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OVERSIGHT HEARING ON REGIONAL HAZE

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON FOREST AND FOREST HEALTH

OF THE

COMMITTEE ON RESOURCES
HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTH CONGRESS

SECOND SESSION

JULY 16, 1998, WASHINGTON, DC

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OVERSIGHT HEARING ON REGIONAL HAZE

THURSDAY, JULY 16, 1998

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON FORESTS AND FOREST HEALTH, COMMITTEE ON RESOURCES, *Washington, DC.*

The Subcommittee met, pursuant to notice, at 10:10 a.m., in room 1334, Longworth House Office Building, Hon. Helen Chenoweth [chairman of the Subcommittee] presiding.

Mrs. CHENOWETH. The Subcommittee on Forests and Forest Health will come to order.

The Subcommittee is meeting today to hear testimony on regional haze and national forest management. Under rule 4(g) of the Committee rules, any oral or opening statements of hearings are limited to the chairman and the Ranking Minority Member. This allows us to hear from our witnesses sooner and helps members keep to their schedules. Therefore, if other members have statements, we will admit them into the record.

STATEMENT OF HON. HELEN CHENOWETH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

Mrs. CHENOWETH. Today the Forest and Forest Health Subcommittee convenes for an oversight hearing on the interrelationship of the forest services fire and vegetation management policies and the EPA's proposed regional haze rule. This is a very timely and important issue, and I want to thank my colleague, Representative Bob Schaffer from Colorado, for requesting this hearing. And I do want to say Mr. Schaffer will be joining me later at the hearing. We are moving into appropriations bills and it is a time in this body when you can't always depend on being able to keep to your schedules. So I know that Mr. Schaffer will be here just as soon as he can.

Last September the Resources Committee examined the impacts of the Environmental Protection Agency's national ambient air quality standards for particulate matter on the Forest Service's use of fire as a management tool.

I, for one, was not convinced by Administrator Browner's insistence that EPA's new standards would not have an impact on the land management agencies' use of fire or that fire emissions would not result in Clean Air Act violations when fires burning on Federal lands produce smoke in quantities that violated the EPA's requirements for particulate matter or haze.

In addition, although EPA has made the same assertion with regard to the proposed regional haze rule, I found no mention in the proposed rule that smoke from fires will be treated differently from

any other sources of particulate matter emissions. This may put an undue burden on our industries and on our farmers.

The proposed rule for regional haze addresses our quality conditions on both the worst and the best days. For many class I areas, particularly remote wilderness lands, smoke from wild fires and prescribed fires burning on Federal lands is likely to be the single greatest contributor to poor visibility.

Unless the EPA can account for all fires on Federal lands, and distinguish their effects from all other combustion sources, there is no assertion that States will not be held accountable for smoke emissions from those fires. Instead, they will be forced to overregulate non-Federal sources to make up for unaccounted emissions from Federal fires.

The EPA has admitted that at this time the agencies do not have sufficient data to accurately determine when forest fires are the source of the haze. This fact alone should be ample cause to delay promulgation of a final rule.

Finally, I believe the agencies do know how to effectively manage wildland fires to minimize the amount and effects of smoke. However, the Forest Service's current prescribed burning policies, which do not adequately consider the use of mechanical methods to reduce fuels, and the agency's reluctance to salvage dead and dying timber to improve forest health, lead me to conclude that they are unwilling to take those necessary steps.

The ultimate goal should be to manage our forests effectively and to manage as much as possible the amount of smoke produced—and the resources lost—when fires do occur. I look forward to hearing today from our witnesses how we can best accomplish this goal.

[The prepared statement of Mrs. Chenoweth follows:]

STATEMENT OF HON. HELEN CHENOWETH, A REPRESENTATIVE IN COGRESS FROM THE STATE OF IDAHO

Today the Subcommittee on Forests and Forest Health convenes for an oversight hearing on the interrelationship of the Forest Service's fire and vegetation management policies and the EPA's proposed regional haze rule. This is a very timely and important issue, and I thank my colleague, Mr. Schaffer from Colorado, for requesting this hearing.

Last September, the Resources Committee examined the impacts of the Environmental Protection Agency's national ambient air quality standards for particulate matter on the Forest Service's use of fire as a management tool. I, for one, was not convinced by Administrator Browner's insistence that EPA's new standards would not have an impact on the land management agencies' use of fire, or that fire emissions would not result in Clean Air Act violations when fires burning on Federal lands produced smoke in quantities that violated the EPA's requirements for particulate matter or haze. In addition, although EPA has made the same assertion with regard to the proposed regional haze rule, I have found *no mention* in the proposed rule that smoke from fires will be treated differently from any other sources of particulate matter emissions.

The proposed rule for regional haze addresses air quality conditions on both the worst and the best days. For many Class I areas—particularly remote wilderness lands—smoke from wildfires and prescribed fires burning on Federal lands is likely to be the single greatest contributor to poor visibility. Unless and until EPA can demonstrate that it can account for all fires on Federal lands—and distinguish their effects from all other combustion sources—there is no assurance that states will not be held accountable for smoke emissions from those fires. Instead, they will be forced to over-regulate non-Federal sources to make up for unaccounted emissions from Federal fires. EPA has admitted that at this time the agencies do not have sufficient data to accurately determine when forest fires are the source of the haze. This fact alone should be ample cause to delay promulgation of a final rule.

Finally, I believe the agencies do know how to effectively manage wildland fires to minimize the amount and effects of smoke. However, the Forest Service's current prescribed burning policies, which do not adequately consider the use of mechanical methods to reduce fuels, and the agency's reluctance to salvage dead and dying timber to improve forest health, lead me to conclude they are unwilling to take the necessary steps.

The ultimate goal should be to manage our forests effectively and to minimize, as much as possible, the amount of smoke produced—and the resources lost—when fires do occur. I look forward to hearing today from our witnesses how we can best accomplish this goal.

Mrs. CHENOWETH. When the Ranking Minority Member arrives, I will recognize him for any statements that he may have.

And now I look forward to introducing our first panel of witnesses: Dr. Robert Pearson, project manager of Radian International; Dr. Phil Omi, director, Western Forest Fire Research Center; Don Matlick, director, Smoke Management, Oregon State Department of Forestry, and Greg Walcher, president of Club 20.

As I explained in our first hearing, it is the intention of the chairman to place all outside witnesses under oath. This is a formality of the Committee that is meant to ensure open and honest discussion and should not affect the testimony given by witnesses. I believe all of the witnesses were informed of this before appearing here today. They have each been provided a copy of the Committee rules.

And now if the witnesses will please come forward and stand and raise your right hand, I will administer the oath.

[Witnesses sworn.]

Mrs. CHENOWETH. Let me remind the witnesses that, under our Committee rules, you need to limit your testimony to 5 minutes for your oral statement. But your entire statement will appear in the record. We will also allow the entire panel to testify before I start questioning you. The chairman now recognizes Dr. Robert Pearson.

STATEMENT OF DR. ROBERT L. PEARSON, PROJECT MANAGER, RADIAN INTERNATIONAL

Dr. PEARSON. Thank you Madam Chairman. Again, my name is Dr. Robert Pearson. I'm an air quality scientist with Radian International in Denver and we are an environmental consulting firm working around the world. And I also hold a post of adjunct professor teaching air pollution classes in the graduate school of the University of Colorado at Denver.

I am appearing before you today to discuss the air quality impacts of the practice of using prescribed burns to reduce vegetation in our Nation's forests. And Madam Chair, it is again a pleasure to appear before you, as I did before the full Committee last September. So thank you again for inviting me.

Mrs. CHENOWETH. Thank you.

Dr. PEARSON. First, a short bit of history. I was appointed by Governor Romer of Colorado to the Public Advisory Committee of the Grand Canyon Visibility Transport Commission which is, as you know, established by Congress pursuant to section 169(b) of the 1990 amendments to the Clean Air Act. The commission spent 4 years and more than $8 million reviewing the science of western regional haze and the causes thereof.

On June 10, 1996, the commission issued a report, "Recommendations for Improving Western Vistas." It detailed a consen-

sus program for improving regional haze in the West. Now we have the EPA proposing a set of regulations last July that allegedly tried to achieve the same goal, but, unfortunately, they have ignored the report prepared by the commission in writing their rules, and I'll get to that in a moment.

They also ignored a study that was done about 3 years ago by the Academy of Sciences looking at western regional haze and some of the remedies thereof. So we have now an agency, EPA, looking at controlling regional haze by focusing their control efforts on a very small number of sources, that being stationary sources, and essentially ignoring, for control purposes, mobile sources, and in the case of the hearing today, land management practices of the Federal land managers. And that's the purpose of my concern and comment this morning.

The commission in their report detailed several recommendations with regard to area sources, sources of fugitive dust, prescribed fire, mobile sources, and emissions crossing the border from Mexico. Again, the EPA rules don't contain any mention of any of these concepts and instead focus their entire weight on stationary source control and giving more authority to land managers to regulate sources outside of Class I areas.

It is apparent to me as an air quality scientist that EPA has chosen to take a narrow perspective of improving western regional visibility. This is in stark contrast to the commission and it is also in stark contrast to the way Congress handled the passage of the 1990 amendments. As you may recall, Madam Chair, the House Bill, section 707, contained several provisions which were removed in the final bill that was adopted by both the House and the Senate and became the 1990 Amendments to Clean Air Act. And instead, section 169(b) was inserted in its place.

EPA is following provisions of the stricken House language instead of the final House bill. And we think that you should remind them that the Act of Congress does not contain all of the programs that they are choosing to put into their proposed rules.

We now have the Federal land managers who by all respects are looking at a vastly increased program of prescribed fire to control the buildup of wood and other biomass in the forests. Secretary Glickman and Secretary Babbitt both testified before the full Committee last September that the Federal land managers are going to drastically increase the use of prescribed burns in the forests. And Secretary Glickman also testified that on half of the lands managed by the Forest Service, they are going to have to do mechanical treatment before they can do the prescribed burns.

The point that I think is being missed here is that fire should be the last resort for removing material from the forests, not the first resort. And yet when we talk to the Federal land managers, that's their full intent, to use fire and fire only. The problem with fires, of course, is you get a lot of smoke from it, and we're concerned in the West that that smoke, as reported by the Grand Canyon Visibility Transport Commission is probably the single largest source of regional haze in the West. And if the prescribed fire burns are done in the way that the Federal land managers intend, they will completely overwhelm all other control efforts on stationary sources, mobile sources, and everything else. So all our good

work is going to be wiped out by the Federal land managers and their prescribed burning plans.

We now have EPA taking part in the process, by Administrator Browner of the EPA saying before the full Commmittee last fall that the EPA intends to exempt ambient air quality measurements for fine particles on those days when fires are taking place. So it's not only the Federal land managers; we have EPA saying that we have an absurd outcome of EPA insisting that fine particle pollution be cleaned up on only the cleanest days, but on the worst days when we have the fires, EPA will exempt the rules.

This leads me to my final statement, and that is that the regional haze rules could trigger even more stringent controls on stationary sources to make up for the impact of the Federal land mangers' actions.

Madam Chairman, thank you very much and I am available to answer any questions you may have.

[The prepared statement of Dr. Pearson may be found at end of hearing.]

Mrs. CHENOWETH. That was very interesting. Thank you, Dr. Pearson.

The Chair welcomes and recognizes Mr. Schaffer, who has arrived. And I wonder if Mr. Schaffer would like to introduce the next witness, Dr. Omi. Or do you have a statement for the record?

Mr. SCHAFFER. Thank you, Madam Chairman, I do, and in fact I will submit—I am not sure who I have missed so far but I'll—Dr. Pearson, OK.

First of all, I want to thank you for the opportunity to hold the hearing on the relationship to the EPA's proposed regional haze rule and Federal land management practices. This is an important issue that deserves further consideration by the agencies and further input into how to implement programs designed to improve air quality and visibility while managing Federal lands for forest health and resources.

I'd like to introduce Dr. Omi, professor and director of the Western Forest Fire Research Center, WESTFIRE, at Colorado State University. Dr. Omi bring 28 years of experience studying fires, five of which he worked as a seasonal firefighter. The WESTFIRE center focuses on collaborative research to assist the agencies with fire and fuels management. I appreciate Dr. Omi's work and the center's important contributions to our understanding of the role of fire and management on forested lands.

Thank you for appearing today.

[The prepared statement of Mr. Schaffer follows:]

STATEMENT OF HON. BOB SCHAFFER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Thank you Madame Chairman. I thank you for the opportunity to hold this hearing into the relationship between EPA's proposed regional haze rule and Federal land management practices. This is an important issue that deserves further consideration by the agencies and further input into how to implement programs designed to improve air quality and visibility while managing Federal lands for forest health and resource production.

I am pleased to introduce three highly qualified witnesses from my home state, and one from the Oregon Department of Forestry that compose our first panel.

First Dr. Robert Pearson, an air quality scientist for Radian International and adjunct professor of air pollution at the University of Colorado, Denver will testify as

to his involvement with the Grand Canyon Visibility Transport Commission. His long and distinguished background and experience will surely be a benefit to us all and I thank him for being here.

Dr. Philip Omi, professor and Director of the Western Forest Fire Research Center (WESTFIRE) at Colorado State University. Dr. Omi brings 28 years of experience studying fires, five of which he worked as a seasonal firefighter. The WESTFIRE center focuses on collaborative research to assist the agencies with fire and fuels management. I appreciate Dr. Omi's work and the center's important contributions to our understanding of the role of fire and management on forested lands. Thank you for appearing today.

Mr. Don Matlick is the Smoke Management Program Manager Oregon Department of Forestry. He brings a unique perspective to the table today. Oregon has successfully managed state forests with a combination of methods while maintaining good air quality standards. Thank you for traveling such a long distance to testify today. I look forward to hearing about Oregon's successes.

Last but certainly not least, Mr. Greg Walcher, President and Executive Director of Colorado's Club 20. Mr. Walcher brings the experience of a large consortium of individuals, business leaders and elected officials from Colorado's Western slope with him here to Washington. Club 20 held a seat on the Grand Canyon Visibility Transport Commission (GCVTC) advisory committee. Mr. Walcher and his organization have followed this national issue from a local and state perspective. I thank Mr. Walcher for coming today and look forward to his valuable insight.

I also would like to recognize our witnesses from the EPA and the Forest Service. We appreciate your appearing before the Subcommittee today and we appreciate your willingness to work with staff to bring us up to speed on this difficult issue. I welcome your comments, and hope that you will consider seriously the issues brought up today.

Thank you Madame Chairman.

STATEMENT OF DR. PHIL OMI, DIRECTOR, WESTERN FOREST FIRE RESEARCH CENTER

Dr. OMI. Thank you, Mr. Schaffer, and thank you, Madam Chairman, for the opportunity to address the Subcommittee. I am going to dispense with much of the introductory material in my statement and try to cover the high points, as we have been instructed to summarize.

I'd like to focus on, first of all, tradeoffs between wild and prescribed fires. In any given year wild fires may burn anywhere between from 1 to 7 million acres of forest and range lands. These fires may have the greatest impact on visibility in all airsheds, but, as we have heard, concern today is with Class I areas.

The economic impact of these fires can be substantial. In the last 10 years we have had several $1 billion fire seasons. Although the losses from the recent—or actually the ongoing—1998 florida fires may not be known for some time, I have heard cost and damage estimates ranging from $300 million to $.5 billion. The Oakland Hills fire in 1991 destroyed 3,000 homes, killed 25 people, and produced over $2 billion in costs and losses. Most of these expenditures are in a reactive mode, I should add.

Of the elements comprising a fire's environment—that is fuel, weather, and topography—only fuels can be managed effectively to reduce the severity of the eventual wildfires. The vast variety of fuel treatments fall into the following broad categories: disposal onsite—for example, prescribed burning, redistribution onsite, physical removal, vegetation type conversion, and isolation. Prescribed fire is receiving much attention because it mimics natural fires' processes, and treatment costs are relatively low compared to other alternatives. Previous studies in California have documented that

prescribed fires can produce comparable fuel hazard reduction but at 1/10 the cost per acre as mechanical treatments.

Ultimately, a combination of mechanical removal followed by prescribed fire may be the optimal treatment sequence for many areas, especially those located at safe distances from human population centers. In such cases, the mechanical treatment could be used to prepare the fuelbed for safe burn execution while also providing potentially useful raw materials for wood products. Unfortunately, in many areas throughout the rural U.S., markets aren't well developed for the small diameter trees and removable biomass that add to fire hazards when left behind in the forest.

Further, I am finding through ongoing research for the USDA Forest Service that there are important knowledge gaps associated with efforts to reduce wildfire severity through prescribed fire and mechanical thinning. Thus, no single treatment is a panacea that will work in all situations. There are no silver bullets here. But each can play an important role if carried out in concert with a systematic and integrative planning process.

Other potential solutions look beyond the technology of fuel hazard reduction. Promising examples include conversion of forest biomass to ethanol, creation of defensible space around homesites and subdivisions, and citizen slash-mulching programs. With adequate incentives, community partnerships can be formed with industry and government to help develop sustainable forestry initiatives that reduce fuel hazards while reviving the forest products sectors in places where it's declining.

Another possibility involves forestry stewardship projects that promote fire-safe environments while providing a sustainable base of local employment. Last year Dr. Dennis Lynch, now professor emeritus at Colorado State University, appeared before this Subcommittee to promote stewardship contracts for forest restoration on national forest lands. I refer you to his written testimony on March 18, 1997 for further details.

Ultimately, solutions to wildfire management will require a coalition of diverse interests working toward solutions at local levels. Scientists, environmentalists, business, and local leaders will need to reach consensus on necessary combinations of treatments that will satisfy human needs without compromising clean air mandates and requirements.

Perhaps the biggest task involves educating the Nation's populace about the importance of fire and forest management. Fires have burned in North American forests for thousands of years. By contrast, forests have been managed in our fire environment for only a short time period. Many residents have not come to grips with the risks of living with fire, in spite of the evidence that forests have burned with regularity. If past experience is any indicator, we are learning that we cannot keep fire out of our forests forever. The trick then is to manage the forest, so that we can safely endure and learn from its consequences.

More tolerance will be required for fire in the forest and prescribed smoke in the atmosphere. Revisions in air quality standards may need to be considered. But the largest obstacle may be our own unwillingness to revise how we fulfill human wants and needs from the forest environment.

