



Money to burn

Fighting wildfires—in the forest and in back yards—has become costlier in recent years

By PHIL DAVIES
Senior Writer

It's high wildfire season in Montana and much of western and central South Dakota. The sun has sucked moisture from forests and grasslands, making them yearn to burn. Crews of firefighters and millions of dollars worth of equipment—fire engines, bulldozers, helicopters, airplanes—stand at the ready to attack blazes ignited by lightning, sparks from trains or careless campers.

This summer could turn out to be a mild fire season like last year, when just a few big wildfires inflicted relatively little damage on natural resources and private property. Or it could develop into a rerun of 2006 and 2007, record wildfire years in the region, when several large fires raged, consuming timber, homes and tens of millions of dollars in suppression costs. There was the Alabaugh Canyon fire, which destroyed

32 homes near Hot Springs, S.D., in July 2007, and the Jocko Lakes fire that broke out near Seeley Lake, Mont., later that summer, burning through 36,000 acres and over \$37 million in public funds before it was put out.

Over the past decade, severe wildfire seasons have outnumbered the mild ones, in the nation and in the Ninth District. The cost of fighting wildfires has risen with the flames, taxing the resources of government agencies charged with putting out fires. Last year, the U.S. Forest Service alone spent over \$1 billion fighting wildfires, mostly in the western part of the country.

In the district, the intensity of recent fire years and the resulting costs are most evident in fire-prone Montana. Over most of the past decade, state government incurred average annual fire suppression costs of over \$20 million—just a fraction of total firefighting costs in the state. Costs peaked at \$65 million in the 2007 fire season, requiring a spe-

cial legislative session to cover a budget shortfall. "What we've seen is a really substantial escalation in the number of fire seasons where we burn a lot of acres, and a lot of those acres are threatening communities, so we tend to spend a lot of money," said State Forester Bob Harrington.

Experts have ascribed the increased expense of wildfires in western states and the district to a hotter and drier climate, the accumulation of deadwood and other fuels in forests, and increased development in fire-prone areas. Growth in the wildland-urban interface, or WUI—areas where structures intermingle with public forest and grassland—has attracted special scrutiny; studies have linked homes in the line of fire to higher firefighting costs.

Strategies for tamping down fire activity and escalating suppression costs face numerous obstacles; some are the equivalent of fighting a house fire with a garden hose. For example, fuels

The 2007 Ham Lake fire in northern Minnesota was the biggest in the state in 90 years, scorching 36,000 acres and more than 100 homes and cabins.

reduction—mechanical removal and prescribed burning to reduce the intensity and duration of wildfires—may prove a losing battle, given the vast acreage yet to be treated.

In the WUI, state and federal taxpayers heavily subsidize risk-taking by people living in fire-prone areas. Because local governments bear a small share of firefighting costs, they haven't done much to regulate development in the WUI or imposed taxes and fees on residents who benefit from fire protection but pay nowhere near its full cost.

"Something has to happen, because the local governments just aren't taking enough responsibility for reducing firefighting cost," said Jeff Gies, a fire manager with the Forest Service in the Black Hills of South Dakota.

However, local officials and landowners are starting to feel the heat from the rising costs of wildfires. The state of Montana and some fire-prone counties in the district are edging toward regu-

Continued on page 12

Wildfires from page 11

lating development on the wildland fringe. And some insurers are requiring policyholders in fire-prone areas to take steps to reduce their fire risk, on pain of losing their insurance.

Smoke gets in your eyes

It may come as a surprise to some, but wildfires are commonplace in the district, as much a part of the natural order during warm weather as bugs and backyard grilling. National fire data show that Montana accounts for the bulk of wildfire activity in the region (see Chart 1). Huge swaths of public timberland and grassland in the state become highly flammable after snowmelt. The Black Hills, an oasis of conifers on the semi-arid Great Plains, is another hot spot.

But every district state has its share of wildfires. During droughts, North Dakota sees numerous rangeland fires that are usually extinguished quickly by rural fire departments. In relatively wet Minnesota, over 1,000 wildfires break out each year, only a few of which wreak sufficient havoc to make the news. One such blaze was the Ham Lake fire in northern Minnesota three years ago—the biggest in the state in 90 years, scorching 36,000 acres of forest and more than 100 homes and cabins.

The source of fires varies. In Montana, lightning starts about half of wildfires; the rest are ignited by human activity—arson, smoking, bonfires, sparks from vehicles. In the eastern part of the district, the overwhelming majority of fires are caused by people.

