

Reducing Barriers to Use of Prescribed Fire in Privately Owned Forests



Photo: Bob Sturtevant

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Acronyms:

| | |
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| BLM | Bureau of Land Management |
| CDPHE | Colorado Department of Public Health and Environment |
| CFR | Code of Federal Regulations |
| CRS | Colorado Revised Statutes |
| EPA | Environmental Protection Agency |
| FEJF | Fire Emissions Joint Forum |
| FSM | Forest Service Manual |
| IAFC | International Association of Fire Chiefs |
| NWCG | National Wildfire Coordinating Group |
| NGO | Non-governmental organization |
| NAAQS | National Ambient Air Quality Standards |
| PM | Particulate matter |
| RFD | Rural fire department |
| SIP | State Implementation Plan |
| USC | United States Code |
| USDA | United States Department of Agriculture |
| USDI | United States Department of the Interior |
| USFA | United States Fire Academy |
| WRAP | Western Regional Air Partnership |

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Executive Summary

Prescribed fires are an essential tool for restoring and managing Colorado's forests (H.B. 00-1283). The 25% of the state's forests in private ownership account for about 1% of the prescribed burns planned in a year. The state of Colorado should develop the infrastructure needed to support a successful and informed prescribed fire program on private lands. Challenges faced by private landowners who want to manage their forests with fire include:

1. Compliance with smoke management regulations
2. A scarcity of personnel trained in managing and supervising prescribed fires
3. Possible civil or criminal liability
4. Difficulties in coordinating across political boundaries
5. Lack of information
6. Expense

This report contains 38 specific recommendations for reducing the above barriers to using prescribed fire on private lands. Taken as a whole, the recommendations would:

1. Create a support system, making information, trained employees, financial assistance, and insurance more available to private landowners
2. Improve collaboration and coordination across legal and political boundaries at the local, state, and federal levels
3. Incorporate the long-term costs and benefits and identify the beneficiaries of prescribed burns during the development of air quality policies
4. Clarify legal issues surrounding the responsible use of fire as a forest management tool

Progress in each of these 4 areas could lead to more frequent and better informed use of prescribed fire, reducing the potential for unusually severe and damaging fires in Colorado's dry forests and maintaining the health of wetter forests.

Introduction

In 2000, the Colorado General Assembly passed legislation encouraging the use of prescribed fire and natural ignition burns to improve the health of Colorado's forest lands and to reduce fire danger (H.B. 00-1283). The legislation also encouraged development of policies that would integrate fire management across private, local, state, and federal land boundaries. The Front Range Fuels Treatment Partnership (2006) recommended a statewide coalition to promote the appropriate use of fire by reducing barriers to prescribed fire and wildland fire use.

Over 200,000 private land owners in Colorado control 5.5 million acres of forest, almost 25% of the state's forested area (USDA Forest Service 2006). Approximately 45% of the ponderosa pine forests statewide are privately owned (USDA Forest Service 2006); in the Front Range, private forests comprise about 60% of the lands needing forest restoration and fuels reduction treatments (Front Range Fuels Treatment Partnership 2006). Yet, private land owners received only 3% of the prescribed burn permits issued by the state in 2006 and no permits for wildland fire use (Colorado Department of Public Health and Environment 2006). Private forest owners proposed broadcast burns on a total of 1,576 acres, less than 1% of the annual acreage for Colorado; proposed pile burns constituted 6.7% of the proposed volume statewide (Colorado Department of Public Health and Environment 2006). Only 320 acres were actually burned by private land managers and actual pile burns on privately owned land were 3% of the volume burned statewide (Colorado Department of Public Health and Environment 2006).

Charged with creating knowledge that will help Colorado's forest owners restore and manage their lands, the Colorado Forest Restoration Institute has examined factors that discourage or prevent private forest owners from taking advantage of fire use. This document identifies and examines barriers to increasing the beneficial uses of fire on private lands in Colorado, and highlights opportunities for lowering these barriers. Issues were generated during discussions with people involved with prescribed fire, particularly on private lands. The objective of this analysis is to engage policy makers, agency personnel, and private citizens in facilitating prescribed fire as a preferred and effective tool in forest management.

The six major barriers to using fire to restore and manage privately owned forests are:

- **Smoke management**
- **Availability of professional expertise and a trained workforce**
- **Liability**
- **Cross-boundary issues**
- **Information and advocacy**
- **Expense**

Discussion of each barrier is followed by a short description of issues, recommendations for reducing the barrier, and the background context. Background sections are intended as an introduction to the issues and a resource for learning more. Prescribed fire and wildland fire use are rapidly changing fields. Readers should check appropriate sources for updated information, particularly on statutes, permitting requirements, and government policies. Website URL's are provided throughout the document to assist readers in finding current or more detailed information.

I. Smoke management

Issues

- Landowners are intimidated by the smoke permitting process.
- Particulates generated by agricultural burning are not regulated and may limit opportunities for forest burning, particularly in the Front Range and on the West Slope.
- Non-attainment areas are designated by county. Some burns are scheduled in parts of the counties that have better air quality but are still subject to the more stringent regulations applied to non-attainment areas.
- The Colorado Department of Public Health and Environment (CDPHE) needs spatial and temporal information on public attitudes and concerns about smoke from prescribed fire across Colorado, and the empirical relationship between public concerns and actual particulate matter.
- Under current US EPA regulations, smoke from wildland fire use cannot be excluded from assessments of compliance with federal air quality regulations.

Recommendations

1. The recently-formed Prescribed Fire Council should consider assisting first-time prescribed burners with the permitting process.
2. Spatial and temporal data comparing smoke generation from prescribed fire, wildland fire use, and burning of agricultural fields should be compiled for airsheds.
3. The US EPA and the CDPHE should consider policies that allow exemptions for smoke generated by wildland fire use. (*Note that the US EPA is revising its regulations, including the policies on smoke from prescribed fire and wildland fire use on federal lands (Federal Register, January 8, 2008)*).
4. State-issued burning permits should remain valid or be easily renewed without charge if landowners are unable to conduct planned burns owing to weather or other contingencies.
5. The state of Colorado should be considering providing the CDPHE with better equipment for determining sources of particulates and for increasing the spatial precision of air quality mapping, as recommended by the Western Regional Air Partnership (WRAP) for all its member states.

