Union of Concerned Scientists

EXECUTIVE SUMMARY

Playing with Fire

How Climate Change and Development Patterns Are Contributing to the Soaring Costs of Western Wildfires

HIGHLIGHTS

Scientific evidence shows that climate change is producing hotter, drier conditions that contribute to worsening risks of wildfires in the American West. Simultaneously, more homes and businesses are being built in and near wildfire-prone areas, which, combined with some current policies and practices, are increasing wildfire risks and costs. Our report highlights the many different impacts and costs of wildfires, and provides recommendations for what we can do to limit these costs.

We have an opportunity to use our resources better to manage wildfires and help protect people. Steps we take now—to build resilience to wildfires in communities that are on the frontlines of risk, reduce the expansion of development near fire-prone forested areas, and cut the emissions that are fueling climate change—will be crucial to help limit the impacts of wildfires on people and forests.

Wildfires have always been a natural and necessary part of the forest landscape in the American West. But recent human-induced changes are dangerously altering wildfire regimes and increasing costs to federal and state budgets and local communities.

Climate Change and Growing Wildfire Risks

Strong scientific evidence shows that climate change is producing hotter, drier conditions that contribute to more larger fires and longer fire seasons in the American West today. The annual number of large wildfires on federally managed lands in the 11 western states has increased by more than 75 percent: from approximately 140 during the period 1980–1989 to 250 in the 2000–2009 period. The western wildfire season has grown from five months on average in the 1970s to seven months today. Moreover, the threat of wildfires is projected to worsen over time as rising temperatures—rising more rapidly in the American West than the global average—continue to lead to more frequent, large, and severe wildfires and longer fire seasons.

Communities on the Frontlines of Risk

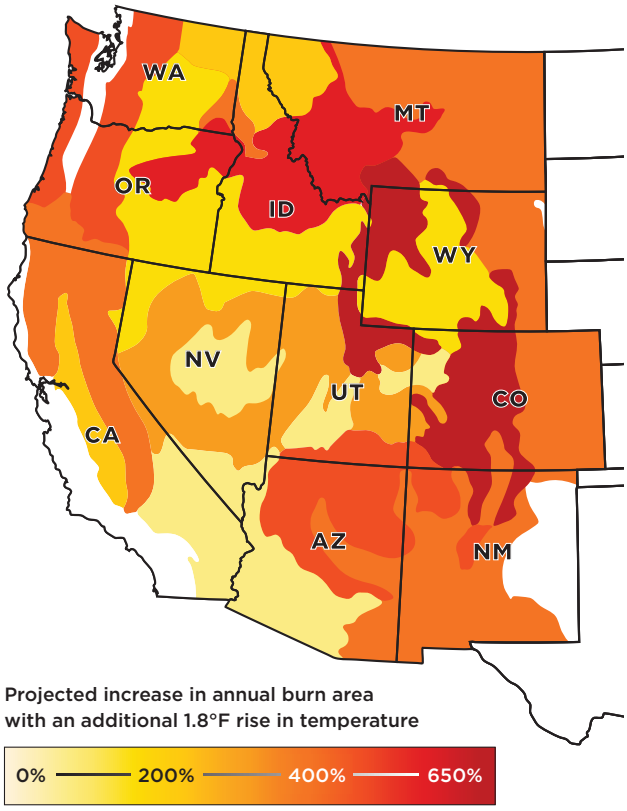
Simultaneously, with more homes and businesses being built in and near wildfire-prone forested areas, the danger to people plus the costs associated with fighting, enduring, and recovering from wildfires are also mounting. More than

The costs of putting out wildfires has exceeded $1 billion (in 2012 dollars) every year since 2000. The share of the Forest Service budget devoted to fire management rose from 13 percent in 1991 to more than 40 percent in 2012.

1.2 million homes—with a combined estimated value of more than $189 billion—across 13 western states are at high or very high risk of wildfires. The majority of the highest-risk properties are in California, Colorado, and Texas, which together have nearly 80 percent of such properties in the western states.

In some areas, past fire suppression, timber harvesting, grazing practices, newly introduced plant species, and increasing geographic range of diseases and pests have altered vegetation and led to an overaccumulation of flammable biomass.

FIGURE 1. Midcentury Increase in Area Burned by Wildfires in the Western United States



One study shows that for every additional 1.8°F (1°C) increase in temperature, much of the western United States will experience a significant increase in the area burned by wildfires. Colorado faces the highest overall increase in risk, with a potential increase in annual burned area of 400 to 650 percent. By mid-century, however, temperatures in the western United States are projected to far exceed this estimate, increasing another 2.5°F to 6.5°F over today's temperatures due to heat-trapping emissions from human activities. This would make the area even more vulnerable to wildfire damage.

SOURCE: UCS 2013; NRC 2011.