Typically, big fires provoke a multi-pronged assault from local fire departments and firefighting crews from state departments of natural resources (DNRs) and federal agencies such as the Forest Service. State and federal units supply the heavy, expensive weaponry often deployed to stop or slow an advancing wildfire: bulldozers to clear fire breaks, helicopters with water-scooping buckets, air tankers that dump water or fire retardant.

After the fire, the various agencies share suppression costs, usually based on acres burned in each jurisdiction. Cost-share agreements differ from state to state and from fire to fire, with other factors such as resources expended and structure protection taken into account, and different cost splits for federal versus state agencies. The Federal Emergency Management Agency often helps pay for large, dangerous—and expensive—fires that threaten communities or subdivisions. For FEMA-declared fires like the Alabaugh Canyon fire and last year's Eagle Mount fire near Columbus, Mont., the federal government pays up to 75 percent of firefighting costs.

After all costs are allocated, the federal government ends up paying the lion's share of fire suppression costs in

Many wildfire experts point to home construction in the WUI as a contributor to escalating firefighting costs—one that is likely to become more significant in some parts of the district.

the district, with state legislatures responsible for most of the remainder. In 2009, the state of Montana was responsible for less than one-quarter of the total cost of putting out fires, according to state and national fire data. (Minnesota, with a smaller proportion of federal land, paid a larger share of overall suppression costs.)

Local governments pay a relatively small portion of firefighting costs, especially for big fires that threaten private property. Figures on local cost share in district states are unavailable, but Harrington estimates that Montana counties pay less than 10 percent of the cost of fighting large fires on county and private land. The state assumes the costs of such fires when county or municipal fire chiefs ask for help.

In South Dakota, the state pays all costs of fires that occur on nonfederal land in the Black Hills. County governments in the region pay nothing (although counties in the rest of the state help pay for fighting grass fires). "The counties have very little skin in the game when it comes to a forest fire in South Dakota," said Jim Strain, assistant chief of the state's Wildland Fire Suppression unit.

Flaming budgets

Firefighting by the Forest Service, state DNRs and other public agencies promotes the general welfare by protecting resources such as timber, wildlife habitat and homes that would otherwise be destroyed. If tax dollars were not spent suppressing fires, society would suffer far greater economic losses (see "Counting the full cost of wildfires" on page 14). But over the past 10 or 15 years, the cost of keeping wildfires in check has risen markedly, along with the amount of land ravaged by fire. After staying fairly constant for 30 years, acreage scorched by wildfires across the country almost doubled in the 2000s, according to the National Interagency Fire Center, a clearinghouse for fire data. Costs also soared: In the 1990s, federal agencies spent an average of about \$400 million annually in today's dollars fighting wildfires; since 2000, they have burned through at least \$1 billion annually.

Comprehensive, long-run data on the cost of fires aren't available for district states. But NIFC statistics show that the region has experienced a rash of severe fire seasons during the past decade. Fire activity spiked in 2003, and

again in 2006 and 2007, when over a million acres—an area the size of Minnesota's Boundary Waters Canoe Area—burned each year in district states, excluding the Upper Peninsula of Michigan. In 2006, over 1 million acres burned in Montana alone.

An analysis of separate NIFC wildfire cost figures—data that capture the biggest and most expensive fires—shows that total fire suppression costs in Montana, Minnesota and the Dakotas surpassed \$375 million between 2005 and 2009.

Historic fire-cost data are available for Montana. State records of fire activity on nonfederal land since 1981 show that as the average number of acres burned annually has increased, inflation-adjusted costs have risen even more sharply over the past 30 years, more than doubling between 1991 and 2009 (see Chart 2).

At the national level, escalating firefighting costs have strained the budget of the Forest Service, which does the bulk of firefighting on federal lands. In the early 1990s, fire suppression accounted for about 13 percent of Forest Service expenses; by 2009, it consumed about half of the agency's budget. Last year, Congress created reserve accounts to cover firefighting costs in severe fire seasons when the annual budgets of the Forest Service and the Department of the Interior are exhausted.

In the district, states feel the financial impact of fighting wildfires in differing degrees. Minnesota spent about \$15.5 million on fire suppression in 2009—a minuscule piece of roughly \$25 billion in state spending that year. In Montana, a state with one-fifth the budget of Minnesota, record fire expenses in 2007 required \$39 million in special appropriations. From 2006 to 2008, South Dakota's governor sought \$2.4 million in emergency funding to douse prairie fires in the western and central parts of the state.