6. The state of Colorado should continue to support regional efforts, such as WRAP's "Attribution of Haze Work Group", to improve the ability to determine the contribution of forest fires as sources of haze.

Background

Pursuant to the Clean Air Act, the federal Environmental Protection Agency (EPA) sets air quality standards that must be met by the states. States meet these National Ambient Air Quality Standards (NAAQS) by developing and enforcing regulations, including those limiting smoke generation from prescribed fire and wildland fire use. Many regulations are intended to address health issues caused by air pollution. The air quality policies in nine western states, including Colorado, derive additionally from the report of The Grand Canyon Visibility Transport Commission (June 10, 1996) and are intended to protect air quality in Class I airsheds (national parks and wilderness areas) on the Colorado Plateau. The report lists major current and future causes of haze at Grand Canyon National Park. Prescribed and wildland fire were found to be major contributors to haze and were predicted to become the largest contributors to haze in the future (The Grand Canyon Visibility Transport Commission June 10, 1996). The legislation authorizing the Colorado Air Pollution Control Board noted that the Grand Canyon report included wildland fire and prescribed burning as major current and predicted sources of haze (CRS 25-7-106, paragraph 7(b)). The Grand Canyon report did not mention agricultural burning as a cause of haze (The Grand Canyon Visibility Transport Commission June 10, 1996), and the Colorado general assembly specified that agricultural burning will only be regulated if the lack of such regulations would impede the attainment of air quality objectives (CRS 25-7-123).

The successor organization to the Grand Canyon Visibility Transport Commission is the Western Regional Air Partnership (WRAP), a project of the Western Governors' Association, National Tribal Environmental Council, and federal agencies. WRAP provides technical support to the nine western states as they develop the state implementation plans (SIP) mandated by the EPA regional haze rule. Technical advice on fire and smoke management is provided to WRAP by the Fire Emissions Joint Forum (FEJF) (<http://www.wrapair.org/forums/fejf/>). Colorado completed its Regional Haze Plan in December 2007 (<http://www.cdphe.state.co.us/ap/regionalhaze.html>). The EPA requires that state plans consider seven sources of haze, including smoke from agricultural and forestry operations. States can choose between two approaches in preparing their SIP's; these are known as Section 309 and Section 308. Utah, New Mexico, and Wyoming are preparing plans under Section 309; Colorado prepared its plan under Section 308 (<http://www.cdphe.state.co.us/ap/RegionalHaze/rhwhitepaper5-8.pdf>).

The EPA allows states to flag data associated with certain exceptional or natural events that exceed air quality standards. Data associated with these events may be excluded when the EPA assesses state compliance with air quality regulations. This policy is defined in 40CFR 50.1 and detailed in 40CFR 50.14. The list of qualifying events currently includes forest fires

and prescribed burning, but not agricultural burning; the list is available at <http://www.epa.gov/ttnairs1/airsaqs/manuals/Qualifiers.xls>.

Among Colorado's neighboring states, some, such as Wyoming and New Mexico, regulate agricultural burning at the state level. In contrast, Kansas and Utah allow counties to establish requirements. The EPA allows the state to exempt smoke from prescribed fires in determining violations of the NAAQS. Colorado has chosen to meet the federal air quality standards by regulating such forest smoke, but not smoke from agricultural burning.

The EPA has also issued new 24 hour standards for PM 2.5 (particulates smaller than 2.5 microns) (<http://www.epa.gov/pmdesignations/regs.htm#8>) that could limit prescribed burns or wildland fire use in some regions (www.stateforesters.org/letters.html; www.nifc.gov/fuels/downloads/implementation/OpeningT4Thursday.ppt). States need to establish programs by 2008 for attaining the new standards ([http://www.airquality.nrcs.usda.gov/AAQTF/Documents/San Diego 2007/14 SALLY%20S HAVER MAY%202007%20AAQTF--EPA.pdf](http://www.airquality.nrcs.usda.gov/AAQTF/Documents/San_Diego_2007/14_SALLY%20S HAVER_MAY%202007%20AAQTF--EPA.pdf)). Managers of state and federal lands have established the Fire/Air Coordination Group (www.fws.gov/refuges/AirQuality/docs/Priorities.pdf; www.fws.gov/refuges/AirQuality/docs/FAICG%20MEMBERSHIP.pdf) to standardize agency approaches to smoke management and to analyze and respond to federal air quality regulations. The state of Colorado was in full compliance with the previous PM 2.5 policy (<http://www.epa.gov/pmdesignations/regions/region8desig.htm>) and does not expect to develop more regulations to meet the new PM 2.5 policy (personal communication, Coleen Campbell).

Recognizing the increasingly stringent air quality requirements, WRAP has commissioned studies on alternatives to burning on both agricultural lands (<http://www.wrapair.org/forums/fejf/tasks/FEJFtask4.html>) and wildlands (<http://www.wrapair.org/forums/fejf/tasks/FEJFtask3.html>). Prescribed fires and wildland fire use may reduce the smoke released in unplanned wildfires, as pointed out by the National Association of State Foresters to the EPA during the comment period on the new particulate standards (www.stateforesters.org/letters/html). Alternatives to burning in forests exist, but they might not provide the same ecological benefits as fires (<http://www.wrapair.org/forums/fejf/tasks/FEJFtask3.html>) and are often more expensive. Other options are to reduce fuels before burning, decreasing, but not eliminating, the amount of smoke.