This concludes my testimony. I will be pleased to answer questions from Subcommittee members.

[The prepared statement of Dr. Omi may be found at end of hearing.]

Mrs. CHENOWETH. Thank you, Doctor.

The Chair now recognizes Don Matlick, director of smoke management for Oregon State Department of Forestry in Salem, Oregon to testify. I've been looking forward to your testimony, Mr. Matlick, because I've heard a lot about your program and I'm glad that you have joined us today. Mr. Matlick.

STATEMENT OF DON MATLICK, DIRECTOR, SMOKE MANAGEMENT, OREGON STATE DEPARTMENT OF FORESTRY

Mr. MATLICK. Thank you very much, Madam Chairman and members of the Subcommittee. I am Don Matlick of the Oregon Department of Forestry and the smoke management program director for the agency, and we do regulate forest land burning prescribed fire on Federal, State, and private forest lands within the State.

And I have been asked by Committee staff to share information with you on the topic of the Oregon approach to managing and regulating forest land prescribed burning on Federal lands in the northeast section of our State. The process was developed in the past few years using an interdisciplinary team of Federal land managers and air quality regulators. The final approach was well accepted and supported by the members of the group. The group used a new approach to address the concerns of the land managers and the air quality regulators. And I believe the approach we used and the final agreement have been successful at balancing the need to conduct an increasing amount of prescribed burning for forest health reasons, while simultaneously protecting air quality in the northeast section of the State.

The background of the problem is that the forest health of the northeast section of Oregon became a major concern in the 1980's when many thousands of acres were showing signs of poor forest health. Forests that were too dense had an improper balance of trees species, and an extended drought during the 1980's were all contributing factors to a major portion of the forest being under stress. Very significant tree mortality was occurring.

There was also a very significant increase in the amount of wildfire in the area, burning many more acres than the historic average. And the type of wildfire also changed, resulting in many more severe fires. Large crown fires became a more frequent event.

Federal land managers in the northeast section of the State decided that, in order to restore and maintain the forest ecosystem in northeast Oregon, prescribed fire would have to be used significantly more than in the past. The Federal land managers wanted to increase their use of prescribed fire about four-fold, from about 30,000 acre per year to about 120,000 per year of prescribed fire. They felt that prescribed fire would have many desirable effects upon the forest ecosystem—reducing the density of the trees, selecting for the more desirable species, and restoring a more natural forest stand structure. The problem then became, what do we do with the smoke?

The resolution process was that we had a group of people come together that dealt with the problem, and, to summarize, the final resolution of the problem really became finding a new frame of reference than the frame of reference we'd been dealing with in terms of air quality regulation. That new frame of reference was the group's recognition that by doing more prescribed burning we would eventually have less wildfire and wildfire smoke in the future. The parties did recognize this tradeoff. The group also recognized that smoke from prescribed burning could be managed so it is less of a problem than the unmanageable smoke from wildfire. And to the best of my knowledge, this was the first time this tradeoff recognition had occurred in a regulatory process.

The final agreement incorporated several key points. First was no net increase in total emissions, a key element being the use of wildfire emissions plus prescribed fire emissions. We weren't just dealing with wildfire emissions alone. What we want to do is maintain a total amount of emissions at or below the historical averages.

And an annual emissions level was established for the use of prescribed fire on Federal lands in the northeast sections of the State, and the emission limit was developed using historical wildfire and prescribed fire emissions and then compared against a natural emission level.

And we did establish a mandatory smoke management program for Federal lands in the area, which includes daily forecasts and burning instructions issued by trained meteorologists, designed to keep smoke from populated areas. Daily reporting of prescribed burning is required by Federal land management agencies.

We also established real-time air quality monitoring . And in the agreement Federal land managers agreed they would use nonburning alternatives in the restoration process when appropriate, instead of prescribed fire, and also use emission-reduction burning techniques when possible.

The conclusions that I think are worthy here are, when emission producers and regulators agree there is a problem, they can often solve the problem locally, if there is significant flexibility within the national rules and guidelines.

And the second one is regulatory agencies should encourage the development of new thinking and new processes at the local level which best meet the local needs. The regulatory agencies then should be prepared to accept those local solutions.

Just two comments, one about the Federal land management policies. We do support the fire and vegetation policies. We do hope, though, that the full range of alternatives for restoration can be incorporated and not rely too heavily upon just prescribed fire. And we would encourage the final regional haze rules to allow local solutions.

With that, I would wind up my testimony. Thank you, Madam Chairman.

[The prepared statement of Mr. Matlick may be found at end of hearing.]

Mrs. CHENOWETH. Thank you, Mr. Matlick.

The Chair yields to Mr. Schaffer to introduce Greg Walcher.

Mr. SCHAFFER. Thank you, Madam Chairman. I'd like to introduce another Coloradan. Greg Walcher is president and executive director of Colorado's Club 20. Mr. Walcher brings the experience of a large consortium of individuals, business leaders, and elected officials from Colorado's western slope with him here to Washington. Club 20 held a seat on the Grand Canyon Visibility Transport Commission Advisory Committee. Mr. Walcher is in his organization, has followed this national issue from a local and State perspective, and I thank him for coming today and look forward to his valuable insight.

Thank you, Madam Chairman.

Mrs. CHENOWETH. Mr. Walcher, please proceed.

STATEMENT OF GREG WALCHER, PRESIDENT, CLUB 20

Mr. WALCHER. Thank you, Mr. Schaffer, and thank you, Madam Chairman. We appreciate very much your continued leadership on this issue which we think is vitally important in the West.

Club 20 represents, among its membership, 20 counties west of the continental divide in Colorado along with 75 incorporated towns, 42 chambers of commerce, several dozen non-profit associations, and literally hundreds of businesses and individuals.

I've got a fairly lengthy written statement that I hope would be included in the Committee's record. And just in summary ,I'll say that our communities believe that fire is a vitally important management tool on the public lands and definitely has it's place in the tool box. And we believe that the EPA's regional haze rules will create serious conflicts that make it very, very difficult to implement fire in the way that it ought to be a part of the mix.

If you cap emission all over the West at the current level and then require a reduction of one deciview, as the EPA suggests, and increase the amount of fires being set by Federal land managers, something else is going to have to be reduced. And that creates inevitable conflicts, as you mentioned in your opening statement, with agriculture burning, with factories, with power plants with all the human activities, mobile sources and others.

It is especially unfair in the West, and you both know as well as I do the perspective of people all over the West is that this is about politics, not about air pollution. If Congress were serious about reducing air pollution, they would have begun this process in places like Pittsburgh, Baltimore, and Los Angeles, which are polluted, not in places like the Grand Canyon.

But that's where we are today anyway, and our fear is that the forest is the big loser in this process. You held a hearing in May on the health of forests in Colorado, and particularly in the Aspen trees, and as we were talking at that time, this issue is closely related to that—for the simple reason that, if you create conflict between the forest and other economic uses in the West, the forest is going to be the big loser. Trees don't pay taxes and they don't vote. So, in the end, you wind up with that kind of a conflict.

The Federal Government—the Secretary of the Interior has admitted that some advance clearing is going to be needed before much of the prescribed burning that's planned can be done, and yet that isn't the direction we are headed at all. We're headed in fact in the opposite direction. By Executive Order, we're stopping the

clearing of materials all over the West. We're putting almost a complete end to the timber industry in my State and submitting ever-shrinking budgets in the timber program of the Forest Service. So the actions and the words don't match what's coming from the administration.

The solution isn't all that complicated when you get right down to it. The U.S. Forest Service obviously needs to reduce the smoke coming off of these prescribed fires. In Colorado, we've followed with great interest the Oregon program. And Colorado has tried, for a couple of years now, to require the Federal Government to reduce the amount of smoke coming from prescribed fires. And 2 years in a row our General Assembly passed overwhelmingly a bill that would have done that—a bill that would have said, when the Federal Government seeks a permit from the health department to set a prescribed fire, that the health department then would examine what the Forest Service's plan was and make sure that they have considered the lower-smoking alternatives before they do that.

Two years in a row Governor Roy Romer vetoed the bill, which we thought was irresponsible and inexcusable, but the writing is on the wall. Federal land managers are going to be held accountable by the public for air pollution that they create. And if they are not going to do that administratively, then Congress is going to have to reign them in. Congress ought to amend the Clean Air Act to simply require in prescribed fires that smoke be reduced to the maximum extent possible.

To put it simple, if the Federal Government is going to continue to be the single largest episodic contributor to regional haze—as we know from the $8 million, 4-year study is the case—then smoke management has got to be part of the deal. Because the public is not going to tolerate continuing to regulate all of the other pollution sources in our society while the Forest Service—with impunity—torches the landscape and darkens our skies.

Thank you.

[The prepared statement of Mr. Walcher may be found at end of hearing.]

Mrs. CHENOWETH. Thank you very much, Mr. Walcher.

The chairman yields to Mr. Schaffer for questions.

Mr. SCHAFFER. I've got a number of questions. First, let me start with Dr. Pearson. Let me just ask, do you agree with the findings of the Grand Canyon study?

Dr. PEARSON. Most of them, yes. I do have a little bit of a concern, however, that the commission could have gone a little bit further in recommending controls for some of the mobile sources, and certainly in the case of the hearing today with regard to prescribed fire and smoke from forest fire management practices.

The commission wrestled with that issue and, as you certainly well understand, that's a very contentious issue. I think the commission could have gone a bit further on that regard, but certainly the commission did a very good job pointing out that smoke from fires is the No. 1 cause of regional haze in the West. I agree with that. We just didn't really come down to a good way of handling that within the commission process.

Mr. SCHAFFER. The Grand Canyon report offered a number of recommendations. To your knowledge, did the Environmental Pro-

tection Agency use the commission's report during the formulation of its proposed regional haze rule?

Dr. PEARSON. Well, if they used it, they must have used it as a door stop, because certainly we don't see much of the recommendations of the commission within the body of the proposed rule. The EPA rule is certainly focused almost entirely on stationary sources, and that was not what the commission's recommendations were at all. The commission recommended a very balanced approach, and EPA has not adopted that at all.

Mr. SCHAFFER. And in your testimony you indicated that, if new regulations were adopted, efforts of the Grand Canyon commission would be overwhelmed by land management plans of the Forest Service.

Dr. PEARSON. Absolutely.

Mr. SCHAFFER. What would your recommendation to the EPA be as far as implementing any new rules on regional haze?

Dr. PEARSON. Well, certainly provide a much more balanced approach. Recognize what the real sources of regional haze are and don't exempt forest management practices carte blanche. We recognize that forest fires will happen and prescribed fires are a necessary tool, as has been mentioned by the other witnesses on the panel. But let's put that in perspective and make sure that we have done everything we can to reduce the impact of those fires on the regional haze and make sure that source category is properly addressed, along with mobile sources and everything else in the West, so that we have a very balanced approach. That was the commission consensus, and I think that's the way EPA should proceed. To date, they are choosing not to do so.

Mr. SCHAFFER. How about the land managers? What can they learn from the Grand Canyon study?

Dr. PEARSON. Well, the land managers can learn that the result of their fires is going to be the No. 1 source of regional haze in the West. And they then carry a responsibility, as has been mentioned, to do what they can to reduce that impact on regional haze. And to the extent of the testimony that we heard last September from Secretary Glickman, Secretary Babbitt, that they are going to increase their prescribed fires without impunity, if you will, I don't think they've gotten that message. And somehow you and Congress need to tell them that, if they are going to be burning the forests, they need to understand the impacts of that and do what they can to control the impact of that on regional haze.

Mr. SCHAFFER. The States are obligated under the implementation plans to come up with some suitable remedy—well, if they're in a non-attainment area and have these Class I lands. Being a Coloradan, I assume you are somewhat familiar with the two attempts of the Colorado legislature to impose essentially a State standard just to try to hold the EPA to some level of accountability and responsibility.

What would have been the practical impact, from your perspective, of the State legislation, had it been permitted to become law?

Dr. PEARSON. Well, as Mr. Walcher mentioned in his testimony, the practical impact would have been that the forest managers in Colorado would have had to consider the smoke impacts when they set fires. Again, that bill was not signed by the Governor, so it's

not law in Colorado, but had it been signed, they would have had some requirement to consider the results of their actions.

Mr. SCHAFFER. Greg, I'd like to ask you just about—other than the legislation that was proposed in Colorado now twice, is there any other role of State governments that you might suggest to us by way of recommendation that we may be able to encourage here from Washington?

Mr. WALCHER. My understanding is that the Grand Canyon Visibility Commission report, which you were asking Dr. Pearson about a minute ago, more or less created or recommended creation of a State-level process as opposed to heavy-handed Federal regulations from the EPA. Obviously, that is a considerably better approach because the pollution problems are different in different States. And so we think that Congress ought to tell the EPA, while you require that they redraw these regulations, you ought to tell the EPA to leave the State alone and let the States manage the smoke the best they can.

In Colorado we would have had a chance to require, had that legislation become law—as I believe it will next year, by the way—had that become law, we would have required the Forest Service in getting a permit to set a prescribed fire to demonstrate to the satisfaction of State officials that they have considered lower smoke alternatives first. And in our State that means, for the most part, taking out the big logs first before you burn. I guess it's coincidence perhaps that the bigger the tree, the longer it smokes and the more haze it contributes. That's the same tree that also has economic value.

And so in our State, as you well know, the public is not very pleased with the concept of torching trees that have economic value while you pay five bucks a piece for two-by-fours in the lumber yard. And so that problem is different in different States. So my recommendation for Congress is to let the States regulate by the issuance of permits. The Clean Air Act already makes that requirement of the Forest Service. The difference is that some States have standards and some States don't, as you mentioned.

Mr. SCHAFFER. Thank you, Madam Chairman.

Mrs. CHENOWETH. Thank you, Mr. Schaffer.

Dr. Pearson, you said something that—your testimony was very good, but you said something that really startled me. You indicated that the Congress struck section 707.

Dr. PEARSON. Yes, ma'am.

Mrs. CHENOWETH. And replaced it with section 169(b)?

Dr. PEARSON. That's correct.

Mrs. CHENOWETH. But the EPA is following section 707 which was stricken by this body?

Dr. PEARSON. Yes, ma'am.

Mrs. CHENOWETH. Could you explain in as much detail as possible exactly how section 707 is being implemented. Be as specific as you can remember.

Dr. PEARSON. Madam Chair, as you know, that section was before Congress back in 1990, so it's been quite a while, but I'll give you the best of my recollection.

There was also a similar section 709 in the Senate bill that was being debated at the same time, so there were parallel provisions.

Those sections, as you may recall, contained requirements for best available control technology analysis of stationary sources, final visibility rules in 1 year after passage of the bill, a regional haze plan, criteria for reasonable progress, and a methodology for measuring visibility.

All of those provisions were in the sections that were deleted from both the House and the Senate bill and replaced with 169(b) which, among other things, set up the Grand Canyon Visibility Transport Commission to study all these issues—best available control technology and the rest—and then bring a recommendation to the EPA on how to address those issues. So what really happened was, in deleting those sections from the bills Congress said, well, maybe we don't have the right answers here before us in Congress; let us have a regional consensus approach, i.e., have the commission look at these, and thus bring a recommendation to EPA after a regional deliberation on these issues.

That's the best of my recollection on what was in those sections, Madam Chair.

Mrs. CHENOWETH. Do you have anything else you would like to add with regards to that subject matter?

Dr. PEARSON. Just that I think the Congress needs to reassert once again that section 169(b) is in the statute that was passed by Congress and that EPA fully should consider the recommendations of the Grand Canyon Visibility Transport Commission, as you required in section 169(b). Apparently, they are choosing not to do so, and you should remind them of your intent when you passed that section.

Mrs. CHENOWETH. Dr. Pearson, you also testified as to the de facto enforcement of buffer zones around Class I areas. Congress explicitly prohibits the establishment of buffer zones around wilderness areas. Can you expand on what you mean by buffer zones in your testimony?

Dr. PEARSON. Certainly, and let me give just a quick overview. The Clean Air Act, as it exists, allows the Federal land manager of Class I areas—mainly the Forest Service—to identify sources of impact on the Class I wilderness area in terms of visibility and other air pollution problems. If there is a source outside the Class I area that is impacting the Class I area, they can then require the State or EPA to study the impact of that source through a best available technology type of analysis. And, indeed, that has happened in Colorado and the Mount Zirkel wilderness areas, as I pointed out in my testimony.

So, in effect, what the Federal land manager can do is trigger a formal investigation of sources outside of the Class I area or even outside of Federal lands, for that matter, and their impact on the Class I area itself. This is at the same time that the Federal land manager can go ahead with prescribed burns at will and essentially pollute the air over a forest, but still pointing the finger outside the forest, insisting that they be cleaned up. We think it's a "do as I say, not as I do" type of approach that should be remedied.

Mrs. CHENOWETH. I wonder how large the buffer zone would have been in the Mexican fires?

Dr. PEARSON. Well, the smoke from the Mexican fires, indeed, did come into Denver. I can remember it vividly. And so we're talking almost a thousand miles, Madam Chair.

Mrs. CHENOWETH. Mr. Matlick, you testified as for the need for balance between prescribed burns and air quality issues. What could the Forest Service learn from your experience in Oregon with regard to this matter? Let me also ask you, how important is the role of timber harvesting and mechanical thinning in your plan?

Mr. MATLICK. Madam Chair, I would, I guess, defer here to a report of a blue ribbon committee put together by Governor Kitzhaber here several years ago. They reported in 1995, and it was 10 distinguished multi-disciplined scientists that essentially looked at that problem about the whole problem in northeast Oregon and what should be done with the forest health issue.

And they, to summarize, felt that restoration treatments, including thinning and fuel reduction, could reduce the risk of loss from insects and fire on large areas of the forests. And they went on to identify specific types of forests that could benefit the most and gave a recommendation in terms of prioritizing the implementation of that. But their view, to paraphrase, was that an awful lot of the acres are overstocked, have very excessive fuel densities, and that to rely heavily on just prescribed fire would essentially shortchange the restoration process, and that an awful lot of mechanical treatment of fuels and thinning of green trees and salvage of dead trees where it would help the ecosystem restoration is a vital and key component.