Waiting for a spark

Probably the single biggest reason for the increase in wildfire activity and suppression costs in the region is a shift in weather patterns. Government and academic research has linked higher-intensity, longer fire seasons since the 1980s to earlier snowmelt and warmer, drier summers, possibly caused by oceanic cycles or global warming. When parts of the district suffer drought—in 2003,

2006 and 2007, for example—the number and severity of wildfires invariably spikes.

Another factor behind the upswing in fire activity and costs is a decades-long buildup of woodland fuels that increase the likelihood of fires burning out of control. Ironically, over a century of successful fire suppression by federal and state agencies has contributed to this buildup; following Smokey Bear's advice has stifled countless small wildfires that otherwise would consume deadwood, brush and leaf litter. In Montana in the summertime, hot weather and a surplus of dried vegetation are an explosive mixture just waiting for a spark, said Harrington, the state forester. "With some fire starts, the conditions are so extreme that by the time you know that fire is there, it is already 100 acres and rolling," he said.

The chances that a wildfire will roll toward a house or subdivision have increased in recent years. Many wildfire experts point to home construction in the WUI as a contributor to escalating firefighting costs—one that is likely to become more significant in some parts of the district.

Over the past 25 years, development has blossomed on the wilderness boundary, particularly in tourist and retirement areas such as western Montana, the Black Hills and the North Woods of Minnesota and Wisconsin. Forestry researchers estimated in 2005 that 60 percent of the homes built in this country in the 1990s were built in WUI areas. In 2000, about 40 percent of all homes in Montana were located within a mile and a half of forestland.

More development means more cabins, houses and other structures that are defended from wildfire, often at considerable expense. (The presence of humans also increases the number of wildfire starts, but not necessarily costs because most wildfires are quickly extinguished.)

The WUI effect is most pronounced in the western part of the district, where fire danger within or adjacent to public forests can be extreme. Firefighting officials in the region see a connection between rising suppression costs and development in the WUI. "That has absolutely been a cost driver for wildfires" in Montana, Harrington said. In the Black Hills, Strain said, increased development "does indeed drive up our fire costs over time. Once you put primary residential houses and structures in a forest setting, it's more expensive to fight the fire."

Nationally and in the district, fire suppression costs per acre burned haven't increased over the years—an indication that, for all fires, cost increases have more to do with weather patterns and the accumulation of fuel than woodland sprawl. However, a number of recent studies have linked WUI devel-



At the 2007 Jocko Lakes fire near Seeley Lake, Mont., a firefighter supervisor drives through flames that jumped the road.

opment to higher suppression costs for *large* wildfires.

Headwaters Economics, a research group based in Bozeman, Mont., analyzed daily fire suppression costs for 18 large wildfires that burned in Montana during 2006 and 2007. The study found that each additional house within one mile of a wildfire was associated with a \$7,900 increase in suppression costs. For conflagrations in areas with relatively dense development, about 30 percent of the cost of fighting those fires was related to structure protection. Another study of large wildfires fought by the U.S. Forest Service found that as total home values within 20 miles of a fire ignition increase, so do firefighting costs.

Protecting “values at risk” from an advancing wildfire is expensive because it typically involves heavy concentrations of firefighters and equipment. A rule of thumb in defending houses or subdivisions calls for one fire engine and crew to be assigned to each structure. Determined to save lives and property, fire chiefs often summon costly reinforcements—large structural engines, bulldozers, tanker airplanes. Aircraft are particularly pricey, accounting for about one-third of total firefighting costs on a big blaze.

Denny Gorton, fire coordinator for Pennington County in the Black Hills, has battled several big wildfires that imperiled houses, including a 2006 fire

that grew quickly and marched toward 200 homes on a ridge near Rapid City, S.D. “When you get that type of fire and you have that many homes being threatened, you pull out all the stops,” he said. “You start requesting lots and lots of resources—local, county, state, federal.” Putting out the East Ridge fire, which burned seven homes, cost taxpayers about \$2 million.