Current policy

Smoke is regulated by the Colorado Air Quality Control Commission. The regulations (<http://www.cdphe.state.co.us/regulations/airregs/100111openburning.pdf>) are implemented by the Colorado Department of Public Health and Environment (CDPHE). Landowners must obtain a permit prior to burning natural fuels. The kind of permit depends on the type and quantity of material to be burned. Permits are issued for a

calendar year. The CDPHE provides extensive information on the permitting process on the website of the smoke management program (<http://www.cdphe.state.co.us/ap/smoke/>). Permit applications are rarely denied, and the Department works closely with applicants to make their projects succeed.

A private landowner planning to burn less than 10 acres of grass, 5 acres of other fuel type, or fewer than 50 piles that can be extinguished by sunset, can burn under a general open burn permit. Open burn permits are available from the state and from counties to which the state has delegated authority. Landowners intending to burn more than these amounts can apply to the state for a prescribed fire permit. The application requires detailed information about the intended burns. The employees of the CDPHE use the information to anticipate smoke quantities and dispersal. Counties can impose additional regulations and permit requirements for open burning, as in El Paso County.

A private landowner who manages more than 10,000 acres of forest or grassland and who will emit more than 10 tons of PM10 (particulates less than 10 microns in size) during a year must apply for a permit as a “significant user of prescribed fire” (CRS 25-7-106 par. 7f, 7g, and 8; <http://www.cdphe.state.co.us/ap/smoke/SignificantUser.html>). A landowner can be approved as a “significant user” for up to 10 years, but must still get permits for individual burns.

Landowners planning prescribed burns or wildland fire use must obtain burn permits whether or not they are permitted as significant users. Prescribed burns are ignited by the land managers. “Wildland fire use” and “unplanned ignition fire” are terms for naturally occurring wildfires that are managed for resource benefits, instead of being suppressed. “Wildland fire use” is a federal government term; “unplanned ignition fire” is a state government term. If landowners choose to designate a fire as wildland fire use, perhaps to coordinate fire operations with neighboring federal lands, they must obtain a permit for an unplanned ignition fire. States can ask the EPA to disallow violations of the NAAQS that qualify as exceptional events; exceptional events are events that are not reasonably preventable or controllable and that are unlikely to recur in the same location. This definition may include wildland fire use (<http://www.epa.gov/ttnairs1/airsaqs/manuals/Qualifiers.xls>). US EPA policies and definitions specific to exemptions for wildland fire use and prescribed fire are being revised in 2008; see the EPA website for current policies and regulations.

Private landowners may not need to designate a naturally occurring wildland fire as fire use if they are not coordinating with a federal agency. In that case, the fire would be a wildfire; it would qualify for the exemption for exceptional or natural events and would not require a wildland fire use permit. A private landowner who lets a wildfire burn without designating it as wildland fire use would still be expected to coordinate with state smoke management personnel on smoke management and mitigation (personal communication, Coleen Campbell). Regardless of the type of fire, burners must submit daily smoke reports to the state smoke management office.

Some counties also regulate prescribed burns to protect air quality or for public safety. Private landowners need to know the regulations of the county where the burn will occur. In most cases, these are available on the county website. Sheriffs' offices handle the permits in most counties, but permits are issued, for instance, by the health department in Boulder, El Paso, and Mesa Counties, the Community Development Department in Eagle County, and the Natural Resources Department in Grand County.

II. Availability of trained workforce

Issues

- Private landowners and non-governmental organizations (NGO's) have difficulty finding people who can plan, supervise, and perform basic field work on managed fires, as well as equipment operators qualified under National Wildfire Coordinating Group (NWCG) guidelines.
- NGO's, such as The Nature Conservancy, and some counties, such as El Paso, require NWCG certification of individuals involved in or supervising prescribed burns.
- Since burning requires specific weather conditions, several landowners may need trained crews on the same day.
- Restrictions on prescribed burning below 6400 feet elevation in much of the Front Range during the winter means that more prescribed burns occur during the wildland fire season. This increases the competition between prescribed burning and wildland fire for qualified firefighters.

Recommendations

1. Consider funding the Colorado State Forest Service to develop at least one dedicated prescribed fire/fire use team (typically called a "module") that would be available to plan and implement burns on private land. The focus of the team would be burning private lands, rather than responding to wildland fires. Funding should include implementation costs, such as appropriate equipment and travel expenses. Additional prescribed fire/fire use modules should be developed to help private landowners when not needed for wildland fire response.
2. Increase training opportunities in wildland and prescribed fire for rural and volunteer fire departments and for private individuals. The NWCG/Rocky Mountain Training Working Team of the Rocky Mountain Coordination Center should open more training sessions to members of rural and volunteer fire departments and to private individuals. Encourage private entities such as Colorado Fire Camp to offer training in prescribed fire and wildland fire use.
3. Develop a pool of trainers with expertise in prescribed fire and wildland fire use.
4. Consider instituting a certification program for burn bosses.
5. Recruit professionals from parts of the country where the burning season occurs at a different time of year.

6. Create a statewide registry of planned prescribed fires. Members of rural and volunteer fire departments and private individuals could contact the burn boss about participating in the burns to gain experience.
7. Bring the Colorado Fire Training Officers Association, Four Corners Fire Training Officer Association, the Colorado Fire Chiefs Association, and the Colorado Division of Fire Safety to the table when planning wildland fire training for Colorado. This would parallel the recent addition of the International Association of Fire Chiefs to the NWCG Training Working Team.
8. Use the resources of the Colorado Division of Fire Safety to increase awareness of online training opportunities and courses offered at community colleges and technical schools.
9. Consider developing prescribed fire training courses that are specific to private lands.
10. Encourage the USDA and the USDI to specify that funding from the Volunteer Fire Assistance and Rural Fire Assistance programs can be used for training individuals in prescribed fire and wildland fire use.

Background

The state of Colorado does not require individuals to have any training prior to conducting a prescribed burn on private land. Some states, such as Texas, require trained personnel for all prescribed burns on both agricultural and forested lands. Virginia requires prescribed burns in forests be conducted by certified prescribed burn bosses. Florida does not require certification for all burns but relieves certified burners of liability except in cases of gross negligence. Regardless of state requirements, landowners who conduct prescribed burns may want their employees to be trained or may want to coordinate their planning with a volunteer fire department that has members trained in prescribed burning. NGO's often require NWCG certification of individuals working on or supervising burns, as does El Paso County. Entry-level wildland firefighter training is usually adequate for individuals performing the basic functions on a prescribed or managed burn. Planning, managing, and lighting burns require experience with fire and more training courses, often with prerequisites.