Mrs. CHENOWETH. Very good.

Dr. Omi, you testified that the only way to manage fire is to manage fuels and this is a followup to the question I asked Mr. Matlick. Can you elaborate on what types of fuel management, in your opinion, would be suitable? What are the relative costs of performing the different types of activities and do you have a per-acre comparison? You testified that even modest increases in prescribed fires will affect visibility and air quality, and how do you mitigate against those risks? Now I asked you a lot of things, but I'm very interested in your opinion.

Dr. OMI. Yes, first of all, with respect to the different types of treatment, in my testimony I outlined broad categories—that is, disposal onsite, redistribution onsite, physical removal, vegetation-type conversion, and isolation—and within those categories there are a multitude of other fuel treatment alternatives: hand piling, tractor piling, mechanical crushing, or mastication and burning, dozer chaining, jackpot burning, chemical desiccation and burning, to name just a few.

The appropriate treatment really depends on the site and the land management objectives in the area. In terms of cost relative to fire, the studies, of course, have focused primarily on implementation of a burn which shows dramatic differences between the cost of prescribed fire relative to other mechanical ways of treating the land.

The big cost factor with mechanical treatments relates to the hardware that is required and fuel and site concerns. That's why in my testimony I indicate that—in California anyway—that prescribed fire costs were one-tenth the cost of mechanical removals.

I think that, again, those are generalizations that have to be considered for each particular—the site adaptations have to be considered at each location.

The final point that I would make is that pristine air—I think we have the wrong idea of what it should look like in this country. Pristine air prehistorically had considerable smoke at different episodes in different times in the past.

Thank you.

Mrs. CHENOWETH. Dr. Omi, I just have one more comment or statement. If we could reduce the fuel loads by mechanical means and those fuels had a value in the marketplace, then could you still say that under those sets of circumstances we let logging contracts out, that prescribed fire and the relative costs would be one-tenth of removal by mechanical means?

Dr. OMI. Again, that was just an average cost and the answer to your question is, I don't think you can make that statement. I don't think that mechanical thinning or logging would necessarily be appropriate for certain areas; for example, national park areas and wilderness areas, where access may be prohibitive and where administratively those types of treatments might not be feasible.

In multiple-use areas, lower elevation areas, where there is a market for those raw materials, I think that potentially those situations represent kind of, as we often say, a win-win situation for removal of fuels and also for restoration of economies that depend on those wood products from the forest.

Mrs. CHENOWETH. Thank you. Mr. Schaffer?

Mr. SCHAFFER. I'd like to followup a little bit on that. I was interested to hear testimony about the long history of disturbances in the interaction between humans and forests. Do you consider the past 100 years of fire suppression to be a form of management?

Dr. OMI. Well, it's definitely a management decision to get all fires aggressively and try to keep them as small as possible, and that was dictated or mandated in the 10 AM policy back in 1935. And I think that it was a well-intentioned policy to try to manage fire in the Nation's wildlands. I think that now, with the benefit of decades of implementation and hindsight being the way that it is, we raise questions about the efficacy of that. It is a management treatment. I would say yes.

Mr. SCHAFFER. Does that policy contribute to the risk, the type, and severity of fires today?

Dr. OMI. Again, generalizations are dangerous but in certain areas I think that the record of the literature shows that especially in low elevation areas, some of our long needle pine systems—ponderosa pine in particular in the western States—there has been a buildup of fuels that contributes to more severe wild fires and to that extent even greater smoke episodes in those areas.

Mr. SCHAFFER. So, humans continue to really influence the forest through either action or inaction today as a result of our past policy over the last 100 years, say?

Dr. OMI. I'd say that is a good characterization.

Mr. SCHAFFER. EPA considers wildfires to be natural. Do you agree? We'd have fewer wildfires if the Forest Service would harvest more timber?

Dr. OMI. I'm not sure I'm drawing the connection that you're trying to make there but—I don't think that the two policies are closely linked within the agency. For many years the——

Mr. SCHAFFER. I know they're not linked with any agency; I'm looking for the truth, though, which is different.

[Laughter.]

Dr. OMI. Well, I think that we could do a lot of fire management and improve land management through harvest of materials. I don't think that it's always appropriate in every situation and there are areas where fire is the optimal treatment.

Mr. SCHAFFER. You testified that little is known about the relationship between fire and its impacts on air quality. Would further study into that relationship assist land managers and air quality experts?

Dr. OMI. I think so. I think we're relatively in infancy in terms of our understanding of fire effects on all of the biota as well as the abiotic environmental influences, like the air.

Mr. SCHAFFER. You suggested the Grand Canyon study leaves certain gaps in research and just the general contribution to our knowledge about science in forestry and fire management, and so on. Can you provide some examples where further research is needed?

Dr. OMI. I think we need a better idea of the impacts of the individual projects. I have just recently been invited to join the Grand Canyon study. So I'm relatively new in terms of understanding what they have proposed, but I think that the models have indicated that we have information gaps about the effect of single projects in site-specific area and we need more information about those individual treatments.

Mr. SCHAFFER. I have more questions than that yellow light allows me.

[Laughter.]

I applaud WESTFIRE Center's work. How did you work with the National Park Service and how did that contribute to taxpayers saving? And just tell me more about the role WESTFIRE will play in the future.

Dr. OMI. Over the years we have accumulated a substantial data base on the occurrence of wild and prescribed fires in the National Park Service and Department of Interior land, and through that effort, we have identified the factors that contribute to high-cost projects and low-cost projects. We've developed a computer program that helps the decisionmakers screen project requests from the field and identify those costs which may be wasteful or inefficient.

Just because a project falls outside an acceptable range doesn't mean that it's not a desirable project, but our effort has helped the Park Service manage their costs. And we think that we've helped the Park Service save hundreds of thousands of dollars in terms of their prescribed fire and fuels treatment program.

Mr. SCHAFFER. Thank you, Madam Chair.

Mrs. CHENOWETH. Greg Walcher, I have some questions for you. Twice your legislature passed legislation—oh, Mr. Kildee, you are here. I am so glad. Do you have a statement that you'd like——

Mr. KILDEE. I'll be very brief, Madam Chairman. Thank you very much.

My staff and I have been interested for several years now in the differences between the effects and values of mechanical removal and controlled burning and concern about air quality.

With the fires in Florida right now, are you studying the effect upon air quality in Florida with the number of fires down there to try and get some information and data to try to help you elsewhere?

Dr. OMI. I'm not studying those fires particularly, because I'm in Colorado, but I have been following the reports on that, and I know that smoke plume from the Florida fires was reported to be seen over the Atlantic Ocean 200 miles downwind. And I know that there have been reported episodes of people's health being adversely affected by that smoke. Specifics, I'm not privy to at this point.

Mr. KILDEE. So the people in forestry and the Forest Service are trying to learn from what is happening in Florida right now?

Dr. OMI. I believe so. Every fire episode, from my perspective, provides a learning opportunity, and sometimes the pill is difficult to swallow, but we're still in a learning mode about fire and forest management.

Mr. KILDEE. OK. Thank you, Madam Chairman

Mrs. CHENOWETH. Thank you, Mr. Kildee.

Mr. Walcher, you're back on the spot again. You've testified to the fact that twice your legislature passed legislation to give the States more control over their air quality. Could you explain that legislation and why did Governor Romer veto it? What was in his veto message?

Mr. WALCHER. Well, first of all, let me say I think it would be difficult, if not inappropriate, for me to try to decipher the Governor's veto message. It makes very little sense to those of us who followed the legislation and tried to get it adopted. I do know that in the Governor's office there was a substantial ongoing discussion over the use of timber as a management tool as compared to fire, and so the politics of the issue are sort of a big picture discussion over whether not the timber industry is an appropriate management tool. That I think actually has very little to do with the use of fire and its effect on air pollution. I think it's sort of a timber versus anti-timber kind of debate going on there.

What the legislation would have done, though, would have put Colorado squarely where it needs to be and where all States ought to be, which is in the process of regulating air pollution in their own State in a way that can consider properly the different kinds of species and different types of smoke that they create in different types of forests. There are instances where prescribed fire, as I testified earlier, is the right management tool. And as Dr. Omi was suggesting, there are some areas where timber is an inappropriate management tool.

What we need to be able to do is to examine what the Forest Service considered in making a decision to set a prescribed fire, and determine whether or not they adequately considered all of the alternatives for reducing smoke. If there is an area where more smoke will be created unnecessarily because bigger logs could have been taken out mechanically ahead of time, and the Forest Service has declined to do that, either because the timber budget wasn't

big enough or because they were getting lobbying from some interest groups that are opposed to timber or whatever reason, this would have been a tool whereby the State could say, well, that's fine, but we're not going to let you burn it until you do a better job of considering the smoke management angle.

That is an appropriate role for the States, and it is a role explicitly authorized by the Clean Air Act which, as you know, unique among Federal statutes, requires Federal agencies to obey State laws on clean air issues. And so it would have been quite appropriate and proper for the State to do that, and I believe that our State is going to enact legislation like that and I think probably other States will, too.

Mrs. CHENOWETH. Could you explain your concerns with the legal authority for the new regulations that you addressed in your testimony?

Mr. WALCHER. Yes, and I don't want to suggest to you that I'm an expert on this because I'm not a lawyer. But it seem fairly clear to me when Congress created the Grand Canyon Visibility Transport Commission and funded it to the tune of half a million dollars over a period of time, clearly it is the intent of Congress that the recommendations from that commission be considered and implemented. So for the EPA to just completely ignore that entire process, obviously, ignores the spirit of congressional intent, if not the letter.

Mrs. CHENOWETH. Could you, Mr. Walcher, explain the distinction between Administrator Browner's previous statement that land managers are not exempt from regulations but simply the data from those fires is excluded? Could you explain that?

Mr. WALCHER. In the mind of laymen all over the West, it is a distinction without a difference, and again, you're asking me to interpret foreign languages, which I'm not very good at, but people around the West don't understand that. If you cap emissions at the current level and require that they be reduced across the board by some percentage, someone is going to have to reduce the air pollution. So whether you exclude the data or exempt the fire, or whatever semantic words they want to use, the effect is that the people that reduce the amount of pollution are going to be private sector people and Federal land managers are given a bye.

Mrs. CHENOWETH. Very interesting.

Mr. Matlick, you've heard testimony from Mr. Walcher about 2 years in a row Colorado passing legislation that would require a State permit from the Forest Service before any prescribed burns, and then the States of course could make the final determination on how it would affect their area. Has the Oregon legislature considered that type of legislation or have you recommended it to the Oregon legislature?

Mr. MATLICK. Representative Chenoweth, we've been in that business now since 1972, and in western Oregon when we recognized that smoke from prescribed burning in western Oregon was getting into the valleys and the larger population centers, and the Oregon legislature passed a bill in 1971 to become effective in 1972 to establish our smoke management program, which does regulate and essentially permit prescribed burning in western Oregon at that point in time—and that does include Federal land lands—now

since then, we've established and incorporated and grown the program into other areas of the State, but we are doing that now, yes.

Mrs. CHENOWETH. I probably didn't make myself clear. I guess the legislation that Colorado passed required that the Forest Service obtain a permit before embarking on a prescribed burn. So it was not a generic permit within a plan. Has Oregon ever considered asking the Forest Service to get a permit from you, as you would any other private entity?

Mr. MATLICK. In the essence of regulating the smoke from the prescribed burn, we have said that the Forest Service, if they follow our instructions that we put out daily for burning, essentially, that is a permit to burn that day. So we might say you can't burn within 50 miles upwind of Portland, and if the Forest Service follows those distance and tonnage and all the lighting instructions that we give, essentially that is a permit, although we do not actually write them a permit.

Mrs. CHENOWETH. All right. Thank you very much. I want to thank this panel for this very interesting testimony, and we're not through with you yet. We still have a lot of questions that we will submit to you in writing and may be back in touch with you by phone. But thank you very much for your valuable contribution to hopefully being able to begin to solve this problem soon and making sure that the commission's work is recognized by the agency. Your testimony was very instructive and very informative and thank you, all four of you, very much.

This panel is dismissed, and the Chair will now call the next panel of witnesses. We recognize Mr. John Seitz, Director of the Office of Air Quality Planning and Standards in the Environmental Protection Agency in Washington, DC; Janice McDougle, Associate Deputy Chief, State and Private Forestry, U.S. Forest Service, Department of Agriculture, Washington, DC, and Denny Truesdale, Acting Director, Fire and Aviation Management, U.S. Forest Service, Department of Agriculture, Washington, DC.

I would ask the panel to remain standing and raise your right hand to swear.

[Witnesses sworn.]

Mrs. CHENOWETH. We'd like to open testimony by hearing from Mr. Seitz.

STATEMENT OF JOHN SEITZ, DIRECTOR OF AIR QUALITY PLANNING AND STANDARDS, ENVIRONMENTAL PROTECTION AGENCY

Mr. SEITZ. Thank you, Madam Chairman, members of the Subcommittee, for inviting me here today to testify on EPA's proposed rule to improve our Nation's visibility.

As you know, there has been extensive documentation that virtually all of our national parks and wilderness areas are subject of some degree of regional haze visibility impairment. Haze is caused by pollutants that are emitted to the atmosphere from a number of industrial sources and transported at long distances. These emissions, after being transported, impact some of our parks and wilderness areas designated for special protection under the Clean Air Act and are referred to as Class I areas.

We also know that the causes and severity of regional haze vary greatly between the East and West. The average standard visual range in the western United States is 60 to 90 miles, or about one-half to two-thirds of the visual range under natural conditions. In the East the average range is 15 to 30 miles, or about one-sixth to one-third of normal range. One of the major challenges dealing with regional haze is that the cause of this problem is not often one point source or one pollutant, but pollutants emitted from various sources over a large geographical regions.

In the 1977 amendments to the Clean Air Act, Congress set the national goal for visibility, and I quote, "For prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." As you know, in the 1990 amendments Congress reinforced this goal by directing EPA to attack the regional haze problem.

In response to the 1990 amendments, the EPA established the Grand Canyon Visibility Transport Commission to address impairment on the Colorado plateau, and as mentioned earlier, in June 1996 they submitted their report to the agency. Under the 1990 amendments, 18 months after receiving that report, EPA was to propose the regional haze rule. And last July, in conjunction with the promulgation of the revised ozone and PM standards, EPA proposed the regional haze rule and took public comment. The rule is based upon the recommendations of the Grand Canyon Transport Commission, the 1993 National Academy of Science report, as well as information from our Clean Air Act Advisory Committee. The public comment period on this rule closed December 5, and the agency hopes to finalize the rule in the fall.

Madam Chairman, my written statement contains detailed discussions of various provisions of this rule. But for the purpose of my oral statement, I would like to discuss some of the specific issues related to fire policy and air quality.

First, I would like to stress that EPA recognizes the importance of fires as a natural part of forest and grassland ecosystem management. Fires release important nutrients into the soil; fires reduce undergrowth and debris on the forest floor; and we know that prescribed fires—or fires managed correctly—are important management tools for keeping forest and grasslands healthy. They also help reduce large, catastrophic burns such as situations we've recently seen in Florida and Yellowstone.

Obviously, fires produce fine particles that can pose threat to human health and contribute to visibility impairment. In recognition of this and the need to ensure that the fire can be addressed correctly, we worked hand-in-hand with the Forest Service and the Department of Interior in developing the Federal Wildfire Management Policy and Program Review in 1995.

In response to this process, the Department of Agriculture and the Department of Interior adopted a policy that all future managed burns must be done in an environmental-friendly way, particularly paying attention to air quality. EPA subsequently established under the Federal Advisory Committee Act, a special work group comprised of experts from the Department of Agriculture,

Department of Interior, Department of Defense, State forest managers, State and local air pollution experts, to develop this policy.

In May of this year, EPA issued the Interim Air Quality Policy on Wildland and Prescribed Fire. This policy encourages land managers and owners to work cooperatively with State and local pollution control officials to conduct integrated planning to successfully manage fire. Consistent with the Grand Canyon Visibility Transport Commission recommendations, it outlines basic components for smoke management programs and urges the States to adopt these measures. This interim policy complements EPA's 1996 policy on natural events by ensuring the States which implement effective smoke management plans, yet occasionally experience avoidable smoke intrusions, are not penalized.

In conclusion, we expect that our regional haze rule, when finalized, will establish a framework to improve visibility in national parks and wilderness areas. I want to be clear that we have not made final decisions on this rule and we will consider all public comment before finalizing the rule. Our goal is to ensure that our final rule achieves the congressionally mandated improvement in visibility and does it in a common-sense way. At the same time, we intend to continue working closely with the Federal land managers, State and local governments, and other interested parties, to ensure that emissions from prescribed and wildland fires are handled in such a way as to minimize air quality problems and maintain healthy forests and wildland.

Thank you very much.

[The prepared statement of Mr. Seitz may be found at end of hearing.]

Mrs. CHENOWETH. Thank you, Mr. Seitz.

The Chair now recognizes Janice McDougle for her testimony.

STATEMENT OF JANICE McDOUGLE, ASSOCIATE DEPUTY CHIEF, STATE AND PRIVATE FORESTRY, U.S. FOREST SERVICE, DEPARTMENT OF AGRICULTURE, ACCOMPANIED BY DENNY TRUESDALE, ACTING DIRECTOR, FIRE AND AVIATION MANAGEMENT, U.S. FOREST SERVICE, DEPARTMENT OF AGRICULTURE

Ms. MCDOUGLE. Good morning, Madam Chairman and members of the Committee.

I am Janice McDougle, Associate Deputy Chief for State and Private Forestry with responsibility for fire and aviation, forest health, and cooperative forestry programs. I am accompanied by Denny Truesdale, who is acting as our National Director for Fire and Aviation Management. I appreciate the opportunity to testify today.

In October 1997, Bob Joslin, Deputy Chief for National Forest System, testified before the Senate Energy and Natural Resources Committee on the agency's history in air management. He talked about our research program, our role in the new permit review for regulatory agencies, and how proposed changes might affect Forest Service programs. I have submitted a copy of that testimony to your clerk to be entered into the record along with my comments.

The Forest Service fire management program, including wildfire suppression and fuels reduction efforts, affects air quality. Our air

quality objective is to reduce the long-term cumulative smoke impacts from all types of fire. The full effect of the regional haze rule on Forest Service programs is difficult to project until a final rule is promulgated and each State and tribe develops is own implementation plan, and related smoke management plans.