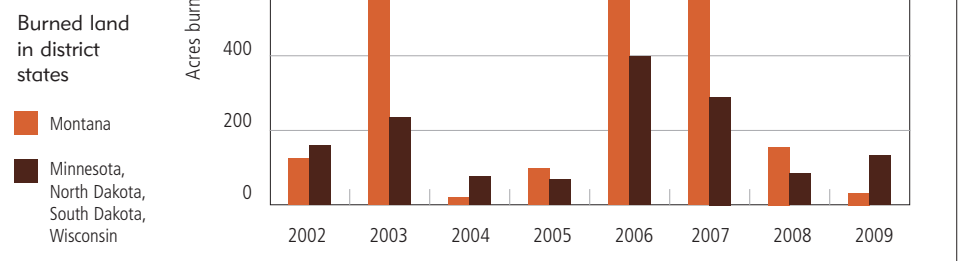
Slash and burn

If hotter and drier conditions are mainly responsible for the upsurge in wildfire activity and suppression costs, there’s not much that can be done about that, at least in the short term. However, public policy and private markets can mitigate the harmful effects of natural phenomena such as floods, tornadoes and wildfires. It may be possible to reduce the number of large, raging fires—and the tax dollars burned putting them out.

Most efforts to tame wildfire risk over the past decade have focused on fuels reduction on public land—thinning tree stands and eliminating brush and forest litter to prevent large, intense fires that rip uncontrolled through forestland. Fuels treatment includes prescribed burning and letting smaller wildfires burn within predetermined boundaries.

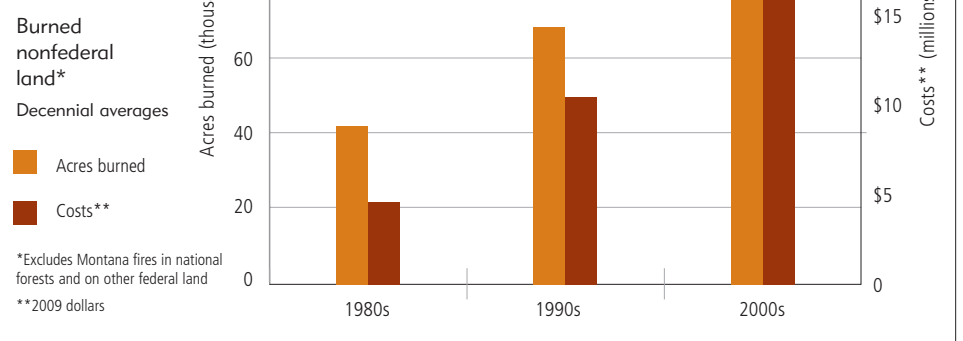
Such treatment has increased over

Chart 1
Wildfire activity varies greatly from year to year



Source: National Interagency Fire Center

Chart 2
In Montana, more wildfire and higher costs



Source: Montana Department of Natural Resources and Conservation

Wildfires from page 13



PHOTOGRAPH BY SUE PROM

A firefighting crew gathers at the Ham Lake fire in Minnesota in 2007.

Counting the full cost of wildfires

Firefighting costs, the focus of this article, amount to a small portion of the economic costs of wildfires. This is especially true for big wildfires that rage out of control, consuming vast expanses of forest and burning private property. Estimates of the total cost of large wildfires to landowners, investors and taxpayers range from 10 to 50 times the cost of fire suppression. Wildfire experts and economists generally divide actual wildfire costs into three categories:

Direct costs. These are values directly consumed by flame or related to controlling and managing fires. They include suppression expenditures, damage to homes, public infrastructure and personal property, burned timber, lost business revenues, and the expense of evacuating residents and treating the injured.

Indirect costs. These are typically unaccounted for in government audits and media reports. Examples are firefighting readiness expenses such as crew training and equipment maintenance, fire insurance premiums (paid in anticipation of fire), lost investments in reforestation and other natural resource management, and degraded recreational value.

Post-fire costs. Long-term damage to the economy and the environment may not become apparent for years. Lingering effects of wildfires include declines in the capital value of timberland, reduced property tax revenue, chronic illness due to smoke exposure, increased soil erosion, and ongoing salvage, repair and rehabilitation costs.

When all of these costs are added up, the economic toll exacted by wildfires can be staggering. The Ham Lake fire in Minnesota in 2007 cost about \$11 million to extinguish. Assuming conservatively that suppression expense amounted to roughly 10 percent of total costs, the full cost of that blaze—just one of thousands that burned in the district that year—likely will exceed \$100 million over time.

—Phil Davies

the past decade, both nationally and in the district. In Montana, the Forest Service, Bureau of Land Management and other federal agencies cut and burned about 114,000 acres last year, more than double the acreage treated in 2003. Minnesota saw a comparable jump in treated federal land, much of it in the Boundary Waters, where a 1999 windstorm had leveled millions of trees.