Until recently, trained wildland firefighters were employed almost exclusively by federal agencies and the various state forestry agencies. The federal government, through the NWCG, determined the training curricula and qualifications for firefighters and provided most of the training. As more communities have been affected by wildland fires, state, local, and federal agencies have recognized a need for trained wildland firefighters in local fire departments, including rural volunteer departments. Recent reports commissioned and developed by the federal land management and emergency agencies, Western Governors' Association, International Association of Fire Chiefs (IAFC), the U.S. Fire Academy (USFA), National Association of State Foresters, and others have addressed increasing and broadening the opportunities for wildland fire training. Descriptions of many of these initiatives can be found on the websites of these organizations, including:

www.westgov.org/wga/initiatives/fire/implement_plan.pdf ;
<http://www.westgov.org/wga/initiatives/fire/>;
<http://www.iafc.org/displaycommon.cfm?an=1&subarticlenbr=20#wildland>;
<http://www.stateforesters.org/pubs/Final%20Rural%20Fire%20Report.pdf>;
<http://www.iafc.org/associations/4685/files/AWFTimplementation.pdf>). The consensus of the reports is that traditional fire departments, including rural volunteer departments, need more training and more training opportunities in wildland fire response.

The USFA and the IAFC are working with the NWCG to improve wildland fire training for rural fire departments trained primarily to respond to structural fires (<http://www.iafc.org/associations/4685/files/AWFTimplementation.pdf>). Initiatives include identifying equivalent courses that can be “cross-walked” between agencies and providing on-line training, particularly beneficial for rural fire departments and private landowners. The initial on-line course offerings are now available at <http://nfaonline.dhs.gov/browse/index.shtm> and include introductory NWCG courses. These courses are available to all members of the public, and do not require affiliation with an emergency response agency. The USFA and the IAFC also have chosen seven states, not including Colorado, for a pilot project to improve wildland fire training among structural firefighters.

Most training in wildland firefighting, prescribed fire, and wildland fire use, is conducted by state and federal agencies for their employees. Willingness to include unaffiliated individuals in training sessions varies. Other sources of training include private organizations and community colleges. The curricula used are commonly those designed and approved by the NWCG. Although standardization of the curriculum is beneficial for inter-jurisdictional operations, some curricula may not be appropriate for private landowners and may include prerequisites with a focus on understanding federal administrative procedures. Alternative curricula can be submitted to the NWCG for approval as equivalent to the standardized curriculum; this means that NWCG will recognize the credential for the NWCG course, even though different training materials were used. States that require certification of burn bosses usually provide additional opportunities for certification of unaffiliated individuals. The Florida Division of Forestry, for example, is offering certification classes six times during 2007-2008.

Many community colleges and vocational schools in Colorado offer training in wildland fire fighting without requiring an agency affiliation. A list of courses is available from the Colorado Community College Common Courses website (<http://www.cccs.edu/cccs/Home.html>). Searching under “F” brings up Wildland Fire Science (FSW) and a list of courses offered statewide (<http://cccs.cccs.ccoes.edu/combo.asp?prefix=FSW>). Training is also available from Colorado Firecamp (www.coloradofirecamp.org), through the Boulder County Wildland Fire Cooperators (www.bcwfc.org), and from the Colorado Wildland Fire and Incident Management Academy (<http://www.cowildfireacademy.com/>). The Rocky Mountain Area

Coordination Center (<http://gacc.nifc.gov/rmcc/administrative/training.htm>) lists training opportunities throughout the central Rocky Mountains and western Great Plains.

Most of the above training focuses on fire prevention and suppression activities, rather than fuel reduction, forest restoration projects, or forest maintenance projects that would use prescribed fire or wildland fire use. Training and experience for private individuals who want to plan, ignite, or supervise managed fires remains difficult to find. Boards of county commissioners are authorized to cooperate with private parties, as well as with all levels of government, on fire management and in the organization and training of rural fire-fighting groups (CRS 23-31-305). This legislation uses the generic term of fire management, rather than fire suppression, potentially allowing for training activities pertaining to prescribed and managed burns.

The federal government currently has two funding programs for RFD's, the Volunteer Fire Assistance Program (Department of Agriculture) and the Rural Fire Assistance Program (Department of Interior). Funding is normally distributed through the State Foresters in each state. The programs specify that funding be used for fire suppression activities. The program guidelines do not mention teaching RFD's to conduct prescribed burns or to manage wildland fires for resource benefits.

In addition to taking the NWCG-recognized training courses and gaining field experience, fire managers use modeling software to predict and plan fire behavior over various spatial and temporal scales. The software is freely available to private landowners, rural fire departments (RFD's), consultants, and others (www.fire.org; www.firemodels.org). Software is also available at <http://www.fs.fed.us/fire/planning/nist/>; some of the modules on this site are for agency use only. Most of the applications have detailed manuals. The primary obstacle to their use may be obtaining all the data needed to run the models.

III. Liability

Issues

- Landowners in Colorado could be held criminally or civilly liable for damages that result from a prescribed fire or controlled burn under a variety of state and federal statutes.
- Colorado statutes do not specify the standard of negligence to be applied to prescribed fire management.
- Colorado does not require training or certification of those who manage prescribed fires or wildland fire use, increasing uncertainties about performance and liability standards.
- Landowners have little information to help them understand the risk of prescribed burns.

Recommendations

1. The General Assembly should consider clarifying the standards of negligence to be applied in cases involving managed fires.
2. Stakeholders or the Prescribed Fire Council should consider instituting certification requirements for prescribed burns, and the possibility of limiting liability for certified activities.
3. The liability of private landowners and RFD's or fire authorities should be clarified for instances when private landowners arrange for fires managed by RFD's or fire authorities.
4. The Colorado State Forest Service or the Prescribed Fire Council should consider assembling information to help landowners make informed decisions about legal risks associated with fire use. This would include data on the percentage of burns that escape, the frequency with which burners are successfully sued, and similar information.