We appreciate EPA's efforts to integrate wildfire suppression and prescribed fire in their policies, and believe that EPA is developing a common-sense approach that will provide a logical context for us to carry out our goals in restoring ecosystems, caring for the land, and serving people.

Fire plays an important role in ecosystems; it is a natural, inevitable part of ecosystems in most forested areas of the country. A number of forest and brush types across the United States reflect fire-adapted ecosystems, and I have two maps that I can share with you to illustrate that.

In the 1995 Interagency Fire Management Policy Review, the Department of Agriculture and Department of Interior recognized the significant role that fire plays in these fire-adapted ecosystems, and the departments called for substantial increase in the use of planned or prescribed fire as a management tool to restore forest health.

The Forest Service has two primary responsibilities related to air quality. We protect air quality-related values, including visibility in Class I Federal areas, and we manage national forest system lands in a manner consistent with regulations implementing the Clean Air Act. Part of our Class I area protection includes integrated air quality monitoring.

The Forest Service manages 88 congressionally designated Class I Federal areas with special air quality protection standards. Formal monitoring information from these areas is used to review permit applications for new major point sources of air pollution, to determine the impacts of existing sources of air pollution, and to identify trends nationally.

The Forest Service has estimated that as much as 40 million acres of national forest system land could be at risk for high-intensity wild fire. The administration and the Congress have increased funding to reduce this fire hazard. I will submit those maps—a record of the map—that show generally where the fire-adapted ecosystems are located. The acres at risk are within those systems and reflect the variety of fuel conditions where fires have been suppressed and excluded. Fires are more likely to burn with high intensity, increasing a threat to natural resources, property, fire fighters, and the public.

The forest service is currently inventorying stands to determine the resources at high risk, the fuel conditions that exist, the likelihood of a fire starting in that specific location, and the cost of treatment. The Forest Service decision to ignite a prescribed fire is based on localized fuel and weather conditions and the availability of personnel and equipment. Prescribed fire plans identify the conditions and resources required to meet the desired objectives, including smoke management. If all smoke management plans are in place and the prescribed fire can be conducted consistent with those plans, the agency completes the burn and monitors the effects.

Mr. Seitz discussed the policy and proposed rule changes. The Forest Service supports the recommendations of the Grand Canyon Visibility Transport Commission and EPA's natural events policy, which considers air quality impacts of wild fire as a natural event, and EPA's interim policy on wild land and prescribed fires that apply to all wildland fires on public lands, integrating two public policies: (1) to allow fire to function, as nearly as possible, in its natural role, and (2) to protect public health and welfare by mitigating the impact of smoke on air quality and visibility.

Madam Chairman, that concludes my remarks. I'd be happy to answer any questions.

[The prepared statement of Ms. McDougle may be found at end of hearing.]

Mrs. CHENOWETH. Thank you, Ms. McDougle.

Mr. Truesdale, you are here accompanying Ms. McDougle. You do not have prepared testimony, I take it?

The Chair recognizes Mr. Schaffer.

Mr. SCHAFFER. Thank you, Madam Chairman.

When the Colorado general assembly was considering legislation that Mr. Walcher discussed earlier, did the EPA provide any testimony or input to the Colorado general assembly on the matter?

Mr. SEITZ. I am not aware of whether we did or did not, Congressman. I can get back to you for the record on that.

[The information referred to follows:]

The EPA did not provide formal input or testimony to the Colorado General Assembly on the legislation discussed by Mr. Walcher in his testimony. However, the EPA does support state efforts to implement state smoke management programs that apply to all uses of fire as a wildland management tool, including its use by Federal land managers (FLM). The EPA has always supported the right of states to control sources of air pollution within the boundaries of their states. Section 118(a) of the Clean Air Act (CAA) requires all Federal agencies engaging in any activity that results in the discharge of air pollutants to comply with all Federal, state, interstate and local requirements regarding the control and abatement of air pollution in the same manner as nongovernmental entities. Additionally, Federal agencies must ensure that their actions do not hinder the state's efforts to attain the NAAQS under either the general conformity or transportation conformity rules, or both.

Mr. SCHAFFER. Did you have any input with the Governor?

Mr. SEITZ. I do not know the answer to that.

Mr. SCHAFFER. Do you have any opinions about the Colorado legislation?

Mr. SEITZ. Just from what I've heard in the previous testimony. Again, I think it is the position, as the gentlemen indicated, as long as State rules and regulations treat Federal parties in an equitable fashion with other members of the sector—in other words, they're neutral—that if the requirements said that all fire that is burned must comply with these requirements, then, under the Clean Air Act, Federal land managers would also be required to comply with that.

Mr. SCHAFFER. Has the EPA been conducting meetings with—I've heard eight Governors among western States regarding this implementation of regional haze standards?

Mr. SEITZ. Well, it's a difficult question. We were at the table through the entire Grand Canyon Visibility Transport Commission

deliberation, took part in that, and as noted in earlier discussion——

Mr. SCHAFFER. How about right now? Are there any organized efforts, meetings with eight Governors in the West?

Mr. SEITZ. I think you're referring to the letter we just received that came in from Governor Leavitt of Utah in referring to an effort that took place between the eight Governors, the industrial community, and some environmental groups. The agency was not part of any of those deliberations.

Mr. SCHAFFER. Let me ask about this—well, first of all, over in the Agriculture Committee we had a similar hearing on this particular matter and other EPA regulations that you in your prepared remarks—I don't know if I heard it in your oral statement here—said that, as we know, that EPA revised national ambient air quality standards for group level ozone and particulate matter. These standards have the potential to prevent as many as 15,000 premature deaths each year. We debated that point in the Agriculture Committee just a few months ago. I can't cite names or quote institutions that they may have been from, but they were sufficiently credentialed as scientists, experts in the area.

So the EPA has no credible way of substantiating the claim that these new standards would prevent as many as 15,000 premature deaths. Do you agree or dispute that?

Mr. SEITZ. I stand by the analysis the agency did.

Mr. SCHAFFER. How did the agency conclude that it can save 15,000 people from premature death?

Mr. SEITZ. Congressman, I would be pleased to provide for the record the information on that, but you're asking questions concerning the PM fire standard, and I came here prepared to talk about regional haze and fire.

[The information referred to follows:]

The EPA prepared a Regulatory Impact Analysis (RIA) to assess the potential costs, economic impacts, and benefits associated with illustrative implementation scenarios of the revised national ambient air qualifier standards (NAAQS) for ozone and particulate matter. It should be noted that, as established in the Clean Air Act, decisions to set or revise air quality standards are based on health effects information, and not on cost or other economic considerations. Therefore, the RIA was intended to inform the public regarding the potential costs and benefits that may result when the revisions to the NAAQS are implemented, but these estimates were not used in the NAAQS decision-making process.

The estimate of approximately 15,000 premature deaths prevented is based primarily on a published study [Pope, C.A., III; Thun, M.J.; Dockery, D.W.; Evans, J.S.; Speizer, F.E.; and Heath, C.W. Jr. (1995), Particulate Air Pollution as a Predictor of Mortality in a Prospective Study of U.S. Adults., *Am. J. Respir. Crit. Care Med* 151:669-674.] regarding the relationship between long-term exposure to PM and mortality. This study was reviewed thoroughly by the independent Clean Air Science Advisory Committee and judged to satisfy various criteria for use within the standard-setting process. Pope et. al. developed a "concentration-response" relationship between median ambient PM concentrations and mortality. The concentration-response relationship allows the estimation of changes in a health effect (in this case, mortality) given a change in air quality. A second step in estimating the reduction in premature mortality was to predict changes in ambient PM concentrations resulting from the new NAAQS. To generate this data, the Agency performed air quality modeling on a county-specific basis for all counties in the continental United States. The predicted air quality changes were used in conjunction with the concentration-response relationship and population statistics specific to each county to predict the reduction in premature mortality associated with the new PM standard. These county-specific estimates were then summed to provide a national estimate.

Mr. SCHAFFER. Is premature a day, a year, 10 years? What's——

Mr. SEITZ Congressman, I'd be pleased to get back to you on the record for that.

Mr. SCHAFFER. That would be useful, I think, because it's how you opened up you comments and established the need for regulation as you go through the rest of your comments.

[The information referred to follows:]

Evidence from epidemiological studies indicated that some portion of the deaths attributable to exposure to particulate matter could be on the order of years, while some may be premature by only a few days. Researchers in this area note that it is possible that the reported deaths might be substantially premature if a person becomes seriously ill but would have otherwise recovered without the extra stress of PM exposure. In the PM criteria review, EPA recognized that quantification of the degree of lifespan shortening associated with long- or short-tenn exposure to particulate matter is difficult and requires assumptions about life expectancies given other risk factors besides PM exposure, including the ages at which PM-attributable deaths occur and the general levels of medical care available to sensitive subpopulations in an area. Because of these uncertainties, EPA found that it could not develop, with confidence, quantitative estimates of the extent of life-shortening accompanying the increased mortality rates that have been associated with exposures to PM.

Mr. SCHAFFER. Also, the issue of deciview's came up. How did we arrive at the measurement of deciviews when it comes to measuring haze or visibility?

Mr. SEITZ. A deciview is a metric that is used to measure visibility improvement. It is merely a tool that is used to tell what the relative improvement in visibility is. Under Section 169 of the Clean Air Act, it is a visibility improvement section of the law and it is a metric that is used to derive from measured values on an improved network—monitoring network—that measures the relative improvement in visibility. It was proposed and we took comment on that metric as well as other metrics.

Mr. SCHAFFER. What is the relevance of the deciview standard to public health, for example—the 15,000 premature deaths for example? Does an improvement of 1 deciview—how many premature deaths does that prevent?

Mr. SEITZ. The metric for the deciview was put in the regional haze rule for the visibility improvement and as a metric of visibility improvement.

Mr. SCHAFFER. So, it's the visibility we're interested in just making the air look nicer, I suppose.

Mr. SEITZ. The visibility improvement under 169, as I mentioned, directs the agency to implement regional haze rules to improve the visibility in these wilderness areas. A benefit from the reductions of this, as you indicate, particularly in the eastern——

Mr. SCHAFFER. Are there any correlation between any kind of restrictions regulations? Any kind of reductions that might be required from an industrial source that would have a measurable reduction of say 1 deciview? Say, in other words, if you require a power plant that might be located or suspect of contributing to regional haze, if you regulate that power plant, is there some expectation or measurement or level of accountability that that will improve the visibility by 1 deciview, for example?

Mr. SEITZ. Well, if you're getting to the point of the relevance between accountability and the emissions reductions in the power plant and the deciview improvement, it isn't quite that simple. As

the rule proposes, the deciview is used as a goal. It is a planning target of goal.

For instance, if the Grand Canyon Visibility Transport Commission combined initial reduction strategies in their report, they would not achieve a deciview. They would probably achieve about a half a deciview. But it is not the one reduction from the one power plant, but is indicated by——

Mr. SCHAFFER. Let me ask——

Mr. SEITZ. If I could finish the answer. It is a combination of the reductions from the industrial sector, as well as automobile and the combined emissions.

Mr. SCHAFFER. You stated that the advantage to the public is a perceptible, visible change that you and I might notice. One deciview is what is noticeable by the average human eye, I understand. If the management plan or the implementation plan is not expected to improve visibility by more than 1 deciview, what public goal does it serve?

Mr. SEITZ. It serves the public goal set forth in the Clean Air Act which says that the reduction strategies that are put in place must be cost-effective. In addition to visibility improvement, the Clean Air Act, and, I believe, the current Congressional Research Service review of the rule identified this flexibility that basically Congress directed us to make reasonable progress toward improvement and visibility.

Reasonable progress is measured in terms of control strategies. Cost effectiveness is one of the measures that is put into place.

Mr. SCHAFFER. So, it's measured in terms of controlled strategies rather than natural improvement?

Mr. SEITZ. The accountability within the State implementation plan for a given source is the emission reduction strategy in the applicable State rule or State regulations. The goal, as far as in our proposed rule, we took comment on putting in place, a long-term strategy of 10 to 15 years, accompanied by State rules that will change the emission reductions to a given source. The goal and whether or not the plan achieved the visibility improvement are reviewed on a 3 to 5 year basis is what we're taking comments on.

The relationship of the goal then, let's say it's one after 10 years and we're 5 years in and we're only at a half, if, in fact, the strategy is still intact from the standpoint that the industrial sector, the automobile sector or all of the plan that the State put in place is still valid, then the issue is to do more planning and analyze what the problem may be. It does not direct that you go back and control these sources more.

The metric is used as a management tool to see how you're doing toward the long-term which could be 20, 30, 40, years. Congress didn't define an end point. A timeframe is merely a metric used to measure progress.

Mr. SCHAFFER. Are there any State implementation plans where the goal is less than 1 deciview in improvement in visibility?

Mr. SEITZ. Well, since this is only a proposed rule and we haven't finalized the rule, I'm unaware of any State plans at this point.

Mr. SCHAFFER. But will there be?

Mr. SEITZ. I can't answer that since the planning process will take place by the State and local agencies when they implement the rule, if we go final.

Mr. SCHAFFER. OK. Is it possible that there could be?

Mr. SEITZ. Yes.

Mr. SCHAFFER. If a deciview is based on the perception, it's a perceived standard on what a human being might recognize or see or perceive a difference in visibility, if anything less than that is imperceptible, why would we do it?

Mr. SEITZ. Well again, because the Congress directed us to do it, and, as I said, the Grand Canyon Visibility Transport Commission's and Governor Leavitt, co-chair of the Commission, testified to this, I believe, in two Senate hearings, strategy was derived by a collective, cooperative process where they developed a series of cost-effective strategies that they believe would improve visibility. That metric is going to be under one decision.

There are two tools to advise the public. We can advise the public, and in this case the Grand Canyon did this, they had all the stakeholders at the table; they had the tribes, the State's local agencies, the environmental community and the industrial community, and said, this is the best strategy, the most cost-effective strategy we can come up for this timeframe.

Albeit, this is what we expect to get in terms of visibility improvement. They can measure that. They can tell at the end of the day, that it was a half or three-quarters. So, they do have the ability to tell the public that we did make progress. Is it progress that in the 10-year period to have the one deciview change, and, as you suggest, can it be seen? Not in the short-term, but hopefully over the long-term we will move from one-half to another half to where we get that perceptible change.

Mrs. CHENOWETH. Mr. Seitz, I wanted to followup on Mr. Schaffer's line of questioning. I don't believe that Congress directed EPA to set a standard of improving air quality by 1 deciview every 10 years.

Mr. SEITZ. The proposed rule did not.

Mrs. CHENOWETH. Right. Did the Grand Canyon Commission recommend this 1 deciview improvement every 10 years?

Mr. SEITZ. No ma'am.

Mrs. CHENOWETH. Did Governor Levitt recommend that?

Mr. SEITZ. No ma'am.

Mrs. CHENOWETH. Thank you. But that will be in your final rule, won't it?

Mr. SEITZ. No ma'am. The rule proposed a goal. It did not set a standard.

Mrs. CHENOWETH. The improvement of 1 deciview every 10 years will not be in the final rule?

Mr. SEITZ. What will be in the final will be decided after we review all public comment. On this particular issue in the proposed rule, 1 deciview was proposed as an analytical point, a presumptive one, where State and local agencies or the group's that were analyzing this, were required to analyze one. They were not required to come up with—There was not specific language for alternatives. In the public comment, we have received numerous comments on this issue two ways.

No. 1: on deciview, is it the right metric; and should an absolute 1 be used?

Some of the testimony, for instance—some of the comments we've heard from the environmental community, they think 1 or anything less than that would mean that in 250 years we'll return some of the vistas to what they should be and they aren't satisfied with that. On the other hand, some commenters believe that it is too prescriptive and more latitude and more description of the alternatives should be examined by the agency.

As we review public comment and as I mentioned into my testimony, we intend to consider all these comments before we go final with the rule.

Mrs. CHENOWETH. So what you're telling me here in this hearing is you're not prepared to tell this Committee whether or not the 1 deciview improvement every 10 years will be in the final rule?

Mr. SEITZ. Well, let me just make sure you're aware and that I'm sure——

Mrs. CHENOWETH. Well, Doctor, closed comment on the final rule—it is proposed, yes?

Mr. SEITZ. The comment period closed December 5th, Madam Chairman.

Mrs. CHENOWETH. Right.

Mr. SEITZ. We are taking comments as you are aware, and I think Congressman Schaffer mentioned, we got a submission from the Western Governors that is in the docket. All comments we receive we will put in the docket and consider.

One point you are saying is 10 years, just to be clear since I'm under oath, in the rule we took comment on a range from 10 to 15 years. It was 1 deciview, but we did not say or we had not decided on whether or not it's a 10 to 15 year period.

Mrs. CHENOWETH. So, Mr. Seitz, at the end of five or seven-and-a-half years, if we haven't reached any improvement of .5 deciviews, what kind of enforcement measures might be applied if we're not reaching those goals?

Mr. SEITZ. Under the proposed rule, the only mechanism that was required was to ask the States, and in this case, the regional bodies to evaluate what the problem was. If, in fact, under the proposed rule, all State and local agencies in their State implementation plan—and incidently in the Grand Canyon, this is one of the issues that the Governor testified to—the Grand Canyon recommendation set out a strategy. And, as the Governor indicated in his testimony, the real meaning of that strategy is contained in the individual State implementation plans.

So, our intent at the 5-year review would be, are these State implementation plans—has everyone done their fair share? Have all the States done the correct thing? If they have, there is no sanction. It is a planning mechanism to take a look at what is the issue—what is the problem. There is no sanction.

Mrs. CHENOWETH. Knowing what Colorado was facing when the Colorado legislature tried to get a handle on working with EPA in controlling air quality standards and the Governor vetoed twice, legislation that was overwhelmingly passed in the legislature and presented to him, did the EPA weigh-in based on your comments of trying to get more State control and more State and local input,

did the EPA weigh-in at all on this in trying to convince the Governor that the legislature had passed some——

Mr. SEITZ. Madam Chairman, again——

Mrs. CHENOWETH. Very good legislation.

Mr. SEITZ. Pardon me?

