



# Wildland Fire and Air Quality



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*This summary document is intended for resource managers*

## About Wildland Fire

A wildland fire is any non-structure fire that occurs in forests, scrublands, grasslands, and marshlands. There can be two types of wildland fires: wildfires (unplanned), and prescribed fires (intentionally ignited for management purposes). At the right times and in the right places, wildland fires play an important ecological role across the globe, enhancing public and firefighter safety, benefitting those plant and animal species that depend on wildland fires for habitat restoration, reducing understory vegetation or encroachment, and meeting other ecological requirements.

### **Wildfires are increasing in both numbers and intensity as a result of past fire suppression practices and climate change.**

In the past decade (2005 – 2014), wildfires burned on average nearly 9.4 million acres annually, and the U.S. Government spent nearly \$16 billion on wildfire suppression. Past practices of extinguishing every fire combined with impacts related to climate change are leading to larger, more intense, more frequent wildfires, threatening life, safety, and property. These fires can impair air quality and harm ecosystems in the U.S. that provide a wealth of goods and services such as timber, wildfire habitat, erosion management, water quality and supply, recreation, and aesthetic value.<sup>1,2</sup>

### **Reducing the Risk of Catastrophic Wildfires**

One of the ways to reduce the intensity and spread of wildfires is to remove or reduce the unwanted vegetation in fire-prone areas. Fire is an important tool to reduce fuel loads, unnatural understory, and tree density, helping to reduce the risk of catastrophic wildfires. Using prescribed fire and/or mechanical treatments, such as chipping and thinning, can slow the spread of wildfire and diminish wildfire intensity. Prescribed fire and some wildfires can mimic the natural processes necessary to maintain fire-dependent ecosystems, minimizing catastrophic wildfires and the risks they pose to safety, property and air quality.

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<sup>1</sup> [Climate Change in the United States: Benefits of Global Action](http://www2.epa.gov/sites/production/files/2015-06/documents/cirareport.pdf) <http://www2.epa.gov/sites/production/files/2015-06/documents/cirareport.pdf>

<sup>2</sup> Vose, James M.; Peterson, David L.; Patel-Weynand, Toral, eds. 2012. [Effects of climatic variability and change on forest ecosystems: a comprehensive science synthesis for the U.S. forest sector](#). Gen. Tech. Rep. PNW-GTR-870. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station

Over the past decade, federal land management agencies have treated more than 3.5 million acres of wildland vegetation annually by using prescribed fires, which mimic the natural process, and mechanical methods. In some parts of the U.S., tribal, state, and local governments and private landowners actively manage considerably more land area than the federal agencies. Yet, vegetation continues to accumulate



*Figure 1 – (Halfway Fire, Grand Canyon National Park) In June 2013, the Halfway Fire provided an excellent example of how planned prescribed fire treatments can be effective in limiting the spread of future wildfires, protecting values at risk, and reducing fire suppression costs. The wildfire burned under extreme conditions, yet reduced in intensity dramatically as it passed from untreated vegetation, on the left side of the fence, into a forest stand managed with prescribed fire on the right side of the fence. This photograph was taken one year after the wildfire.*

at a faster rate than is possible to control by all types of fuels management practices or wildfire combined.<sup>3</sup> Despite all efforts to prevent or eliminate fire, wildfires occur, particularly in vegetation types most adapted or dependent upon fire. In fact, attempts to prevent or eliminate all fires allow vegetation to accumulate and have led to prolonged, larger, and more intense fires. Managing vegetation, including the use of prescribed fire, helps to manage the risk that catastrophic wildfires pose to ecosystems and society, including risks to public health from smoke.

**Landowners and land managers across the country seek to safely and effectively extinguish fire when needed; use fire where beneficial; manage their natural resources; and, as a nation, live with wildland fire.**

The National Cohesive Wildland Fire Management Strategy<sup>4</sup> reaffirms that federal, tribal, territorial, state, and local governments, and non-governmental partners, private property owners, and public stakeholders will need to increase efforts to work together across all lands to manage wildland fire. The primary goals of the National Strategy are to restore and maintain fire resilience across landscapes, which foster healthy ecosystems and provide benefits to society across all jurisdictions; prepare communities so they can live with and withstand wildfire without loss of life and property; and safely, effectively, and efficiently respond to wildfires when they occur. The activities in the strategy could diminish the associated air quality risks to the public which can reach unhealthy levels during wildfires.

<sup>3</sup> Calkin, D. E., et al., (2015). Negative consequences of positive feedbacks in U.S. wildfire management, *Forest Ecosystems* 2:9

<sup>4</sup> [National Cohesive Wildland Fire Management Strategy](https://www.forestandrangelands.gov/strategy/index.shtml), U.S. Department of the Interior and U.S. Department of Agriculture (2014) <https://www.forestandrangelands.gov/strategy/index.shtml>

**Wildfires pose a direct threat to air quality and public safety—a threat that can be mitigated through management of wildland vegetation.**

Attempts to suppress all wildfires in the past have resulted in unintended consequences, including increased risks to both people and ecosystems. Wildfire smoke can result in significant air quality impacts to public health, particularly for at-risk groups, and impacts to safety and transportation through diminished visibility on roads and aviation corridors. In contrast, prescribed fires provide an opportunity to adjust the timing of fire and some ability to manage the amount of smoke and its path, thereby reducing the impact of fire emissions. Prescribed fire, managed using basic smoke management practices<sup>5</sup>, can reduce the impacts on air quality while meeting fire-related objectives.



*Figure 2– (Paradise Fire, Olympic National Park) Managing vegetation, including the use of prescribed fire, helps to manage the risk to ecosystems and to society, including managing risk to human health from smoke impacts.*

**EPA is committed to working with land managers to effectively use prescribed fire to reduce the impact of catastrophic wildfire-related emissions.**

Smoke from wildfires can cause air quality to exceed the U.S. Environmental Protection Agency’s (EPA) health standards for fine particulate matter and ozone. The agency’s Exceptional Events Rule provides regulatory relief for states that exceed national air quality standards because of emissions from certain sources of pollution, including wildfires and certain prescribed fires. EPA recently proposed updates to the rule to simplify and shorten the process for state air agencies to address the impacts of wildfire smoke in their air quality plans. EPA also released a draft guidance document that will help state air agencies develop supporting information for wildfires that affect monitored ozone concentrations.

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**We will work together to provide information and help the public protect their health.**

EPA, U.S. Department of the Interior, and U.S. Department of Agriculture are working together to

provide the public information on the effects of smoke from fires – including information on steps people can take to reduce their exposure and protect their health from wildfire smoke. Information on current wildfires and air quality is available on the [AirNow.gov](http://go.usa.gov/cCc5F) website at: <http://go.usa.gov/cCc5F>.

<sup>5</sup> [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb104631l.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb104631l.pdf)