NWCG logo may not be used except on NWCG authorized information. “National Wildfire Coordinating Group,” “NWCG,” and the NWCG logo are trademarks of NWCG.

The use of trade, firm, or corporation names or trademarks in NWCG products is solely for the information and convenience of the reader and does not constitute endorsement by NWCG or its member agencies or any product or service to the exclusion of others that may be suitable.

This NWCG publication may contain links to information created and maintained by other non-federal public and/or private organizations. These organizations may have different policies from those of NWCG. Please note that NWCG does not control and cannot guarantee the relevance, timeliness, or accuracy of these outside materials.