Mrs. CHENOWETH. Did the EPA weigh-in at all on the side of the State based on the fact that they really had tried to do what you stated the goals of the EPA was? And that is to return more control to the States and local governments and regional areas?

Mr. SEITZ. I cannot comment on what took place, and I have said for the record, I will get back as to whether we had any interaction with the Governor and/or the State at that point in time. And, I am unaware of what the details of that legislation is. So, it would be inappropriate for me to speculate.

I can say, though, and I'm sure you're aware, or Congressman Schaffer I'm certain is aware, of the fact that there is a very active program, albeit voluntary, in place in Colorado, managed by, I believe, the Environmental Agency that, prior to any burning done by Federal land managers, they work with the State of Colorado, submit an environmental assessment, as well as—I'm not sure of this, but will check for the record—obtain a permit to burn.

So whether the letter of the law I cannot answer, and I will followup for the record, but I can say that the Federal agencies are working closely with the State of Colorado.

Mrs. CHENOWETH. You would expect me to ask, does that also apply in Idaho? Does it apply in Oregon, Washington, Montana, Wyoming?

Mr. SEITZ. Madam Chairman, Idaho is one of the few States that has not adopted a smoke management plan for some reason. I can't quite answer why, but, as mentioned before, we applaud the efforts of Colorado in putting these plans in place, and Federal land managers, clearly—the Department of Interior as well as the Forest Service—have indicated that they intend to fully cooperate with the States, and I believe in Colorado have actually entered into a formal memorandum of agreement with the State. It is my understanding the State of Idaho has chosen not to adopt such a smoke management plan.

Mrs. CHENOWETH. When do you plan to complete the final rule?

Mr. SEITZ. Madam Chairman, we hope to have the rule completed this Fall.

Mrs. CHENOWETH. Then, when would the requirements of the rule be implemented?

Mr. SEITZ. As you know, I'm sure from the ISTEA legislation recently passed by Congress and signed by the President, it directs that the implementation of the PM fine control strategies, meaning the SIP—State Implementation Plans—I get trapped in using in acronyms—the State implementation plans for regional haze must be coordinated with the implementation of the PM fine program. The agency is currently reviewing changes to or how we would adopt that in the final regulations, but we will comply with the ISTEA legislation.

Mrs. CHENOWETH. How does the Inhofe amendment alter any of the implementation of the schedule that has been proposed?

Mr. SEITZ. The ISTEA legislation?

Mrs. CHENOWETH. Yes.

Mr. SEITZ. The ISTEA legislation directs one of the issues—if I could just back up a second. One of the issues on the proposal that we heard a tremendous comment on from the State and local agencies was that 1 year after promulgation of the final regional haze rule States would be required to submit a State implementation plan.

Meanwhile, we talked earlier about the benefits of some other reductions—say, of sulphates and nitrates for the fine particles standards; those steps weren't due until later 2003 to 2004. What the agency intended to do on the regional haze rule was—we agree with Congress and others that these two programs should be implemented together; they shouldn't be separate planning requirements. And when you're looking for environmental improvement, you should look across both.

So we intended to, if you will, require after 1 year from the haze rule, a planning State implementation plan that would tell us how they plan to coordinate regional haze with the PM fire plans.

What the ISTEA legislation has done is take that principle and incorporate into law. So, it basically achieves an objective that we support very strongly, and that is joint-planning and joint-control strategies.

Mrs. CHENOWETH. I just have one more question before I'm going to yield back to Mr. Schaffer. Director Seitz, you heard Dr. Pearson testify that sections 707 in the House bill and 709 in the Senate was stricken and replaced with section 169(b); yet, Dr. Pearson testified that EPA's following not section 169(b), but the original section 707. Can you explain that?

Mr. SEITZ. Well, and I would be pleased—I will give you a brief answer and we will ask my office general counsel. I'm not a lawyer and I don't know but maybe Dr. Pearson is.

The real issue, I think, here is that we are following under section 169 of the Act, direction to promulgate a regional haze rule. Section 169(b) of the Clean Air Act also directs us to establish the Grand Canyon Visibility Transport Commission and sets forth a number of other recommendations. We believe that we have complied with both of those, and more importantly, the regulatory authority in the direction of the 1977 amendments to the Clean Air Act directed us to do rulemaking on this, and Congress left that intact in the 1990 amendments to the 1990 Act.

So, we believe and feel very strongly that we are acting in accordance with not only of the intent of Congress, but absolutely in a way that makes sense: we established the Commission; we waited until 18 months; we've taken their recommendations. So, I'm not quite sure, frankly, what Dr. Pearson did mention. I listened with great interest and I intend to ask my office of general counsel to explain that issue to me, because we believe we are acting within the intent of Congress.

Mrs. CHENOWETH. And you believe—were the recommendations of the Commission different than what Congress had intended in laying out section 169(b)?

Mr. SEITZ. I think in the Congress' establishing 169(b) and asking us to establish the Grand Canyon Visibility Commission, it was a tool for the agency to use as a guidance as we develop the rule

under 169(a) in response to the 1977 amendments. So we believe we did. There have been a lot of issues, as you've heard, in the previous testimony, on just how closely we did follow the recommendations of the Grand Canyon Visibility Transport Commission and we've received a lot of public comment on that. The Governor and I have testified at two hearings in the Senate concerning that issue.

As you indicated, we received detailed comments from some of our western Governors on that. We intend to further harmonize these rules with the recommendations of the Grand Canyon Commission on our final rulemaking.

Mrs. CHENOWETH. In your previous answer you had indicated that you're working to follow both recommendations. By that, you meant the Commission and?

Mr. SEITZ. The Commission and direction of Congress. Maybe "recommendations" rather than "directions" is a better word there. The Commission set forth a whole series of recommendations within the report, as you are aware.

Mrs. CHENOWETH. All right. I will be following-up with more specific questions on this of both Dr. Pearson, and of you, Director Seitz.

Mr. SEITZ. Thank you very much. I appreciate the opportunity to answer them.

Mrs. CHENOWETH. Thank you.

Mr. Schaffer.

Mr. SCHAFFER. Thank you, Madam Chairman.

Director Seitz, the impression as to the opinions about the extent to which you followed or considered the Grand Canyon study seem to vary a little bit—perceptions are—you ought to see the one from up here, when I can see the people behind you. I'll just try to interpret some of the stares and facial gestures as a disagreement, at least, about the extent to which Grand Canyon study has been included.

Mr. SEITZ. Can I comment on that?

Mr. SCHAFFER. Yes. I doubt you can rattle them off here. Is it possible at some point in time for you to respond to the Committee which recommendations were forwarded into the overall rule?

Mr. SEITZ. We'd be glad to. One of the most important aspects of the visibility improvement rule is 20 percent best/20 percent worst days. That is directly out of the Grand Canyon Visibility Transport Commission's report.

The question is, do you measure visibility improvement over the entire twelve month period, or do you take a look at the distribution of the best and worst days? That very recommendation came out of the Grand Canyon Visibility Transport Commission, and, in fact, is the heart of the rule. Even when you take a look at some of this prescribed burning activity, the 20 percent worst days generally take place during the summer months.

Working with the Department of Agriculture and the Department of Interior with their policies, they intend to encourage the prescribed burning be conducted in timeframes outside of that. So, that recommendation was one thing we borrowed.

I would acknowledge the struggle the agency had on the proposal, and we spent—I would agree with the previous testimony—

a great deal of time summarizing each and every one of the Grand Canyon Visibility Transport Commission's recommendations in the preamble. Our problem on the proposal was, as the Governor suggested in his testimony before the Senate, is that if we had taken those recommendations and incorporated them word-for-word in regulatory language, we would have then been prescribing to each individual State how they should develop their State regulations.

And, as I discussed with the Governor, my guess was, if I had done that I would have been beaten-up for being overly prescriptive—that the agency would have been, probably myself, personally as well.

The issue is how to take those recommendations which as the Governor suggested, were general recommendations and needed work with the follow-on body of the Grand Canyon Visibility Transport Commission to give them meaning, that would allow them to eventually be incorporated into individual State rules—that was the challenge. We didn't know how to do that and we spent a lot of time on the preamble talking about that.

Subsequent to the rulemaking during the public comment period, we met with the Western Governors Association; we met with the board of the Grand Canyon; and they, as well as some industrial sectors in the West, have given us suggested regulatory language about how to accomplish that balance of creating a structure within the rule that recognized each recommendation of the Commission, but at the same time, did not tell the State of Idaho or the State of Colorado, this is how you must do your State rule.

That is the struggle and one of the most, as you've indicated and heard in the testimony, one of the most controversial issues in the comment period. Hopefully, in the final rule based upon comments we received from the Western Governors and the industrial sector, we can do a better job of reflecting those recommendations in regulatory language.

Mr. SCHAFFER. Let me ask you how the regional haze rule taken together with the particular standard—how does that allow for land managers to conduct burning without violating the Clean Air Act?

Mr. SEITZ. Well, again, you've heard some of the testimony from the earlier panel, we would hope, and I hope Dr. Omi and I'm not sure which previous witness specifically mentioned, that our worst fear is catastrophic fire from an air quality standpoint. Those fires generally burn hotter and with higher emissions than a prescribed burn.

And you asked a question earlier, and if you'd like, we can get for the record—I believe it was you—about the fires in Florida; we have been tracking the emissions in Florida and they are very high. They are violating the PM–10 standard.

So, our objective, along with the Forest Service, will be to use prescribed fire not only on public lands, but hopefully, on all lands such as the program Oregon has in place to, over the long-run, produce emissions done in a way that would be below the ambient standard. As a matter of fact, when you take a look at data from a monitor, fire is measured by elemental carbon. And seeing the results of the filters in these areas, carbon is only the fraction of the particles. Clearly, fire is not the major source of the problem in

some of these areas. It is on a episodic basis, but on a long-term basis.

Mrs. CHENOWETH. Thank you very much, Director Seitz and Ms. McDougle. I do want to let you know we have two votes on the floor and we have 4.5 minutes left to get over there. So I am going to temporarily recess the Committee, and we will take up this session again just as soon as we can return. I will recess the Committee for 20 minutes.

Is the second vote a 15-minute vote? We'll return in 20 minutes. Thank you.

[Recess.]

Mrs. CHENOWETH. The Committee will come to order, please.

I wanted to very quickly ask Mr. Seitz one last question. I know that he has a family emergency and you must catch a plane. So, my question is—you suggested you will continue to accept comments and that you're making them part of the final record?

Mr. SEITZ. Yes, ma'am. Again, for the regional haze rule, the comment period, as you mentioned earlier, is closed. But any information or comments we receive are docketed as part of the final record and as the Agency has committed in the past, we intend to consider all of those comments.

Mrs. CHENOWETH. Did the Western Governors ask for additional comment period?

Mr. SEITZ. The Western Governors, in their submission, ask that what they have provided to us be put out for comment. And we are currently looking—I don't know if you had a chance to review—they provided us a written document that discusses proposals for the preamble and suggests different ways to write regulatory language. It was a very excellent and we're going through it now within the Agency, we got it at the end of month, and analyzing all of what was put in there, and trying to see what it would look like in regulatory language, and deciding what our next steps with it would be including the issue that you raise about supplemental notice and comment.

Mrs. CHENOWETH. But did the Western Governors ask for additional comment period?

Mr. SEITZ. They asked that we put out for comment what they provided to us.

Mrs. CHENOWETH. But they didn't ask for an additional extension on the comment period?

Mr. SEITZ. On the rest of the rule, no they did not.

Mrs. CHENOWETH. OK.

Has anyone else asked for an additional comment period?

Mr. SEITZ. Yes. I'm sure in the comments we received there were requests for an extended comment period.

Mrs. CHENOWETH. OK.

Given the additional implementation schedule prescribed by the highway bill, will you consider reopening the comment period?

Mr. SEITZ. On what?

Mrs. CHENOWETH. On ISTEA.

Mr. SEITZ. ISTEA was a law that directed us to harmonize the schedules of PM and haze. We don't view that as a comment issue. That is a direction from the Congress to do it and we intend to do it.

Mrs. CHENOWETH. But it will require more rulemaking and so forth. So, will the comment period be extended?

Mr. SEITZ. I would have to defer to my Office of General Counsel. I don't believe that is a comment period issue, Madam Chairman, but we can ask my general counsel to get back to you for the record on that.

Mrs. CHENOWETH. All right.

[The information referred to follows:]

The EPA has decided to solicit additional public comment on incorporation of the GCVTC recommendations, with particular emphasis on the contents of the WGA letter, in an upcoming public notice. In that notice, EPA also will inform the public of the changes made by the TEA-21 to the State Implementation Plan submittal requirements and discuss the effect of these changes on the regional haze requirements. The EPA believes it is important to reopen the comment period specifically on these two significant new items received since the original comment period closed in December 1997.

Mrs. CHENOWETH. Since it does delay the implementation date in ISTEA, under that set of requirements, would you consider extending the comment period?

Mr. SEITZ. Again, there's three or four questions on the comment period you've asked: one is the request in what the Governors have submitted to us. We're reviewing that and deciding whether that should be put out; and, I believe you're asking us to open the comment period on the rule based upon the ISTEA recommendations.

Mrs. CHENOWETH. Yes, I'm asking you, will you extend it so you can make those new considerations required in ISTEA?

Mr. SEITZ. Again, Madam Chairman, we're going through the impact of ISTEA right now as to whether or not it requires a re-opening of the comment period. I'd have to defer to my Office of General Counsel, but we are reviewing all of that right now.

Mrs. CHENOWETH. It would seem logical that it would——

Mr. SEITZ. I understand your concern.

Mrs. CHENOWETH. And so, I will look forward to hearing from you through your office of general counsel.

Mr. SEITZ. Yes, ma'am.

Mrs. CHENOWETH. We would appreciate getting a response on that particular question within 5 days.

Mr. SEITZ. On both the issues? Just to be clear on both the Governors——

Mrs. CHENOWETH. The new requirements in ISTEA——

Mr. SEITZ. OK.

Mrs. CHENOWETH. They, being new, major requirements that will require rulemaking. I would appreciate within 5 days knowing if you will extend the rulemaking.

Mr. SEITZ. Yes, ma'am.

[The information referred to may be found at end of hearing.]

Mrs. CHENOWETH. Mr. Seitz, I am very sorry to hear about your family emergency, but I understand that another party will be taking your place. Would you like to introduce them?

Mr. SEITZ. That is not what we had talked about, and if I can, if there are more questions for me, I'd like to stay and hang in here until as long as 12:45, if possible.

Mrs. CHENOWETH. All right, we'll do that then.

Mr. Schaffer, do you have additional questions?

Mr. SCHAFFER. I missed all of the discussion on the comment period. When did the comment period close? That was December?

Mr. SEITZ. December 5.

Mr. SCHAFFER. December 5, and had there been ongoing discussions with—I asked this before—but there had been ongoing discussions and input from Governors around the country beyond the comment period?

Mr. SEITZ. There have been ongoing submissions and suggestions not only from the Governors, but other individuals that have been put in the docket.

Mr. SCHAFFER. Input? Is it fair to characterize them as negotiations?

Mr. SEITZ. No, sir.

Mr. SCHAFFER. No? These other groups, what kind of other input?

Mr. SEITZ. We received—I would have to characterize them, I'm not sure of the extent of submissions that have come in after the comment period closed—but any submission that came in after the comment period would have made a record of it and put it in the docket. There has been numerous occasions where people have asked us to brief them on the proposal after the comment period closed. We've docketed those discussions. I'd have to let the record speak for that, sir.

Mr. SCHAFFER. Given the additional input that's come in after the comment period, the additional flexibility of the transportation bill, is there any—let me just ask it a little bit different than the chairman did—is there any reason an extension of the comment period would not be advisable?

Mr. SEITZ. Well, with respect to the ISTEA legislation direction, again, we're still analyzing it. But, it seemed pretty clear to me what the legislation direction was. It said that we will harmonize the control strategies for the PM fine areas with the haze rule.

Mr. SCHAFFER. OK, for legislative references, understandable, but from a practical perspective and an administrative judgment, is there any reason that an extension of the comment period would not be advisable?

Mr. SEITZ. I cannot see why we would need an extension at this point in time, Congressman. No.

Mr. SCHAFFER. OK, you see no need for—is there any reason it would not be advisable?

Mr. SEITZ. Any reason it would not be advisable?

Mr. SCHAFFER. Right.

Mr. SEITZ. Other than that we had a public comment period and we extended it once? The agency needs to move forward and finalize the rule.

Mr. SCHAFFER. Any other reason?

Mr. SEITZ. No, sir.

Mr. SCHAFFER. Thank you. Let me shuffle through my notes for a second.

If I remember, right when I was heading out the door going to the floor to vote, one of the questions I was asking was just about land managers conducting burning without violating the Clean Air Act. Can you speak to State and private landowners, how do var-

ious management strategies that may involve controlled burning on private or State lands interact with the proposed rule?

Mr. SEITZ. I think this is one of the issues we said in the interim policy we would put out, it is interim, because we want to consider activities that are underway with the final haze rule, and the Department of Agriculture has a task force dealing with agriculture burning which is another issue that clearly could impact haze. So once the efforts of that work group are completed, we intend to consider them.

As indicated, I think, from the gentleman from Oregon, we would agree that a smoke management plan, much as the Grand Canyon recommended, has to extend way beyond just Federal lands. It must incorporate all burning that takes place, not only on Federal lands, but also on private lands.

Mr. SCHAFFER. How about outside the legal jurisdiction of the United States, Canadian or Mexican?

Mr. SEITZ. Well, the issue's not only Canadian; particularly, the issue was raised earlier about the Mexican smoke issue. We consider that an international transport/transboundary issue, and we have a policy dealing with that. That is a transport issue that we need to deal with from an international standpoint. We can provide you information on our position on that for the record, if you'd like. It is a different category. And as you know from the Mexican fire issue, or maybe you aren't aware of, we tracked with the weather service satellite data the actual movement of the Mexican fire plume into the United States and advised all areas along with the State of Texas—which was actively involved in this with the public health concern also—and have advised these areas that if they experience exceedances or violations of the standard on those episodic days that we would work with them, not to have that data penalize their ongoing attainment activities.