District states and local governments

have received federal dollars to reduce fuels in areas identified in Community Wildfire Protection Plans. About 4,000 communities across the west, including Rapid City, S.D., and Missoula, Mont., have adopted such plans. “We’re seeing a sizable amount of acres getting worked up in fuel reduction activities,” Strain said. “Whether it’s made a difference or not, time will tell.”

It’s not clear that such activity is mov-

ing fast enough, and ultimately it may prove futile. Studies have shown that the Forest Service and other federal agencies would have to treat between 10 million and 12 million acres nationwide each year to significantly reduce wildfire risk—more than double the current pace of fuels reduction. At Montana’s accelerated 2009 pace, treating all the federally owned forest in the state would take more than a century—by which time much of the purged biomass would have grown back.

Moreover, a struggling timber industry in Montana and other western states has removed a major source of demand for logs from selective cutting of trees on public land.

Homeland defense

The one element of wildfire suppression cost that is completely under human control is development near wildlands. If protecting private property in the WUI drives up firefighting costs, then perhaps the conditions that contribute to higher costs—government policies that encourage disregard for fire risk, for example—can be changed.

Wildfire research has shown that the best way to protect structures from wildfire—and avoid heroic firefighting efforts—is for owners to create “defensible space” by removing surrounding trees, undergrowth, pine needles and other flammable materials. “The biggest fire risk out here is that people aren’t doing enough to treat their own land,” said Gies of the Forest Service. Using fire-resistant construction materials on roofs and decks can also prevent house fires started by embers carried on the wind from nearby wildfires.

But there’s a major obstacle to making builders and property owners responsible for keeping the flames at bay: a disconnect between who benefits from construction in the WUI and who pays when those structures are threatened by fire.

Because local governments pay little or none of the cost of defending homes or subdivisions from wildfires, they have scant incentive to reduce fire risk by restricting development in hazardous areas or requiring defensible space and fire-wise construction methods. Some local officials reject the notion that WUI development increases suppression costs, arguing that if federal and state agencies were more diligent in treating fuels on public land, fewer fires would invade private land and endanger homes.

For their part, property owners generally don’t give much thought to wildfire peril, trusting firefighters to come to the rescue or, in the worst case scenario, insurance or federal disaster assistance to cover their losses and let them build anew—often somewhere else near the forest. “You get a lot of people with the attitude that if the for-

est is all black around my house, I might as well let my house burn down because I don’t want to live here anymore,” said Tim Eggers, fire chief of Lead, S.D.

Curbing development in the WUI—by banning home building in hazardous areas, for example—is probably infeasible, both economically and politically. The desire to live in scenic, wooded areas of the district is strong, and local governments covet increases in property tax revenue that development brings. After a lull due to the national recession, growth in the WUI, especially in western states, is projected to continue apace in a recovering economy.

But it’s an economic axiom that those who benefit from a good or service should bear its costs, and this rule should also apply to wildfire protection on the forest fringe. Noting that federal agencies don’t have power to regulate local development, a 2006 report by the U.S. Department of Agriculture’s Office of Inspector General recommended that state and local governments accept more financial responsibility for firefighting in the WUI.

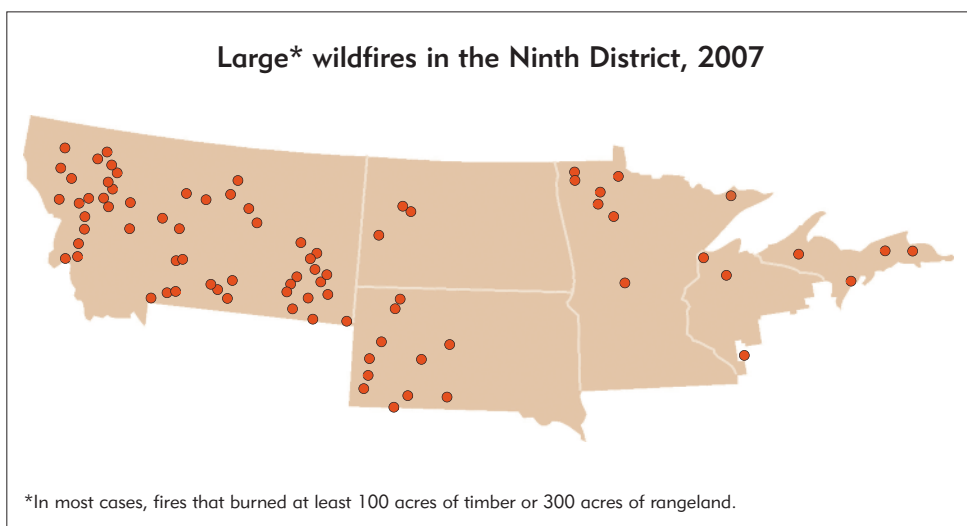
Such a shift “should provide an incentive for a behavior change, such as changing zoning rules or building codes,” noted Krista Gebert, a Forest Service economist based in Missoula who co-authored the cost study of large wildfires fought by the agency. In particular, tapping city and county governments for a greater share of firefighting costs would put pressure on them to try to reduce wildfire risk to private property. (Alternatively, they could raise property taxes or levy special fire protection fees on homeowners in hazardous areas.)