Background

Civil and criminal liability are major concerns for landowners and contractors conducting prescribed burns (Mitchell and Buman 2006). Damage claims may be filed for burns that escape planned boundaries and for smoke-related issues (Sun 2006). Landowner vulnerability to civil and criminal liability varies from state to state (Yoder et al. 2003a, Yoder et al. 2003b). States that make it more difficult for a landowner to be found negligent also tend to have stiffer permitting requirements for conducting prescribed burns (Sun 2006). Additionally, states with more private acreage burned tend to limit negligence claims more than states where burned acreage is primarily federal; this is attributed to stronger private landowner lobbying in the states with more private land burning (Sun 2006).

Civil liability

The county sheriff is the fire warden for each county in Colorado (CRS 30-10-512). County sheriffs have the authority to extinguish fires on private land if they believe the fires to be dangerous (CRS 30-10-513.5); the landowner can be held responsible for the costs of extinguishing the fire (CRS 30-10-513.5). Private landowners considering prescribed burns or other managed fires should contact the county sheriff during the planning process and again prior to the burn to ensure the sheriff's acceptance of the plan (personal communication, Robert Sturtevant).

Private landowners may be liable for damages for escaped prescribed fires or other controlled burns. CRS 13-21-105 defines the liability of a person who "sets fire to any woods or prairie so as to damage any other person...". Fines would depend on the damages found. Paragraph 2 of this section establishes treble damages if the fire is set during an emergency or drought declaration by the governor. Burns authorized by the State Forester

during emergency or drought declarations (CRS 24-33-203) are exempt from the treble damages clause. Yoder and others (2003a) stated that landowners are exempt from liability if they notify the county sheriff in advance of the burn, but this assertion appears to be incorrect; CRS 30-10-513.5, para. 3, limits this exemption to a “controlled burn of a structure or building”. Precedent exists for the federal government recovering damages as a landowner in the state (United States v. Boone, 476 F.2d 276 (10th Cir. 1973)). Private landowners risk liability under state statutes for fires that spread to federal lands.

Criminal liability

Several Colorado statutes address criminal liability for setting fires. CRS 18-13-109, "Firing woods or prairie", establishes a misdemeanor offense for allowing fire to spread to another's property “knowingly” and “without lawful authority”. Other provisions cover reckless or criminally negligent behavior. The maximum penalty for violation of CRS 18-13-109 is \$1000. As with the civil offense, damages are trebled during drought or emergency, with the same exemption as in the civil statute. For exemption from criminal liability, the state forester's authority to allow burns during drought or emergency conditions rests under CRS 24-33-204.

CRS 18-13-109.5, “Intentionally setting wildfire”, requires that the fire endanger lives, or buildings or occupied structures of someone other than the person who set the fire, and requires that the accused to have intended to set fire to the land of another. This provision seems unlikely to apply to a landowner conducting a prescribed or controlled burn. Violation of CRS 18-13-109.5 is a felony.

Arson statutes (CRS 18-4-101 to 105) establish the grounds for convicting individuals of arson. Whereas CRS 18-13-109.5 requires the intention to burn another's property, CRS 18-4-101 requires that the fire be started “knowingly or recklessly”. Sections 102 and 103, first and second degree arson, are felonies and could apparently be applied to an individual conducting a prescribed or otherwise controlled burn that escapes to another's property. Section 102 applies if a building of another is damaged and Section 103 applies if property of another is damaged. Sections 102 and 103 require that the fire be started “knowingly”. Section 104, third degree arson, is unlikely to apply to the spread of prescribed or controlled burns, unless they are started for the purposes of insurance fraud. Section 105 applies to fires that are started or maintained “knowingly or recklessly” and that endanger the life or buildings of another person. Section 105 can be prosecuted as either a misdemeanor or a felony, depending on what is endangered.

If a prescribed fire damages federal lands or property, federal criminal statutes may apply. 18USC 1853 governs damage to trees on federally owned public lands; damage must be unlawful or wanton. This is a misdemeanor. 18USC 1856 addresses individuals who cause fires on federal lands to burn or spread beyond control; this is also a misdemeanor offense. 18USC 1855 establishes the felony offense of setting fire to federal lands “willfully and without authority”. Individual federal agencies also have regulations governing fires, such

as 36CFR 261.5 for the U.S. Forest Service and 36CFR 2.13 for the National Park Service. Violations of agency regulations are misdemeanor offenses.

Summary

The nature of a civil or criminal action is likely to depend on public perceptions of intent, recklessness, negligence, “knowing”, and the type of damage or endangerment done, whether to structures, occupied buildings, or people. Colorado statutes are not clear as to the standard of negligence, whether simple, gross, or strict, that applies to a prescribed burn or to wildland fire use (Sun 2006). Landowners can presumably also be held liable for the consequences of smoke, such as medical problems or accidents that occur when visibility is poor. The exact statutes that might apply and the penalties that could be imposed are unknown.

Liability risks may be reduced by careful planning of burns, provision of advance notice to interested parties (such as the county sheriff), using trained fire crews during implementation, obtaining any required permits, and adhering to burn and smoke management plans. The Colorado State Forest Service helps private landowners prepare burn plans (<http://csfs.colostate.edu/localforester.htm>). Additional information about planning burns is available from many on-line sources, including the fire manuals of governmental and non-governmental organizations, state extension services, and in the permitting regulations of states that require approval of burn plans.