[The information referred to follows:]

The plume from recent wildfires in Mexico and Central America caused increased air pollution in parts of the United States. In particular, we have observed increases in monitored particulate matter (PM) and ozone values. Our first concern, of course, is the impact on public health in the areas affected by the plume. As always, we feel that the State and local agencies must inform the public whenever the air quality in an area is unhealthy and should take appropriate measures to protect public health and to mitigate the health impacts to the extent possible. However, we want to ensure that State and local agencies and sources within affected areas not be held accountable for the National Ambient Air Quality Standards (NAAQS) violations caused by these international wildfires.

EPA's 1996 Natural Events Policy for PM_{10} recognizes the possibility of the impact of wildfires on attainment of the PM10 NAAQS and addresses situations like this [Memorandum from Mary Nichols, Assistant Administrator for Air and Radiation, to Air Division Director, Regions I-X, "Areas Affected by PM10 Natural Events," May 30, 1996]. In accordance with this policy, EPA will use its discretion under section 107 of the Clean Air Act not to designate areas as nonattainment for PM-10 when air quality violations are caused by natural events such as international wildfires. With regard to the ozone NAAQS, there are several studies which show that smoke from wildfires can result in increased ozone concentrations [(1) Ridley, B.A., et al., "Measurements of Reactive Nitrogen and Ozone to 5-km Altitude in June 1990 over Southeastern United States," *Journal of Geophysical Research*, Vol. 103, No. D7, pages 8369-8388, April 20, 1998; (2) Mauzerall, D L., et al., "Photochemistry in Biomass Burning Plumes and Implication for Tropospheric Ozone over the Tropical South Atlantic," *Journal of Geophysical Research,* Vol. 103, No. D7, pages 8401-8423, April 20, 1998; (3) Andreae, M.O., et al., "Biomass-Burning Emissions and Associated Haze Layers Over Amazonia," *Journal of Geophysical Research,* Vol 93, No. D2, pages 1509-1527, February 20, 1988]. Therefore, EPA does

not intend to hold states responsible for violations of the ozone NAAQS which are caused by these wildfires.

In addition, over the last several years, EPA has worked closely with its corresponding environmental agencies and ministries in Canada and Mexico to establish strong working relationships and agreements to generally address transboundary air quality issues. EPA has significantly benefited from the cooperative framework and information sharing on international pollutant transport that these partnerships have yielded.

Mr. SEITZ. We did not want them going back and saying they had to revise or do more work domestically, if, in fact, it was an international event.

Mr. SCHAFFER. So the EPA can distinguish Canadian smoke from Canadian or Mexican wildfires in the United States?

Mr. SEITZ. Again, the Mexican plume we track by satellite data from day-to-day and hour-to-hour through the United States.

Mr. SCHAFFER. What are we doing next, Madam Chairman? Do you have any more questions or is this it?

Mrs. CHENOWETH. I'd like for you to——

Mr. SCHAFFER. OK. OK.

Is there any reason that all sources of pollution, including those that originate on Federal land—wildfires, for example—is there any reason that those sources and the extent of air pollution as a result of these fires should not be part of the final rule on regional haze development?

Mr. SEITZ. Again, there was extensive comment on not only Federal fire, and how it would apply in the final rule, but how we would deal with it. This was a comment we received and will consider in the final rule.

I think it is important to note that the final rule should, as did recommendations for the Grand Canyon Visibility Transport Commission, consider all sources, not only fire but manmade as well.

Mr. SCHAFFER. Well I think the Federal Government ought to be held to the same standard as any other source for the private, State land, or any other source of particular matter, or any other pollution source. The EPA ought to pursue in a manner that treats the Federal Government no different than any other entity.

Currently, in my opinion, it's time for the Federal Government to recognize it's role in air pollution and regional haze. Smoke and forest fires, and prescribed burns on Federal lands is the single greatest contributor to regional haze in national parks and wilderness areas. And the EPA practically exempts the Forest Service from compliance. I think the EPA needs to carefully consider all sources of pollution in their air quality and visibility standards should reflect that.

I see we're out of time, Madam Chairman, but I would——

Mr. SEITZ. If I could just comment, I would agree that forest fires, uncontrolled burns are episodic; they are not the single largest ongoing source of impairment to haze. And as mentioned earlier, by the previous panel, the Clean Air Act does provide to the extent that States develop and adopt regulations, maybe like Oregon, that Federal lands and land managers equitably are required to comply with those rules. So, Congressman, we agree with you.

Mr. SCHAFFER. Thank you, Madam Chairman.

Mrs. CHENOWETH. Thank you, Mr. Schaffer.

I want to take one more swing at the effects of ISTEA while you're still here.

Mr. SEITZ. Should I duck?

[Laughter.]

Mrs. CHENOWETH. Given the complexity of the issues associated with the effect of fire on regional haze in Class I areas, given EPA's agreement to a delayed implementation schedule of the Inhofe amendment, I believe Mr. Seitz, that it is reasonable to ask you to reopen the comment period on the proposed rule so that the public can fully participate in the resolution of these issues. Do you agree?

Mr. SEITZ. As I said, Madam Chairman, your position is clear. I've heard your position. As we review the final rule, the Inhofe amendment, as well as submission for the Governors, we will consider the comment period.

Mrs. CHENOWETH. All right. This is a special request, and I look forward to your answer.

With that, Mr. Seitz, you are welcome to be excused. We'll be asking questions of Ms. McDougle, or you're welcome to stay, whatever your schedule allows.

Mr. SEITZ. Thank you very much, Madam Chairman.

Mrs. CHENOWETH. Ms. McDougle, you mentioned that, before embarking and engaging in a prescribed fire, that usually your regional or your supervisors evaluate winds and air pressure, and so forth——

Ms. MCDOUGLE. Local conditions.

Mrs. CHENOWETH. Yes. Yet, in our area in Boise, I personally have never received as many calls as I did when we were doing prescribed burning, just a few weeks ago. I received hundreds and hundreds of calls. Because the Treasure Valley in which Boise, Naja, Caldwell, are located, is an air inversion weather pattern there, this smoke came right down and settled on the valley floor and people were awfully sick; and people got awfully irritated. Do you have any idea as a result of that experience and other experiences like that, what your position may be in the future? Because it really does cause more asthma, a lot of health problems, stinging eyes and irritated people.

Ms. MCDOUGLE. I'm not personally aware of that particular situation, Madam Chairman. I'd be happy to look into it.

Also, sometimes these things happen and they're not as a result of Forest Service activities even though we are the ones who are deemed responsible. And if you will look at some of the events in the Florida fires as well, wind shifts that were unpredicted can dramatically alter the direction that fire fighters will go on the strategies that they will use to put out fires. So, I'm not real sure what you would like to see here.

Mrs. CHENOWETH. Usually, spring has unpredictable weather patterns—that's spring. It was very unfortunate that in that period of unpredictable weather that forests prescribed burning was implemented. Now, when you say that that it isn't always your call——

Ms. MCDOUGLE. No, I'm saying that it's not always the forests, it's activities that could—especially in the areas of mixed ownership—activities that could occur on Forest Service lands, but within

the green light that we sometimes get blamed for it. But I'll be happy to look into that and get back with you.

Mrs. CHENOWETH. I can guarantee that we could tell the difference. It was a great press interest that there were prescribed burnings going on when there was an air inversion. So, it was because of the activity in the forest.

Ms. MCDOUGLE. OK.

Mrs. CHENOWETH. And, it was unfortunate.

Mr. Truesdale, did you have anything you would like to add?

Mr. TRUESDALE. The issue of putting smoke into valleys and into areas during periods of inversion is something that we would want to avoid because of the reaction and the impacts that you just described. I think that planning process, the implementation process, the working with the local smoke management authorities within the State, we need to follow the restrictions and regulations in order to avoid that and make sure it doesn't happen. I am not familiar with this particular incident, although I have heard that there was a bad weather forecast, but we would have to look into that particular one for you.

But, I agree with you. Under those conditions, where smoke would be sent into populated areas, is probably not the conditions that we should be burdened. But, at the same time, we may need to take some opportunities in the spring where the weather is a little bit unpredictable in order to avoid the more serious impacts from wildfires during the summer that we're trying to avoid by reducing the fuels and reducing the impacts of smoke from wildfires.

I believe there would be a tradeoff there. However, I don't believe the tradeoff should be smoke into a valley if we can avoid that. The smoke management plan of the burning plan and the implementation plan should avoid that. I agree.

Mrs. CHENOWETH. In southern Idaho, we were prevented from even sighting an even coal fire plant with huge call of smoke stacks because of the air inversion back in the early 1970's. So, it's an historically established fact that there is always air inversion in there about that time of year.

I know the people who make those decisions in the Boise National Forest, and while I have not talked to them directly, I have worked with Ms. McDougle, it is unlike them to make these kinds of decisions. I have high regard for their ability to make good, sound decisions. Was there any pressure on the forests to engage in these prescribed burns; perhaps against the best advice of the foresters who know that area?

Ms. MCDOUGLE. I doubt it. The targets or burning are bottom-up targets. Phil identifies them to us; we roll them up, and this is our annual plan of work as best we can meet them. So, no.

Mrs. CHENOWETH. Ms. McDougle, I would like to know personally how the decision was made to engage in this prescribed burning at this time.

Ms. MCDOUGLE. I will be happy to——

Mrs. CHENOWETH. And who was in on the decisionmaking? Now, I don't want anybody's head.

Ms. MCDOUGLE. I understand.

Mrs. CHENOWETH. I don't want anyone to get in trouble over this unless—I would like to be able to review the facts.

Ms. MCDOUGLE. Certainly.

Mrs. CHENOWETH. But I also don't want our forests under undue pressure from any other agency, including EPA or anyone else to have to feel pushed to engage in this kind of activity. Now, should the choice be between setting prescribed fires in the springtime as compared to the summertime? I suggest that there is a better alternative, and I'd like to know the degree to which mechanical activity on the forest was also considered to reduce the fuel load.

Ms. MCDOUGLE. OK.

Mrs. CHENOWETH. Could you please get back to me on that?

Ms. MCDOUGLE. OK. I'd be happy to.

Mrs. CHENOWETH. Because, to me, that would be a very logical alternative.

Ms. McDougle, you mentioned EPA natural events policy and its emphasis on mitigation measures to reduce the effects of fire on air quality. Could you please describe the mitigation measures you now utilize and any other measures you'd like to see used in the future for mitigation?

Ms. MCDOUGLE. We have several ways that we go about looking at that on the work level. We do it through our planning process where we apply NEPA, where we utilize public involvement; where we assure that we comply with statutory requirements. We have completed and published a desk guide map that lays out how you consider fuels management, fire inland and management planning. We have published this land management considerations and fire adapt ecosystems. It's a conceptual guideline and we are revising it to better refinement at the field.

So there are a number of things that are being done in a national framework, but the allowing the field units to tailor it.

Mrs. CHENOWETH. Chief Dombeck has testified that 40 million acres of Forest Service lands are susceptible to catastrophic wild fires and are in need of fuels reduction. It's also stated that many of these acres cannot be burned safely unless they are initially treated. What does the Forest Service plan to do to reduce the wild fire risk in these areas? And how will these efforts address the need to minimize smoke emissions such as in the Boise area?

Ms. MCDOUGLE. You are correct in saying that the Chief has made this statement, the Secretary, as well, and Joslin and others. We estimate that between 39 and 40 million acres are at risk for catastrophic fires on national forests out there. This is a rough estimate and we expect to have a refined map late this fall that will a lot more clearly articulate how many acres and where they are.

The map that we have up there shows about 70 million acres which contain those 40 million that we've talked about and they are represented in very implied species. We understand that the volume is no longer in the big trees and that it is in the small diameter wood. We understand that what we're talking about here is a timber pilgrimage transition. We understand that more has to be done in terms of forest conditions, ecosystem restoration. We understand that we have to go forward in addressing those things with constrained budgets. We also understand that our tools are going to have to be different to do this. This takes time.

Our timber program is aggressively involved in re-engineering from some of their contract to their actual tools on the ground to

better respond to the emerging needs here. We understand that 50 percent of the acres that need fuels treatment have to be accessed mechanically, to get to them. We understand that because we say there are 40 million acres at high-risk, that all 40 million acres don't need treatment.

We don't know what that number of acres are to substantially reduce that risk, but those are the acres that have been identified where fire has been excluded from the ecosystem.

We understand that we have to vastly expand our relationship with these communities to where there are markets for this wood to find ways to connect the communities with the markets and with the businesses, either expanding them or developing them or creating them, and our Madison lab is doing this. Where there aren't markets, we have to be more creative in developing them.

So, we see this as a very comprehensive need out there, and there is a commitment on behalf of the Secretary, the Chief, and myself to get on with it.

Mrs. CHENOWETH. What tools will you use or will you have available to use to meet these goals in the future?

Ms. MCDOUGLE. We're still in the inventorying stage, just to find out what's out there. We have our folks in research working on that right now.

Mrs. CHENOWETH. Ms. McDougle, we've done a lot of inventories. We've got to move beyond that—well, what we've been talking about, fire management and air quality here.

Ms. MCDOUGLE. Well, what we've inventoried and what we've paid attention to and what we've kept up with was the stuff that had market value. What we have not inventoried is the stuff that doesn't. That's what we have to get a handle on. We do have a handle on the acres that are at high-risk to insects and disease across this country. We know that. We will have this fall those acres that are at high-risk for catastrophic fire. I think we'll have something we're able to overlay that.

But right now, Congress has been very, very supportive in terms of the funding that we've gotten, that Interior has gotten to complete those inventories, and we're almost done.

Mrs. CHENOWETH. But in your answer, you did say that the timber program is in transition.

Ms. MCDOUGLE. Yes.

Mrs. CHENOWETH. Will logging thinning be options in the future?

Ms. MCDOUGLE. Significant.

Mrs. CHENOWETH. Logging and thinning will be a viable option in the future.

Ms. MCDOUGLE. Yes, in what proportions, I don't know, but, yes. This is not an intent to get away from that, but where the volume is. This isn't small diameter wood right now.

Mrs. CHENOWETH. Yes. You heard Mr. Walcher's comment about it's the larger diameter trees when burning, create more smoke, and actually work against us. So, if there is an area where we need to thin, of course, none of us want to leave the small diameter fuel load in there.

Ms. MCDOUGLE. Well, I agree with you.

Mrs. CHENOWETH. See, the whole purpose of this hearing is to figure out a way and to get some good facts on the record with re-

gards to conflicting values. So, it would seem to me that the market will not respond as the market is made up now, even with chips becoming a big part of construction. The market will not respond to be able to, in a viable manner, economically, get that small stuff out of the forest.

So, will our logging programs as we have known them in the past and has been framed by the National Forest Management Act still be part of your program? Or is the transition to move away from that as required in NEPA?

Ms. MCDOUGLE. I think the transition that I'm describing is that the work of the timber program is broader than it's been in the past. The funding constraints are bigger than they've been in the past and it challenges the Agency to be a lot more adaptive and a lot more creative to respond to all of the different needs that are out there; to respond to the needs of the community in terms of economy; to respond to forest health; and we don't have that portfolio in place right now to do that.

Mrs. CHENOWETH. Both of us feel that we do have other questions, but both Mr. Schaffer and I, through the Committee, will be submitting more questions in writing to both you and Mr. Seitz. This is an area of great concern to us, and I don't believe that the goals as you described them are mutually exclusive, and that seems to be up until today the tendency where we were treating them as mutually exclusive goals.

To the degree that I understood you to say, they don't have to be mutually exclusive, and that may be part of the transition. If that is correct, I am pleased to hear that.

Is there anything that you would like to add?

[The information referred to may be found at end of hearing.]

Ms. MCDOUGLE. I would like to say, Madam Chairman, that as we proceed in framing this broader mission, if you will, we will be more than happy to spend time with you and your Committee and your staff in keeping you involved in how it's developing.

Mrs. CHENOWETH. All right. Thank you very much.

Did you have any final comments?

Mr. SCHAFFER. No.

Mrs. CHENOWETH. All right. I do want to thank you very much for your patience. We can't always call the floor schedule in these committees and they can be drawn out into very long committee hearings, but I thank you for your patience.

And I thank you, Ms. McDougle, for accommodating the time that we had to spend with Mr. Seitz so he could——

Ms. MCDOUGLE. That's perfectly all right.

Mrs. CHENOWETH. The record will remain open for 10 working days. We would appreciate your responses for any changes or responses within 10 working days.

[The prepared statement of Mr. Joslin may be found at end of hearing.]

Mrs. CHENOWETH. With that, this hearing is adjourned.

[Whereupon, at 12:55 p.m., the Subcommittee adjourned subject to the call of the Chair.]

[Additional material submitted for the record follows.]

STATEMENT OF DR. ROBERT L. PEARSON, RADIAN INTERNATIONAL, DENVER, COLORADO

Mr. Chairman and members of the Committee.

My name is Dr. Robert Pearson. I am an air quality scientist and Project Manager at the Denver office of Radian International, an environmental consulting firm. I am also an adjunct professor of air pollution in the graduate school of the University of Colorado at Denver.

I am appearing before you today to discuss the air quality impacts of the practice of using prescribed burns to reduce vegetation in our nation's forests. I also appeared before the full Committee in a similar hearing last September 30. I appreciate the opportunity to again appear before you Madam Chair and members of the Subcommittee to further discuss this important subject.

First a short bit of history. I have practiced as a scientist in the area of air pollution for my entire career, lasting some 25 years. In 1992, Governor Romer of Colorado appointed me to be a representative of Colorado on the Public Advisory Committee of the Grand Canyon Visibility Transport Commission. Congress established the Commission in Section 169B of the 1990 amendments to the Clean Air Act. The Commission, made up of the governors of eight states and representatives of several Indian tribes, was charged to recommend to EPA ways of reducing man caused visibility impairment in and near the Grand Canyon. The Public Advisory Committee was given the responsibility of reviewing the man caused impact to visibility in the Grand Canyon and other Class I national parks and wilderness areas in the West and making recommendations to the Commission on methods for preventing and remedying such impact.

We spent four years and more than eight million dollars reviewing the science that had been collected on this subject including new visibility data gathered for the Commission. We then formulated policy recommendations for the Commission to consider. Throughout the conduct of this scientific study, every interest group was represented including environmental groups, the EPA and the Federal land management agencies of the Forest Service, the Bureau of Land Management and the National Park Service.