All these factors are converging to create greater wildfire risks and costs. The costs associated with putting out wildfires have soared, surpassing $1 billion (in 2012 dollars) every year since 2000. Since 1985 suppression costs have increased nearly fourfold from $440 million to more than $1.7 billion in 2013 (in 2012 dollars). Firefighting costs are only a minor fraction of the total costs of wildfires. A synthesis of six case studies of major recent wildfires in the western United States estimated that total wildfire costs can range anywhere from 2 to 30 times the direct suppression costs. Wildfires also have profound effects, both good and bad, on natural ecosystems.

Managing and Mismanaging Risk

Some current federal, state, and local policies and commercial practices are worsening the impacts and costs of wildfires. Federal fire management is disproportionately skewed toward suppressing wildfire at the expense of efforts to proactively reduce wildfire risks and maintain healthy forests. The share of the Forest Service (FS) budget devoted to fire management rose from 13 percent in 1991 to more than 40 percent in 2012. From 2004 to 2008, 346 wildfires that each cost more than $1 million in suppression costs resulted in $2.25 billion in spending by the FS.

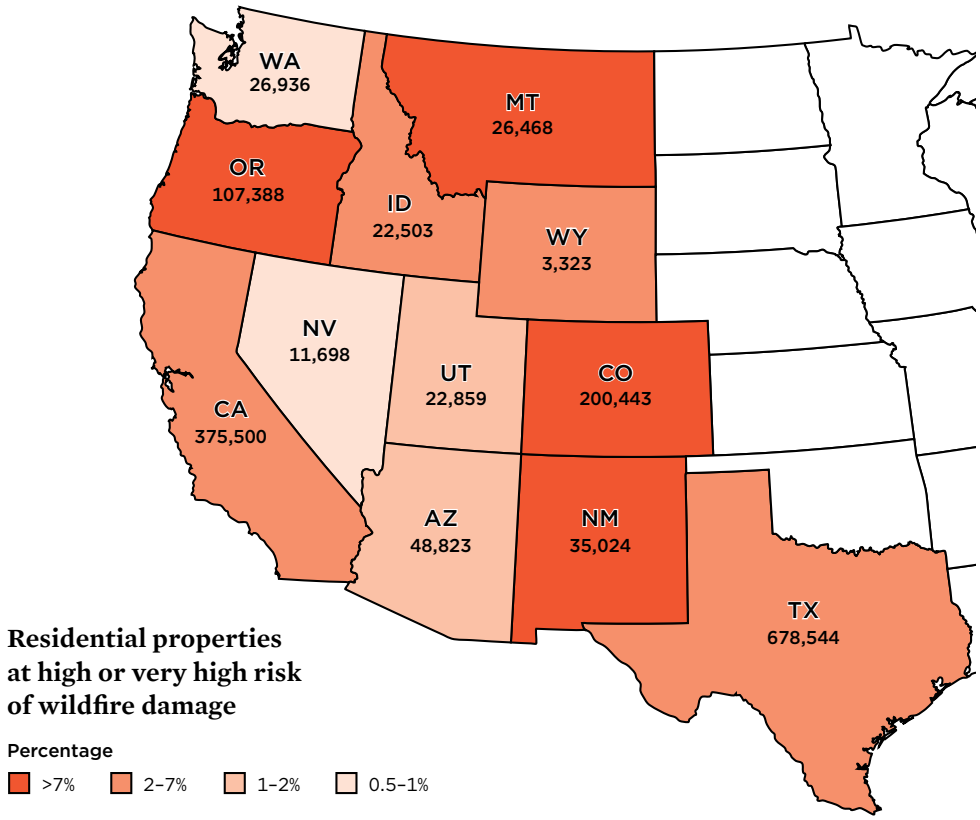
State and local zoning priorities continue to allow development near forests, creating a misalignment with actions that can help reduce risks from wildfires and keep costs down. Taxpayer funds, mostly directed at suppression, are not being used effectively to manage and prepare for the full range of wildfire risks and build resilience. And the full actual risks to homeowners living in fire-prone areas are not reflected in premiums for fire insurance.

The Costly Impacts of Wildfires

Damage to property, infrastructure, and local economies are often an expensive legacy of fires. For example, the 2003 San Diego wildfires caused more than $86 million in damages to roads, bridges, and electricity and gas infrastructure. Smoke from wildfires causes significant health problems, both when wildfires occur near major population centers and when smoke is carried long distances to populated areas. Aggravation of asthma and heart and lung diseases, breathing difficulties, and even death can result. The 2008 fire season led to almost $2.2 million in hospital costs in the Reno/Sparks area of Nevada caused by wildfires within a 350-mile radius.