Private landowners might gain some protection from liability by using insured contractors or NGO’s to plan or implement a burn. Prescribed fire contractors can be insured under a general business liability policy or specifically for prescribed burning (Mitchell and Buman 2006). The Association of Consulting Foresters of America offers insurance for prescribed burning to its members (<http://www.acf-foresters.org/Content/NavigationMenu/Membership/Benefits/Insurance/ForestersLiabilityInsurance/default.htm>). The USDA recently funded an actuarial study (www.agren-inc.com/Final%20Report%20Rx%20Fire%20Survey%202006.pdf) to spur the creation of additional insurance options for prescribed fire contractors.

NGO’s conducting prescribed burns on private land include Quail Unlimited (www.qu.org), The Nature Conservancy (www.tnc.org), Rocky Mountain Elk Foundation (www.rmef.org), and Ducks Unlimited (www.ducks.org). The insurers of NGO’s typically require standard operating procedures for conducting burns, e.g., <http://www.tncfiremanual.org/index.htm>. A private landowner who used an NGO to conduct a burn would have to follow that organization’s operating procedures. NGO’s, however, may ask the landowner to assume liability for the burn (personal communication, Ryan Boggs). The USDA Agricultural Research Service conducts prescribed burns for research purposes on private lands (e.g., Hardegree et al. 2007) and might be another resource for landowners.

Please note that the above information is being provided as an informational service. It is not a substitute for legal advice and no legal services are being offered. Please consult an attorney for guidance on legal issues. All references to statutes were current at the time of writing (2007). Legislative policies and regulations change, and local, state, and federal codes should be checked for up-to-date information.

IV. Federal-private relations and cross-boundary issues

Issues

- Within the boundaries of Colorado's counties are lands of intermingled private and public ownership. Public landowners include county, state, and federal governments. At each governmental level, agencies have different and sometimes conflicting policies. In these circumstances, political boundaries, rather than ecological need, can govern decision-making and limit landscape-scale projects.
- County sheriffs can extinguish fires on private lands if they believe the fires are dangerous.
- Private landowners need a better understanding of whether or not, and under what circumstances, neighboring federal managers can:
 - assist private landowners with prescribed or otherwise controlled burns
 - allow prescribed or other controlled fires to spread from private to federal lands
 - allow prescribed or other controlled fires to spread from federal to private lands
 - suppress fires for private landowners
- Federal personnel need clarification of their role as neighboring land managers.
- Federal personnel need clear policy direction and templates for developing agreements that allow prescribed fire or wildland fire use activities to cross federal-private boundaries.
- State and federal personnel need clarification of their liability when working on burns on lands other than those of their employing agency.

Recommendations

1. Counties should consider taking advantage of CRS 23-31-305 to coordinate cross-boundary fire planning. The developers of the innovative plan in Moffatt County could be made available as a resource to other counties in the state.
2. The Colorado State Forest Service should consider developing a program to familiarize and train county authorities involved in evaluating the safety of managed fires.
3. Counties should consider using the authorities granted in CRS 23-31-305, CRS 30-11-101, and CRS 11-124 to develop cross-boundary management plans that integrate fire, forest, and fuels management.

4. Federal agencies should clarify their responsibilities and options as managers of neighboring lands and make these known to neighboring land owners.
5. Federal agencies should consider amending policies on fire on adjacent lands to address prescribed fire and wildland fire use.
6. The Colorado State Forest Service should consider using the Good Neighbor Act to extend private-land prescribed burns into adjacent federal lands.
7. Private landowners should consider addressing prescribed burns and unplanned ignitions as they develop their Community Wildfire Protection Plans (<http://csfs.colostate.edu/cwpp.htm>)
8. A state-federal working group on liability issues should be tasked to develop legislation that would clarify liability for agency personnel.

Background

Recognizing the issue of inter-mingled ownership, the Colorado General Assembly amended CRS 23-31-305 in 2002 and 2003 to authorize county commissioners to engage in fire management with all private and public landowners at all levels of government. CRS 31-15-101, CRS 30-11-101, and CRS 30-11-124 also authorize municipalities or counties to coordinate land management plans with the USDA and the USDI. The plans are to address “hazardous fuel removal and other forest management practices”, watershed protection, and a variety of other natural resource issues. The Moffat County Commission has used the new authorities to develop a detailed county-wide fire management plan that designates areas for fire suppression or managed fires on the basis of landowner preference and ecological need and condition, rather than by political boundary. Lands covered under this agreement, in addition to those in private ownership, are managed by the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Forest Service.

County sheriffs are the fire wardens for counties (CRS 30-10-512), with authority to extinguish fires on private lands when they believe the fires are dangerous (CRS 30-10-513.5). Landowners can be held responsible for the costs of extinguishing the fires (CRS 30-10-513.5). The extent of sheriff involvement varies among counties; some sheriffs delegate authority to fire departments. Private landowners considering prescribed burns or other managed fires should contact the county sheriff or designated representative during the planning process to ensure county approval of the plan. In the case of large or highly visible fires, landowners should make sure that the county authorities have a sense of what the fire and smoke are expected to look like. If more counties develop plans under the authorities in CRS 23-31-305, CRS 30-11-101, and CRS 30-11-124, the possibility and location of prescribed fires and wildland fire use will be anticipated and will be less likely to generate concern or opposition.

The federal government has two roles with respect to fire management. In the first and more familiar role, federal agencies take the lead on wildland fire suppression and firefighter training, and support state forestry agencies to address these issues on private

lands. Federal authorization is generally clear in these areas and funding is explicit in the federal budget.

The role of the federal government as a landowner is less clear. Government personnel can work only on activities for which there is both legal authorization and spending authorization. Although federal documents encourage forest restoration projects across multiple ownerships at a landscape scale (USDA/USDI 2006), the 2002 Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy described federal responsibility and authority for fire in the wildland-urban interface and in rural areas as “muddled” (www.nifc.gov/fire_policy/pdf/strategy.pdf, p. 44). Statutes such as the Wyden Amendment and the Granger-Thye Act authorize federal employees to work on private lands; in most cases, the costs have to be borne by the private landowner. The Wyden Amendment (Public Law 105-277, Section 323 as amended by Public Law 109-54, Section 434) authorizes work on private lands at federal expense, but provides no separate funding mechanism. Projects on private land must compete with other agency projects for available dollars. Work done under the Wyden Amendment should enhance National Forest System resources or provide tangible benefits to Forest Service lands (memo November 1, 2005). The Granger-Thye Act authorizes the Forest Service to perform work on or off of National Forest lands. The work must be the responsibility of another party and must be paid for by that party. A Forest Service website (www.partnershipresourcecenter.org) assists landowners interested in developing partnerships. If the type of partnership desired by a landowner does not fall into any of the categories on the website, then it is likely that authorizing legislation does not exist for that type of arrangement; authorizing legislation is created by the U.S. Congress.