On June 10, 1996, the Commission published its findings in a report titled "Recommendations for Improving Western Vistas." This report discusses in detail the scientific study that was done and the recommended control strategies for all of the categories of sources of air pollution located throughout the West. I am here today to relate some of the information we learned as we struggled to craft a workable regional haze improvement plan for the West.

The EPA has recently proposed a set of regulations to allegedly protect and improve regional visibility in the U.S. Unfortunately, even though the proposed regional haze rules acknowledge the work of the Commission, the rules almost totally ignore the recommendations of the Commission. We on the Commission worked very hard to craft a workable plan for improving visibility in the West. However, this regional haze proposal of EPA is ignoring our work and attempts by the Western Governors Association (WGA) to get EPA to follow the Commissions approach have led to even more confusion. If the new regulations are adopted, our efforts in improving visibility in the West will be overwhelmed by land management plans of the Forest Service, Bureau of Land Management and the National Park Service, which I will detail in a moment.

The Commission's proposed strategy for improving visibility in the West took a regional consensus approach to achieving this goal. The consensus addressed all sources of air pollution emissions in the West including motor vehicles and fugitive dust. It recognizes the current trends in western air quality that will result in improved regional visibility over time. Instead of adopting the Commission proposal, EPA has chosen to go back to their usual command and control approach to place an ever-increasing burden on a single group, stationary sources. The Commission's work has shown that this group of sources has a relatively small and declining role in the cause of regional haze, particularly on the worst days that EPA has chosen to target. Requiring additional controls on them will yield relatively little benefit over emission reduction trends that are currently under way.

EPA also is apparently not aware of the legislative history of the language in the Clean Air Act for protecting regional visibility, Congress in debating the 1990 amendments to the Clean Air Act had before it two bills. Section 707 of the House Bill and Section 709 of the Senate Bill had provisions similar to the currently proposed EPA regional haze rules. Those sections contained requirements for Best Available Control Technology analysis of major stationary sources, final visibility rules in a year, regional haze plans, criteria for reasonable progress and a methodology for measuring visibility. These sections were deleted during Senate floor debate

and the current Section 169B was inserted in its place and adopted by Congress in the final bill.

Section 169B requires that studies of regional visibility are conducted and regional visibility transport regions be established to formulate measures for improving visibility in the region. It was under this provision that the Grand Canyon Visibility Transport Commission was established to perform these analyses. Section 169B also requires the Administrator of the EPA to take into account the recommendations of the Commission in forming its regulations for improving visibility in the region. EPA has chosen to follow the provisions of the sections that were deleted by the Senate and House and not the sections that were adopted in the final bill.

Congress, in Section 169B, required the Commission to study several concepts in regional visibility including visibility transport regions and clean air corridors. The Commission studied these and included discussions of them in its report. The Commission also reported in detail and made recommendations on several potential sources of western visibility impairment including area sources, fugitive dust, prescribed fire, mobile sources and emissions crossing the border from Mexico. Congress required that the EPA Administrator take into account these recommendations from the Commission report in formulating its proposed rule. The EPA proposed rules don't contain any mention of any of these concepts and recommendations required by Congress. EPA has instead chosen to ignore Congress and the Commission report and to focus on stationary source control, giving more authority to the Federal land managers, and requiring the states to perform many costly functions such as setting up visibility monitoring stations.

It is apparent to me as an air quality scientist that EPA has chosen to take a narrow perspective of improving regional visibility. This is in stark contrast to the Commission that has taken a much broader, and in my view, a much more workable scientific approach to improving regional visibility in the West by looking at all sources of visibility impairment rather than a select few. EPA should be told by Congress to rescind its regional haze regulation proposal and to prepare a new regional haze rule which is in accord with the intent of Congress as expressed in Section I69B and which fully incorporates the process of the Grand Canyon Visibility Transport Commission.

The Federal land managers also have several responsibilities for the protection of regional haze that I would like to bring to the attention of the Subcommittee. One provision of current law as well as the proposed regional haze rule allows the Federal land manager of a Class I area to identify a source or some group of sources some distance away which could be impacting visibility in the Class I area. The state in which the source is located would then be required to evaluate the allegedly offending source(s) for the retrofit of air pollution control technology equipment to reduce the effect on the Class I area. In effect, this gives the Federal land manager land use control over lands outside of the wilderness area despite the fact that wilderness legislation passed by Congress specifically prohibits the establishment of buffer zones around wilderness areas.

While this scenario may sound far-fetched, it has been going on for some time in Northwestern Colorado. The Forest Service, manager of the Mount Zirkel Wilderness Area accused the Hayden Power Plant of polluting the wilderness area some 30 miles away. The State of Colorado Department of Public Health and Environment along with the Forest Service and the Colorado utilities conducted a $3 million scientific study to determine the sources of visibility impact in the wilderness area. The recently released results of the study showed that the Hayden power plant was only a minor contributor to visibility impairment in the wilderness. Despite this evidence, the source owners have committed to spending over $120 million to reduce the emissions from the plant.

At the same time the Federal land managers can trigger clean up activities on other sources, they plan on increasing their own air pollution activities through increasing prescribed burns. Interior Secretary Babbitt testified to the full Committee in its hearing last fall his intention to increase the use of prescribed fire by 400 percent as a land management tool in order to reduce the level of fuels built up in our forests. Secretary of Agriculture Glickman also testified before the Committee that the Forest Service would dramatically increase its use of prescribed fire. While the elimination of fuels in our forests is needed, the use of fire as the tool of choice will cause regional haze to increase.

Forest fires, either intentionally set or accidental, release quantities of fine particles made of carbon and other elements in the smoke. These fine particles cause several impacts on air quality. First the concentration of fine particles in forest fire smoke may cause the PM 2.5 National Ambient Air Quality Standard recently adopted by EPA for the protection of human health to be violated near the fire. In

addition, the fine soot particles in the smoke will affect regional visibility by both scattering and absorbing light.

At times smoke containing fine particles travels hundreds of miles and across several states increasing regional haze all along the way. I can vividly remember seeing the effects in Denver of several California wildfires, the 1988 Yellowstone fires and just this spring the smoke from the fires in Southern Mexico. These effects were much reduced visibility and a smoke smell in the air. While I do not have air quality measurement data from these periods, I am sure the concentration of fine particles was elevated for several days each time even at the considerable distance that the smoke traveled to get to Denver.

During the Commission study of western regional visibility, we also saw photographs taken at Hopi Point at the Grand Canyon when a small wild fire on the South Rim of the Canyon was brought under control and extinguished. Even such a small fire, which lasted only a few hours, filled the Canyon with smoke. The point is that even a small fire in or near a Class I area can cause dramatic effects on visibility and the concentration of fine particles in the air similar to the effects seen at long distances from large fires.

The Commission analyzed the effects of the announced increase in the use of fire as a forest management tool and concluded that the effects on western regional visibility could easily wipe out the gains made by all other source categories combined. These other source categories, which are currently reducing emissions, include power plants, copper smelters, cars, trucks and area sources of fugitive dust.

Note that the Commission combined all fires, both man caused and wild fires, into the "natural category" for our analysis. Such natural causes contribute almost half of the visibility impairment in the West. To some extent considering smoke from intentional man caused fires as "natural" biases the report. This also, in effect, excludes the smoke from prescribed burns from being considered against your goal in the Clean Air Act of remedying man caused sources of visibility impairment. The point is that all of our hard won incremental improvements in regional visibility across the West could be overwhelmed by the increased use of fire as a land management tool by the Federal land management agencies even though their contribution is considered "natural."

The story gets even better since EPA Administrator Browner testified in last fall's hearing before to full Committee that EPA will ignore air quality measurements on those days when fires, either intentional prescribed burns or unintentional wild fires, are taking place. This is to allow regions to meet the recently adopted EPA fine particle ambient standards. This takes us to an absurd outcome of EPA insisting that fine particle pollution in many areas of the West be reduced to protect human health and visibility on all but the worst days when fires are taking place. Those bad days, when health and visibility impacts are at their peak, will be exempt from recording of the measurements through this flexible interpretation by EPA of their monitoring requirements.

While I am extremely concerned that prescribed burns will hamper and even possibly prevent our attainment of the goal Congress set of remedying man made causes of visibility impairment in the West, I recognize that forest fires can and will continue to occur. Federal land managers must take action to reduce the level of fuel available in the nations forests for wild fires to consume. I am not convinced, however, that prescribed burns are the only tools at their disposal for this purpose. Other techniques such as logging and mechanical removal can and should be selectively used to reduce the amount of fuel available for fires.

Both Secretary Babbitt and Secretary Glickman testified last fall that mechanical thinning of vegetation in our forests would be part of the treatment that will be applied to the forests. This testimony runs counter to the recent trend by the Forest Service of reducing logging on the nation's forests. Secretary Glickman went on to say that nearly half of the 40 million acres of Federal land needing vegetation reduction would have to be done mechanically because the level of fuel in the forest is too high to perform a prescribed burn without major damage to the forest.

When prescribed fire is indeed the only available option, the land managers should only use it when conditions are right for burning with little smoke being produced which will affect visibility in and near Class I areas. Only then can we have some hope of achieving cleaner air in our Class I areas. The increase in regional haze due to prescribed burns will make it more difficult for the improved visibility goals to be achieved.

The proposed EPA regional haze rules could trigger even more stringent controls on stationary sources to make up for the increased visibility impact of the prescribed burns of the Federal land managers so that the visibility improvement goals set by Congress are met. Under the proposed regional haze rules, the Federal land managers are allowed to set fires at will to reduce forest fuel. At the same time the land

managers have the power to force other sources to reduce their emissions that may affect Class I areas to meet the congressional goal. This "do as I say not as I do" philosophy of the Federal land managers suggests a double standard that needs to be addressed by Congress. You need to assure that the clean air goals you set are being met with an equal burden being carried by all. This is the approach chosen by the Grand Canyon Visibility Transport Commission that EPA is ignoring.

We must all work together to see that the goal of improved visibility is achieved that you as members of Congress have set. Fires on Federal lands were identified by the Grand Canyon study as the largest single episodic source of regional haze. I am extremely concerned that Federal land managers have chosen to point the finger at others while ignoring the obligation they themselves have to protect the air quality in areas they have been charged to protect. Until land management agencies recognize this responsibility and factor it into their day-to-day land management practices, will we see the benefits of improved air quality in our Class I areas. Also, the regional haze rules recently proposed by EPA need to be rescinded because they lack scientific basis, exclude major sources, exclude the Grand Canyon process, return to a command and control regime previously rejected by Congress, and have no adequate cost/benefit or unfunded mandate anaysis.

Thank you.

STATEMENT OF DR. PHILIP N. OMI, PROFESSOR AND DIRECTOR, WESTERN FOREST FIRE RESEARCH CENTER (WESTFIRE), COLORADO STATE UNIVERSITY

CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Introductory Comments

Thank you for inviting me to present my views on prescribed burns, other management techniques, and fire economic impacts as these relate to your air quality deliberations. My views on these topics result from 28 years of experience studying fires, including five years as a seasonal firefighter and 23 years as researcher and professor in forest fire science. For the past 6 years I have served as Director of the Western Forest Fire Research Center (WESTFIRE) at Colorado State University, which performs integrative research into ecological, socio-economic and environmental effects of forest and rangeland fires. Current and recent projects have provided insights into the cost-effectiveness of mitigation efforts aimed at reducing consequences of wildfires. We focus on areas in need of fuels treatment and suggest appropriate management techniques for allowing people to live and work safely in fire-prone areas throughout the western U.S. Recently I have been invited to participate on the Fire Emissions Joint Forum of the Western Regional Air Partnership, which will be developing policies and methodologies for implementing recommendations from the Grand Canyon Visibility Transport Commission.

Overview

Fire has been a part of most terrestrial ecosystems for thousands of years. Lightning has provided a natural ignition source and humans have interacted with fire for more than 300,000 years. Humans have used fire to shape landscapes for perhaps the last 20,000 years. Combined with lightning ignitions, fire has created a diverse mosaic of so-called fire type plant communities. By the same token, ecologists point to the impacts of the past 100 years of fire suppression in the U.S., including excessive fuel buildups, stagnant dog-hair stands, increased disease and insect infestations, less diversity and numbers of wildlife, and ultimately, devastating wildfire conflagrations. These outcomes are symptoms of a general deterioration in forest health in affected areas. Compared to presettlement times, current forests appear denser, have many more small-diameter trees and fewer large trees, and support greater quantities of surface and canopy fuels.

The forests and wild areas of the U.S. are the result of a long history of disturbance (such as fire) and also of human use. Most north American plant species are adapted to periodic fire recurrence and humans have manipulated forest rangeland environments with fire, cutting, and other cultural activities. Fire has served humankind as a valuable tool; but we also know too well that unbridled fire can wreak havoc on our best-laid plans for enjoying both tangible and intangible products from the forest.

Recently, the use of fire has achieved credibility as a land management tool for achieving a variety of objectives. Under carefully prescribed conditions, fire has been used to reduce fuels, prepare seedbeds, control plant diseases, remove undesirable plant species, restore ecosystems, and improve wildlife habitat. Even so, surprisingly little is known of the relationship between fire and its effects, including impacts on air quality.

Smoke from fire contributes to regional haze and can adversely affect commerce and human health. On the other hand, fire may be an indispensable tool to the land manager for reducing the risk from future fires as well as for restoring forest health in many areas of the western U.S. Thus an emerging conflict is taking shape between the desire for clean air versus the inevitable and intentional ignition of the nation's wildlands. Further, tightening of air quality restrictions could inadvertently lead to more smoke and haze as a consequence of greater limitations on prescribed fire.

Fire Impacts on Air Quality

The Grand Canyon Visibility Transport Commission report summarizes conveniently in one document the effects of fire on air quality, especially from a visibility standpoint. According to this report, "emissions from fire (wildfire and prescribed fire) are an important episodic contributor to visibility-impairing aersols, including organic carbon, elemental carbon, and particulate matter." The report also includes important gaps in our knowledge that can be addressed through future research.

The chemistry of smoke is complex and as yet incompletely specified, although the distribution of particle sizes is better known. The human health impacts from fire emissions aren't understood very well, although increased levels of fine particulate matter have been associated with higher levels of absenteeism, illness, and premature death. Better information is needed though the potential downside seems clear. We know that regional haze can lead to aircraft, marine vessel, and highway deaths in the short-term; long-term impacts of prolonged exposure haven't been studied conclusively.

Regional haze from fires usually doesn't garner the same attention as subdivisions aflame or massive evacuations. Even so, according to news reports the haze from the Florida fires was "visible on satellite pictures from space and evident 200 miles out into the Atlantic Ocean ... causing health problems and curtailing outside activities," (USA Today 6/26/98). Closer to home, in 1994 an estimated 1.35 million tons of fine particulate matter was emitted from 65,700 fires that burned 3.8 million acres of Federal land. During these incidents several northwestern U.S. communities experienced smoke pollution episodes exceeding EPA standards adopted to protect human health. The downwind smoke plume from these northwestern U.S. fires was visible 150 miles away.

Tradeoffs between Wild- and Prescribed Fires

In any given year anywhere from 1 to 7 million acres of forests and rangelands may burn by wildfires. These fires may have the greatest impact on visibility in all airsheds, but especially in Class I areas mandated by Congress for special air quality protection. Further, increased visibility impairment by fire is likely to exceed any potential visibility improvements made possible by regulation of emissions from other sources.

The economic impact of wildfires can be substantial. In this decade we have had several $1 billion fire seasons. Although the losses from the 1998 Florida fires may not be known for some time, I have heard cost and damage estimates ranging from $300,000 to $.5 billion. The Oakland Hills fire in 1991 destroyed 3,000 homes, killed 25 people, and produced over $2 billion in costs and losses.

Of the elements comprising a fire's environment (fuel, weather, and topography), only fuels can be managed effectively to reduce the severity of eventual wildfires. The vast variety of fuel treatments fall into the following broad categories: disposal on site (e.g., burning), redistribution on site, physical removal, vegetation type conversion, and isolation. The types of fuel treatments that fall into these various categories can be quite numerous, e.g., hand piling, tractor piling, mechanical crushing or mastication and burning, dozer chaining, jackpot burning, chemical desiccation and burning, to name just a few.

Recently Federal agencies with fire management responsibilities have embarked on an ambitious expansion in fuel treatment programs, with emphasis on prescribed fire and mechanical thinning. This effort is part of a larger attempt to restore and maintain ecosystem health while providing for public and firefighter safety. Reductions in wildfire costs are part of this ambitious agenda although many uncertainties remain about the magnitude of savings achievable. The agencies have identified 95 million acres of public land in need of hazardous fuel reduction, primarily in the western states. Currently, agencies are treating about 2 million acres annually; projections call for expansions to 3-6 million acres annually over the next decade. These projections are speculative but some suggest that fuel accumulations may continue to stockpile, even with the planned expansions in fuel reduction programs.

Prescribed fire is receiving much attention because it mimics natural fire processes and treatment costs are relatively low compared to other alternatives. Pre-

vious studies in California have documented that prescribed fires can produce comparable fuel hazard reduction but at 1/10 the cost per acre as mechanical treatments. At the same time, intentional burning does require skilled staff and reliance on suitable fuel moisture and wind conditions during burn execution. Escapes can be costly and and even modest increases in prescribed fire applications could significantly degrade air quality in a region. These risks can be mitigated through sound planning and professional execution, but these same risks cannot be eliminated completely.

Ultimately a combination of mechanical removal followed by prescribed fire may be the optimal treatment for many areas, especially those located at safe distances from human population centers. In such cases, the mechanical treatment could be used to prepare the fuelbed for safe burn execution while also providing potentially useful raw materials for wood products. Unfortunately, in many areas throughout the rural U.S. markets aren't well developed for the small diameter trees and removable biomass that add to fire hazards when left behind in the forest. Further, the combination of mechanical plus fire treatments may not be feasible in park and wilderness areas. Access to these areas may be difficult and use of mechanized equipment may not be practical nor acceptable (administratively or socially) in these areas, many of which coincidentally may be designated for Class I protection. Finally I am finding through ongoing research for the USDA Forest Service that there are important knowledge gaps associated with efforts to reduce wildfire severity through prescribed fire and mechanical thinning.