Responding to the high costs of recent fire seasons, the state of Montana and some counties in the district have taken halting steps toward making development in hazardous areas more resistant to fire. In Montana, legislation enacted in 2007 encourages local government to follow state guidelines on the use of fire-resistant building materials in the WUI, in return for aid to local fire departments drawn from federal fuels-reduction dollars.

In the northern Black Hills, Lawrence County started requiring wildfire hazard inspections of new subdivisions last year. Developers must comply if inspectors order them to trim vegetation, improve road access and take other action to mitigate fire danger. Although the measure doesn’t address building codes (the county has no building inspector) or existing subdivisions, Eggers said that it will make firefighting easier as more clusters of houses sprout among combustible pines. “It was just a recognition by the county that with the amount of growth that was going on, something needed to be done,” he said.



Smoke billows at the 2006 Red Eagle wildfire in Glacier National Park.



Source: National Interagency Fire Center

Insurance to the rescue?

Insurance markets offer another approach to cutting fire risk and suppression costs in the WUI. If insurance companies raised fire insurance premiums, some prospective home buyers might forgo a place in the woods, resulting in fewer houses to defend in the event of a wildfire. Existing homeowners, in order to lower their rates—or qualify for coverage at any price—might carve out defensible space, replace shingle roofs and take other steps to reduce the chances of disaster.

Historically, insurance firms haven't

worried much about wildfire losses because they make up a small proportion of payouts; according to the Insurance Information Institute, catastrophic fires account for about 2 percent of U.S. insurance losses, compared with 26 percent for tornadoes and 46 percent for hurricanes and tropical storms. But devastating wildfires in California over the past 15 years have alerted the industry to the potential for huge property losses. "It's been on our radar for a long time," said Carole Walker, executive director of the Rocky Mountain Insurance Information Association in Denver.

Some insurers have tightened their requirements for wildfire coverage, usually sold as part of a home or commercial property policy. State Farm Insurance introduced a wildfire hazard inspection program in 2003 and has since expanded it to 13 states, including Montana. Landowners must show inspectors that they've cut brush, moved log piles, installed wildfire sprinkler systems and taken other action to enhance fire safety. Those who don't comply risk cancellation of their policy. "The financial incentive for people to do the right thing and protect their property is motivated by keeping your insurance," Walker said. Allstate Insurance Co. and USAA have similar inspection programs.

In most WUI areas, fire insurance is available and relatively inexpensive compared with other types of insurance. For all their concern about curbing wildfire risk, State Farm and other insurers have not appreciably raised rates, and they have canceled only a tiny percentage of policies. This forbearance is understandable; public policy sends a clear signal that the government will shield private property from wildfire, even in high-risk areas. In setting their rates, insurers factor in local firefighting capacity—what firefighting resources are in the vicinity and how quickly they can arrive at the scene of an approaching wildfire.

For premiums to accurately reflect wildfire risk, firefighting agencies would have to abandon their practice of protecting private property at all costs—an unlikely scenario, observed Montana State Sen. Bob Hawks, who sponsored last year's WUI wildfire legislation. "If we just considered all territory to be equal in our [firefighting] response, then homeowners would pay an increased insurance cost ... which is the way the market should work. But our sense of protecting people and property is high."

There's the rub with wildfires, and not just blazes threatening homes and other buildings in the WUI. When fire rages across the landscape, federal and state agencies and local fire departments respond aggressively, dispatching fire crews and expensive equipment to battle the flames. Very few fires are left to burn themselves out; in Montana, 96 percent of fires on state land are put out before they exceed 10 acres in size.

If more hot, dry summers lie in store for the district's forests and grasslands, the cost of suppressing wildfires will rise with the columns of smoke. Everybody—people who live in cities and relatively wet areas at little risk from wildfire as well those squarely in the fire zone—will foot the bill. **f**