The USDA Forest Service policy manual on fire suppression (Forest Service Manual (FSM) 5130) specifically addresses fire suppression on private land, but the policy manual for wildland fire use (FSM 5140) lacks explicit guidance for coordinating prescribed burns or wildland fire use with private landowners. The BLM strongly encourages area managers to develop prescribed fire agreements where public and private lands are inter-mingled but notes that limited authority exists to expend funds on private lands if the benefit is to the private lands (BLM Prescribed Fire Management Handbook, H-9214-1, Chapter 7). Agreements to allow fire to move across several jurisdictions, including private lands, are mentioned in the Interagency Wildland Fire Use Guide (www.nifc.gov/fire_policy/pdf/wildland_fire_use_guide.pdf, p. 71), but the legal framework for developing such agreements is not clearly defined. Inter-agency projects in Colorado, such as the Upper South Platte Watershed Protection and Restoration Project and the various projects near Boulder, were jointly planned but in some cases individually executed. Under the Good Neighbor Authorization from the federal government, the Colorado State Forest Service can conduct projects of limited size on federal lands bordering private lands (http://www.frftp.org/implementers_2006/good_neighbor_program.pdf)

The Colorado Cooperative Fire Management Agreement (gacc.nifc.gov/rmcc/administrative/fire_business/coop_co.pdf) provides general

authorization for state, county, and federal authorities to cooperate on prescribed fire and wildland fire use across political boundaries. The agreement seems to have little applicability to prescribed fire and wildland fire use on private lands unless the burns are managed and conducted by the Colorado State Forest Service or another agency that signed the agreement.

Most agency guidelines for cooperative agreements or for funding of community fire resources, such as FSM 3150 - Cooperative Fire Protection, discuss fire protection or fire suppression, rather than the full range of fire management. Both the Forest Service and BLM are authorized to provide fire suppression services to private landowners if the landowners pay the costs. Forest Service policy prohibits managing fires that are to be suppressed in a manner that will also provide resource benefits (FSM 5130.3(4)(a)(3)); neighboring landowners might reasonably want to combine the goals of suppression and resource benefits during a single fire. As indicated in the 2007 Healthy Forests Report (USDA/USDI 2007), federal projects are concentrated in forests with the greatest immediate need for restoration or hazardous fuels reduction. Federal funding is generally not being used to maintain or prevent deterioration of currently healthy forests (USDA/USDI 2007), as other landowners might wish to do.

Whereas the 2002 version of the Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy (www.nifc.gov/fire_policy/pdf/strategy.pdf) had little mention either of these issues or of forest restoration, the 2006 version (http://www.forestsandrangelands.gov:80/plan/documents/10-YearStrategyFinal_Dec2006.pdf) recognizes some of the gaps in policy guidance. Goal 3, Part A, Task 1 calls for an analysis of barriers to wildland fire use and prescribed fire and for recommendations for policy changes; the implementation target is 2008. Goal 3, Part A, Task 3 is to add information on restoration and wildland fire use to the Community Wildfire Protection Plan (CWPP) Handbook, with an implementation target of summer 2007.

V. Information and Advocacy

Issues

- Private landowners have a hard time obtaining important and current information about how to conduct prescribed burns or manage wildland fires.
- Private landowners do not have a strong voice in the setting of policy on prescribed fires and wildland fire use.
- Private landowners of small- and medium-size ranches typically lack the resources to conduct prescribed burns.
- Private landowners may not have sufficient information to recognize the value and benefits of prescribed fires.
- Landowners might not be aware of methods, such as site preparation and mechanical treatment, that can reduce the complexity, cost, and smoke of prescribed burns.

- More information is needed on prescribed fires that maintain forest conditions, particularly in higher-elevation and wetter forests.

Recommendations

1. Establish a forum for information on prescribed burning.
2. Support the recently-established Colorado Prescribed Fire Council, recommended by the Front Range Fuels Treatment Partnership Roundtable (2006).
3. Support researcher involvement in the design, implementation, and post-fire monitoring of prescribed burns, both for forest restoration and for maintaining forest conditions.
4. The Colorado State Forest Service should consider adding information on prescribed burns and wildland fire use/unplanned ignition fires to its main webpage.

Background

Many states have prescribed fire councils that serve as advocacy groups for prescribed fire, and central sources of information on prescribed fire. These councils generally have the aim of promoting the use of prescribed fire on lands of all ownership. They are active in government relations, creating training opportunities, and assembling information about resources for landowners who want to use prescribed fire on their lands. Membership is typically representative of all those who use fire as a management tool. Some prescribed fire councils are in North Carolina (<http://www.ncprescribedfirecouncil.org/index.html>), South Carolina (www.clemson.edu/rxfire/), Wisconsin (<http://www.prescribedfire.org/index.html>), and Florida (www.fl-dof.com/wildfire/rx_councils.html). The Front Range Fuels Treatment Partnership (2006) recommended establishment of a prescribed fire council in Colorado.

Little peer-reviewed research exists on prescribed burns, particularly at the finer spatial-scales of interest to land managers and government officials. Involving researchers in prescribed burns from the initial planning stages may lead to more information that meets the standards of peer-reviewed publications.

VI. Financial burden

Issues

- The costs of planning and implementing a prescribed burn, including both cash outlays and the time involved, can be prohibitive for a private landowner.
- Many members of the public can benefit when a landowner uses fire to treat forested lands, but the landowner has to bear all the costs.
- Prescribed burn permits can be expensive and are valid for a calendar year. If the burn does not occur in the year for which the permit issued, perhaps due to weather

or other conditions, the landowner must obtain another permit to burn during the following year.