Intense wildfires can leave burned areas and areas downstream at risk of soil erosion and serious flooding for years

FIGURE 2. Homes at Risk from Wildfires in the Western United States



Development in or near wildfire-prone areas in the western United States is significantly raising the risks and costs of wildfires. The colors on the map show the percentage of homes in each state that are either in the very high or high wildfire risk categories. Colorado, Montana, New Mexico, and Oregon are the states with the highest percentages of homes in very high and high risk categories, based on terrain, fuel, and vegetation characteristics of the property itself. The figures in each state show the number of properties that have the highest numeric risk score, factoring in a property's proximity to very high or high wildfire-risk areas. Texas, California, and Colorado have the greatest number of homes with the highest risk score.

SOURCE: BASED ON DATA BY CORELOGIC (BOTTS 2013).

afterward. Burned landscapes and soil erosion can also harm water supplies. The 1997 Buffalo Creek fire and the 2002 Hayman fire in Colorado together cost Denver Water $26 million in watershed rehabilitation costs. The 2000 Cerro Grande fire in New Mexico forced direct expenditures of more than $9 million by the Los Alamos Water Utility and an additional $72.4 million in rehabilitation, restoration, and flood mitigation.

Wildfires can also have a significant impact on tourism revenue. The 1988 fires in Yellowstone National Park, the largest wildfires ever experienced in the national park, led to hotels and other accommodations closing four weeks ahead of the normal tourist season, a reduction in annual visits by 15 percent in 1988, and a $60 million loss in tourism benefits between 1988 and 1990.

Many western states have experienced some of their largest wildfires in recorded history in the last decade and a half. The 2002 Hayman fire in Colorado, the 2003 Cedar fire in California, the 2012 Ash Creek fire in Montana, and 2012 Whitewater-Baldy Complex fire in New Mexico were all the largest recorded to date in those states. Billions of dollars have been spent on putting out fires in these states in the last decade and a half. Damage to the Cheeseman Reservoir in Colorado and the Rio Grande watershed in New Mexico, billions of dollars in insured losses in Colorado and California, significant health costs from smoke pollution, and devastating impacts on the Santa Clara Pueblo in New Mexico and the Northern Cheyenne Indian Reservation in Montana are some of the other major costs of recent wildfires.

Policies and Practices to Help Reduce Wildfire Risks and Costs

In light of these costly trends, we need to use our resources better to manage wildfires and help protect people. Incorporating the latest science to improve wildfire mapping and prediction, investing in fireproofing and fire safety measures, and ensuring that forest management practices reflect changes in climate are necessary starts for human safety and long-term forest health.

Coordinated action is needed among state and federal agencies and policy makers tasked with forest management and fire management, local agencies tasked with zoning regulations, communities located in high fire-risk areas, and insurance companies who insure homes in fire-prone areas. Mandatory building codes and zoning laws at the state and local level can help reduce future wildfire risks and costs. Moving more responsibility for mitigating wildfire risks and costs to homeowners and local communities to incentivize fireproofing measures—and charging insurance premiums that reflect the true danger to properties—can lead to less risky outcomes and decisions that help build local resilience.

Worsening wildfire seasons are forcing federal agencies to shift budgets from investments in long-term fire management and forest health to fire suppression. Funding fire suppression through separate emergency funds, as has been proposed in recent legislation, is an important step toward halting this harmful dynamic.

Public awareness campaigns and fire codes are also important for individual homeowners to understand the risks and the steps they can take to limit them. Homes are often much more flammable than forests. Investments in fireproofing homes and establishing vegetation-free defensible buffer zones around homes can slow or even stop fire from spreading and help keep firefighters safe. There is also a broader need for a national climate resilience fund to help communities cope with the impacts of climate change, including wildfires.

Adaptation measures, however, have their limits. Reducing the expansion of development in risky zones near fire-prone forested areas is the single best way to limit human exposure to wildfire risks (or human causes of wildfires) in the short term. Ultimately, cutting carbon emissions to slow climate change and temperature increases will be crucial to help curtail the impacts of wildfires on people and forests.

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Wildfires can have devastating impacts on personal property and lives. A San Diego couple watches as firefighters try to save their home.

> ***Hotter, drier conditions and growing development in wildfire-prone areas are driving up the risks and costs of wildfires in the western United States.***

Union of Concerned Scientists

FIND THE FULL REPORT ONLINE: www.ucsusa.org/playingwithfire

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NATIONAL HEADQUARTERS
Two Brattle Square
Cambridge, MA 02138-3780
Phone: (617) 547-5552
Fax: (617) 864-9405

WASHINGTON, DC, OFFICE
1825 K St. NW, Suite 800
Washington, DC 20006-1232
Phone: (202) 223-6133
Fax: (202) 223-6162

WEST COAST OFFICE
500 12th St., Suite 340
Oakland, CA 94607-4087
Phone: (510) 843-1872
Fax: (510) 843-3785

MIDWEST OFFICE
One N. LaSalle St., Suite 1904
Chicago, IL 60602-4064
Phone: (312) 578-1750
Fax: (312) 578-1751

WEB: www.ucsusa.org