- Forest owners have to invest time and money in obtaining smoke permits; agricultural landowners do not.

Recommendations

1. Colorado State Forest Service and Colorado State Extension Service should consider encouraging and supporting private landowners in establishing prescribed fire associations.
2. Private landowners can support Colorado legislators, the Colorado State Forest Service, and other state and county agencies in their efforts to obtain federal funding that can be used for prescribed burning and managed fire on non-federal lands.
3. The state of Colorado should consider a tax-credit program for prescribed burns and managed fires on private lands (recommended by the Front Range Fuels Treatment Partnership Roundtable 2006)
4. The state of Colorado should consider funding the Colorado State Forest Service to hire burn planners and burn bosses to assist private landowners.
5. Counties and other local governments and authorities should consider developing or expanding cost-sharing opportunities with other landowners (recommended by the Front Range Fuels Treatment Partnership Roundtable (2006) and authorized in CRS 23-31-305, 30-11-101, and 31-15-101).
6. The state legislature should reconsider the requirement that 100% of the cost of smoke permit processing be recovered from the permittees.

Background

Planning and implementing a prescribed fire or a managed wildland fire can be prohibitive for a private landowner. Costs include obtaining state and county permits, doing public outreach, hiring firefighters and equipment operators, hiring contractors to plan and supervise burns, renting equipment, and obtaining appropriate liability insurance. If the burn does not occur on a given day, due perhaps to weather conditions, the resources have to be hired and paid for again, if they are still available. Smoke permits (see section I) are issued for a calendar year. If the burn does not occur, perhaps due to weather, a new permit must be obtained for the following year. Since legislation mandates that billings recover the expense of permit processing (<http://www.cdphe.state.co.us/ap/smoke/Fees.html>), fees must be paid whether or not the burn takes place. Fees for permits range from \$10 to over \$1000. Since agricultural landowners are not required to obtain permits, they do not incur similar costs.

Since the benefits of the fires can extend beyond the landowner's boundary, it makes sense for state and local governments to provide financial assistance for the burns. Another option for private landowners is to form prescribed fire associations. Similar to farmers'

cooperatives, prescribed fire associations are groups of landowners who pool resources for prescribed burning. Most prescribed fire associations are in Oklahoma and Texas. In Oklahoma, the State Extension Service encourages and supports the associations (pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2819/F-2880web.pdf).

Conclusions

Prescribed fire can be one of the most cost-effective and ecologically appropriate tools for reducing the potential for unusually severe or damaging fires in Colorado's dry forests. Prescribed fire is also an essential tool for maintaining the healthy conditions of Colorado's wetter forests. The managers of Colorado's forests need help with the complex task of burning a forest in an ecologically beneficial and legally responsible manner. The recommendations in the preceding sections will go a long ways in providing them with this help. Taken together, the recommendations will:

1. Create a support system, making information, trained employees, financial assistance, and insurance more available to private landowners
2. Improve collaboration and coordination across legal and political boundaries at local, state, and federal levels
3. Incorporate long-term costs and benefits and identify the beneficiaries of prescribed burns during the development of air quality policies
4. Clarify legal issues surrounding the responsible use of fire as a forest management tool

Accomplishment of these 4 tasks will benefit both the residents and the forests of Colorado for decades to come.

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References

- Colorado Department of Public Health and Environment. 2006. Wildland fire in Colorado: annual summary report for calendar year 2006. Denver, Colorado: Air Pollution Control Division. 22 pp.
<http://www.cdphe.state.co.us/ap/smoke/DocumentsLinked/AnnualRptAPCDSmoke2006.pdf>
- Federal Register. Tuesday, January 8, 2008. Revisions to the General Conformity Regulations; Proposed Rule. Volume 73, number 5. National Archives and Records Administration, Washington, D.C.
http://www.epa.gov/air/genconform/documents/20080108_NPRM.pdf accessed June 4, 2008.
- Front Range Fuels Treatment Partnership Roundtable. May 2006. Living with fire: protecting communities and restoring forests. <http://www.frftp.org/docs/report.pdf>.
- Hardegree, S., P. Clark, F. Pierson, M. Seyfried, and C. Moffet. 2007. Prescribed-Fire Impacts on Vegetation, Soil and Water Resources at the Reynolds Creek Experimental Watershed in Southwest Idaho. *in* Abstracts of the 60th Annual Meeting, Society for Range Management, Reno, NV, Feb 11-15, 2007. .
- Mitchell, P. D., and T. Buman. 2006. Developing a prescribed fire insurance liability product: actuarial analysis of survey data. Iowa Department of Natural Resources and the USDA Risk Management Agency.
- Sun, C. 2006. State statutory reforms and retention of prescribed fire liability laws on U.S. forest land. *Forest Policy and Economics* **9**:392-402.
- The Grand Canyon Visibility Transport Commission. June 10, 1996. Recommendations for improving western vistas. Report of the Grand Canyon Visibility Transport Commission to the United States Environmental Protection Agency.
- USDA Forest Service. 2006. Interior West Forest Inventory and Analysis. Ogden, Utah: Rocky Mountain Research Station.
http://www.fs.fed.us/rm/ogden/annual_tables/co/2002_2006_nims_annual_filtered_review/CO2006F.pdf
- USDA/USDI. 2006. Wildland Fire Management: The National Fire Plan (2007 Budget Justification).
- USDA/USDI. 2007. Healthy Forests Report 2007.
- Yoder, J., D. M. Engle, M. Tilley, and S. D. Fuhlendorf. 2003a. The economic logic of prescribed law and regulation. *Journal of range management* **56**:306-313.
- Yoder, J., M. Tilley, D. M. Engle, and S. D. Fuhlendorf. 2003b. Economics and prescribed fire law in the United States. *Review of Agricultural Economics* **25**:218-233.