Thus no single treatment is a panacea or will work in all situations, but each can play an important role if carried out in concert with a systematic and integrative planning process. In most landscapes a combination of treatments will likely be required, rather than relying on one single treatment. Each proposed treatment needs to be evaluated on the basis of relative advantages and disadvantages compared to overall land management objectives for the area and relative costs associated with treatment alternatives.

Other potential solutions look beyond the technology of fuel hazard reduction. Promising examples include conversion of forest biomass to ethanol, creation of defensible space around home-sites and subdivisions, and citizen slash-mulching programs. With adequate incentives, community partnerships can be formed with industry and government to develop sustainable forestry initiatives that reduce fuel hazards while reviving the forest products sector. Another possibility involves forestry stewardship projects that promote fire-safe environments while providing a sustainable base of local employment. Last year Dr. Dennis Lynch, now Professor Emeritus at Colorado State University appeared before this Subcommittee to promote stewardship contracts for forest restoration on national forest lands. I refer you to his written testimony before the Subcommittee on March 18, 1997 for further details.

Ongoing Efforts and Information Needs

The projected expansion in fuels treatment programs has spawned the recognition of many uncertainties and information gaps associated with fuel treatment and wildfire management. The Federal Fire Science Initiative is an interagency collaborative effort aimed at bolstering fuels management research. Fire managers have long recognized the importance of fuels in managing a fire's environment, but relatively little emphasis had been directed toward understanding the scope and breadth of problems related to implementing a fuels management program. The Federal Fire Science Initiative represents a first attempt to address these problems programmatically on an inter-agency basis.

Many information gaps will remain even after the Initiative is completed. For example, it will be some time before we are able to predict relationships between fuel treatment expenditures and anticipated reductions in wildfire suppression costs. Other voids will relate to the optimal balance between wild and prescribed fires, especially as related to managing visibility and human health impacts from wildland combustion.

The Western Forest Fire Research Center (WESTFIRE) which I direct at Colorado State University has an established capability for collaborative research that assists agencies in answering questions about fire and fuels management. For example, a previous project assisted the Department of Interior in evaluating fuel treatments and management practices capable of reducing the likelihood of large fires. Another project assisted the National Park Service in identifying contributors to high versus low cost prescribed fire projects, including reasonable ranges on expenditures for projects of varying size. We estimate that the NPS saved several hundreds of thousands of taxpayer dollars by screening wasteful or inefficient projects. In the future we hope to assist agencies and publics by contributing to better understanding of

the scope and magnitude of wildfire problems throughout the U.S., so that efforts can focus on high-risk areas. We hope to do this by developing models and action plans that mitigate threats before fires occur in these high-risk areas.

Conclusions

Ultimately solutions to wildfire management problems will require a coalition of diverse interests working toward solutions at the local levels. Scientists, environmentalists, businesses, and local leaders will need to reach consensus on necessary combinations of treatments that will satisfy human needs without compromising clean air mandates and requirements. Stewardship projects that sustain local community employment bases while providing for a cleaner environment certainly deserve additional consideration.

Perhaps the biggest task involves educating the nation's population about the importance of fire and forest management. Fires have burned in north American forests for thousands of years. By contrast, forests have been managed in our fire environments for only a short time period. Many residents have not come to grips with the risks of living with fire, in spite of the evidence that our forests have burned with regularity. If past experience is any indicator, we are learning that we cannot keep fire out of our forests forever. The trick then is to manage the forest so that we can safely endure and learn from fire's consequences. More tolerance will be required for fire in the forest and prescribed smoke in the atmosphere. Revisions in air quality standards may need to be considered—but the largest obstacle may be our own unwillingness to revise how we fulfill human wants and needs from the forest environment.

This concludes my testimony. I will be pleased to answer any questions from Subcommittee members.

CURRICULUM VITAE (ABBREVIATED)

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Specialization: Fire management, fuel inventory and assessment, fire risk assessment, integration of wild- and prescribed fire decisions into ecosystem management

Education: A.B. Mathematics, University of California, Berkeley 1969
M.S. Wildland Resource Science, U.C., Berkeley 1973
Ph.D. Wildland Resource Science, U.C., Berkeley 1977

Awards, Honors: Faculty Minority Distinguished Service Award, Colorado State University, 1998
Administrative Intern/Fellow, Colorado State University, 1990-91
NATO Fellow, 1984-86

Experience: *Interim Associate Provost for Undergraduate Studies,* Colorado State University, 1993.

Interim Associate Vice President for Academic Affairs, Colorado State University, 1992-93.

Director, Western Forest Fire Research Center (WESTFIRE), Colorado State University, 1992-present.

Acting Director, Center for Applied Studies in American Ethnicity, Colorado State University, 1992-93.

Assistant Vice President for Academic Affairs (Intern), Colorado State University, 1990-91.

Professor, Department of Forest Sciences, 1986-present.

Visiting Professor, Wildland Fire Management, College of Forest Resources, University of Washington, Seattle, 1987-88.

Associate Professor, Department of Forest and Wood Sciences, 1980-86.

Assistant Professor, Department of Forest and Wood Sciences, 1977-79.

Staff Researcher, Department of Forestry and Conservation, University of California, 1977.

Consultant, Forest Warthman and Associates, Palo Alto, California, 1977.

Research/Teaching Assistant, Department of Forestry and Conservation, University of California, 1974-76.

Research: Principal Investigator or co-PI on 43 research projects in the past 21 years ($2.5 million), primarily with public land agencies with fire management responsibilities.

Publications: 67 total, including 20 invited presentations

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July 13, 1998

STATEMENT OF GREG E. WALCHER, PRESIDENT AND EXECUTIVE DIRECTOR, CLUB 20

Introduction:

Chairman Chenoweth, we are grateful to you for scheduling this hearing on a matter we believe is of great importance to the Rocky Mountain West in general, and to Western Colorado in particular. I also want to emphasize how much we appreciate the hours of work you and your staff, and the other Committee members, have put in on related issues over the past few months. As you know so well, the decisions made by the managers of our public lands have a tremendous impact on the communities in our states, and on the quality of life in our region. Prescribed fire is a vitally important management tool, and will see increased use in the coming years. That makes it even more important that we give careful thought to its affect on air pollution and regional haze.

About CLUB 20:

CLUB 20 is an organization of counties, communities, businesses, individuals and associations in Western Colorado. The group is organized for the purpose of speaking with a single unified voice on issues of mutual concern. Its activities include marketing and advertising, public education, promotion, meetings and events, and political action.

Founded in 1953 by Western Slope business leaders, CLUB 20 was originally organized to get rural roads paved. The State of Colorado had been spending only 10 percent of its highway funds west of the Continental Divide, where more than half the roads were. It finally became clear that only by agreeing on a single priority list could all our communities be heard. It worked. Within a few years, the State was spending 37 percent of its highway funds west of the Divide, and by the end of the 1950s most of the major highways on the West Slope had been paved.

The organization continued to function, incorporating in 1955, and began working on other issues of concern to all Western Slope communities. Its activities today include water, agriculture and natural resources, energy, economic development, public lands, highways, air service, tourism, trails, recreation, and telecommunications.

CLUB 20 policy is made by a Board of Directors, which includes voting membership for each county on the Western Slope. All counties have an equal voice, their delegations elected by the members in each county. Management decisions are made by an Executive Committee composed of elected officers. A vote of the full Board is required for CLUB 20 to take a position on any issue.

The engines that drive CLUB 20 are the standing committees. Most Western Slope policy originates with these committees, all with broad geographic representation. These panels include Natural Resources and Public Lands, Transportation, Economic Development, and Tourism in addition to subcommittees on water and agriculture. Membership is open to all CLUB 20 members, and the groups recommend policy to the full Board of Directors.

For over four decades, this organization of all the communities of Colorado West has been providing a forum for the discussion of complex and controversial issues, and representing the interests of the Western Slope at all levels of government. The group's membership is broader and more diverse than at any time in history, and still growing each year. The CLUB 20 leadership is convinced that, by working together to achieve a stronger voice, the Western Slope can help shape the destiny of Colorado and the West.

The EPA's new regional haze regulations are potentially disastrous for our region, especially in the threat they pose to proper and wise management of the public lands. CLUB 20 strongly supports the use of prescribed fire by the Forest Service, under carefully controlled circumstances, and we fear the new Federal process will create a terrible series of problems.

The Grand Canyon Process:

CLUB 20 participated in the Grand Canyon Visibility Transport Commission process in good faith for four years. Our organization held a seat on the Commission's advisory committee and attended several meetings of the group, trying to persuade that body to recommend state policies that were based upon a sound interpretation of the science.

The Grand Canyon study took over four years to complete, and cost the taxpayers some $8.5 million. It was authorized by Congress, and the entire effort was pushed strongly by the EPA. Yet after that report was issued, not only have its recommendations been ignored by the EPA, but the scientific study itself has been complete sidestepped. The study was incredibly thorough and the technology used was impressive. Congress should be proud, indeed, of the skill with which technicians can sample the air and determine what is in it and pinpoint where it came from.

For the first time, we had the ability to determine the actual causes of the haze in the Grand Canyon and other Class I areas throughout the Colorado Plateau.

There was just one problem with the study, its conclusions did not support the hidden political agenda of the EPA and its allies. So when the Western governors began meeting to determine state and regional solutions based on that study, EPA stepped around them. With no warning whatsoever to the governors, or any of the other players in the Grand Canyon study process, EPA published its own national rules. The rules came out of nowhere, apparently not even from the same EPA officials involved in the Grand Canyon study. Nevertheless, the rules would supersede all the four years of activity of the study, ignore the study itself, pay no mind to the $8.5 million already spent, and begin from the same phony assumptions and junk science we worked so hard to overcome before.

These regulations could cause serious economic problems in my state, and they will not help solve the visibility problems. Coloradans never envisioned when we went into this process that our State would be penalized because it has the cleanest air in the country. But that may be the result if EPA gets its way.

The EPA's Proposed Regulations:

Part of CLUB 20's original reservations about the Grand Canyon Commission recommendations were expressed a year ago, and are being proven accurate now. We expressed to Governor Romer a strong fear that the EPA would implement Federal regulations enforcing ill advised and economically indefensible policies. We were assured that the Grand Canyon Commission would continue to be a state and regional process, involving affected stakeholders, and that final solutions would be handled at the state level. But the EPA's new proposed national haze and visibility regulations which supersede that regional process and ignore the Commission's scientific study renders that lengthy and costly process futile, and proves our fears were well founded. We were correct to suspect at the beginning of that process that hidden agendas were at work.

The proposed regulations unfairly impact the Rocky Mountain West (which already boasts the nation's cleanest air) by requiring it to achieve unattainable levels of reductions. We cannot solve haze problems not created in Colorado at the state level. That's why a regional approach can be the only answer. But the EPA proposes reductions in every state, and denies us any means of achieving them. Such regulations would severely restrict economic activity and retard future growth in areas with already-clean air, while producing very little effect on polluting areas which are the source of much of the region's haze, as demonstrated by the Grand Canyon Study.

The Grand Canyon Study identified the major causes of regional haze on the Colorado Plateau, and the results were not vague. The major contributors of year-round haze were Southern California air pollution and unregulated Mexican stationary sources. The major contributor of episodic haze was clearly identified as prescribed fires on Federal lands. Yet the EPA regulations have no effect on Mexico at all, nor do they provide any means for Colorado to address pollution generated in California. And most importantly, they specifically exclude Federal land managers from any responsibility for the pollution generated by prescribed fires.

Without sound science to determine a baseline of naturally occurring sources of haze in each region, it is impractical to set uniform standards of haze reduction that may be technologically and economically unfeasible. To require the same total amount of reduction in each state, rather than the same percentage, is patently unfair to the West, and will have essentially no impact on the states east of the Appalachians. If Congress is serious about cleaning up the nation's haze and solving the visibility problems, it should start this process in Los Angeles or Pittsburgh., not in Western Colorado.

CLUB 20 strongly objects to the proposed EPA visibility regulations as unfair to the West, scientifically and economically indefensible, and without clear authority. We believe it is especially important for this Committee to recognize that the legal authority for these regulations is questionable. Congress authorized and funded the Grand Canyon Visibility Transport Commission, with a clear intention that it would result in regional solutions to a Colorado Plateau regional problem. It was never the intent of Congress to authorize new national regulations of this kind, nor was it the intent that the scientific study ($8.5 million) would be completely ignored by an EPA with a political agenda.

Federal Land Management and Prescribed Fires:

One of the most dangerous aspects of the proposed rules is that they continue to essentially exempt Federal land managers from responsibility for the pollution generated by prescribed fires. And yet, while excluding fires on Federal lands, the rules

still require a total across-the-board reduction in the statewide level of smoke. This would have the effect of causing drastic regulation of existing sources of haze, in order to offset the major source, the smoke created by Federal land managers.

You will remember that EPA Administrator Carol Browner, in testimony before a similar hearing last year, denied that Federal land managers are exempt from the regulations. Rather, she said, the data from those fires is excluded. It is a distinction without a difference to a state government required to reduce its haze by one "deciview," regardless of the source. Until the EPA has defined the baseline of naturally occurring sources, and included in that baseline an amount of smoke generated by prescribed fires—which amount the EPA cannot possibly predict—her assurances ring hollow. The fact is that the exemption of Federal fires, or the exclusion of their data, has the effect of creating a conflict between Federal land managers and other sources of haze.

CLUB 20 believes fire can be an important part of management of public lands, and we cannot afford the unnecessary conflict between proper land management techniques—including fires—and important economic interests. The us-against-them mindset that will inevitably result is counterproductive, and will endanger the proper management of Federal lands. There are numerous areas in Western Colorado where the fuel overload has reached critical conditions. There is no doubt that much of this material must be removed or it will burn in a more devastating wildfire in the near future.

Proper Federal land management means the larger materials, which burn longer and smoke more, should be removed mechanically before fires are set. By coincidence this is the same material for which there is a viable economic market. Yet the Forest Service continues to manage the forests in a manner that precludes sale or any removal of those materials, and the fuel loads continue to increase yearly. This Committee heard testimony recently from Interior Secretary Babbitt that as much as half of all the forests in America are unsuitable for burning until some mechanical clearing has taken place. Yet the Administration has effectively closed down access for that purpose by Executive Order, and the Forest Service budgets continue to reduce such clearing every year. CLUB 20 believes a combination of mechanical removal and prescribed fires are essential to the restoration of healthy forests in Colorado. The EPA regulations may serve to prevent that strategy because of its conflict with other economic interests that contribute to the haze. Trees do not vote, nor do they make campaign contributions. So if the EPA forces a showdown between proper public land management and continued industrial activity, the forests will be the losers. The only solution is to apply the same rules to all haze contributors, and to solve these problems at the state and regional level, as Congress intended.

CLUB 20 supported legislation at the State level for the past two years that would have placed the State Health Department in the decision loop on such prescribed fires. Almost unique among Federal statutes, the Clean Air Act requires Federal land managers to obey State laws on emissions. This legislation would have allowed the State to examine Federal decision records to determine whether less-smoke alternatives had been fully considered before prescribed fires are set. It passed the Colorado Legislature overwhelmingly two years in a row, only to be vetoed by Governor Roy Romer both times. The veto was irresponsible and inexcusable, but the writing is on the wall. Federal land managers are going to be held accountable for their emissions.

In short, CLUB 20 supports prescribed fire as a proper management tool for regenerating the natural environment, but more consideration should be given to smoke management as prescribed fires are planned, and methods for reducing emissions by clearing appropriate materials in advance should be used. A simple amendment to the Clean Air Act should be adopted by Congress to require land managers to reduce emissions to the extent practicable. That would end the Federal-state argument over responsibility for such fires, and allow the continuation of important fire management. At the same time, by reducing the haze caused by such fires, it would end the conflicts between other economic activity and proper forest management. When EPA Administrator Browner says this "does not have to be a fight between clean air and good forest management," she is right. It does not have to be. But her proposal from EPA, combined with the executive order limiting forest access, and the constantly shrinking forest timber budgets, make it exactly that kind of fight.

The Agriculture Problem:

In the agricultural areas of the Western Slope, the EPA regulations pose a very serious threat to the farming and ranching industry. Most of these communities have no major local sources of haze—none at all. The episodic haze created by fire

is the only significant source of local visibility impairment in many of our counties. Thus, when Federal land managers set prescribed fires the haze can be serious, and is very noticeable. So if the EPA rules force a reduction in those communities, but continue to exclude the data from prescribed fires, agricultural burning may be the only remaining source to regulate. And regulation of agricultural burning is a major threat to the existence of the industry in those areas.

It is not possible to grow crops and weeds in the same field at the same time. Weeds must be controlled if farming is to succeed. They must either be burned, or killed with chemicals. It is ironic, to say the least, that the same zealots who are pushing the regional haze rules would also ban such chemicals, leaving farmers with no chance of successful farming. There is no public policy reason to create such conflicts. The EPA's proposed regulations would divide the economic interests of this nation in an unproductive and harmful way, while accomplishing no real solution to the problem.

The Local Government Problem:

The same kinds of conflicts are now becoming a major problem for local governments throughout the West, including many of those CLUB 20 represents. Several Western Colorado counties are at this moment struggling with local regulations aimed at smoke and haze management. My own home county (Mesa County) is in the process of implementing rules affecting wood-burning stoves, as many other counties have already done. Those who think pollution advisories and voluntary no-drive days are for the big cities should know that many mountain communities live with the same temperature inversion problems. Commonly the inversions create the same kind of haze problem in the Vail Valley, for example, as is common in Denver.

Local governments are taking serious actions to solve these problems, based on sound science and on the real sources of the haze in those areas. No national cookie cutter approach can be successful because the sources are not always the same. The EPA regulations add an especially difficult factor to the mix, because counties will feel increased pressure to adopt local rules to make up for Federal actions they cannot control. Such regulations have an unquestionable impact on local economies, and in many areas may produce no result in visibility improvement. Yet counties and cities throughout the region are feeling enormous pressure to implement stringent air quality standards.

In addition, Colorado still labors with state law requiring county sheriffs to "control and extinguish" all fires on public lands. There is no discretion to let such fires burn, even when Federal land managers have reached such a conclusion. Local experts often can reach a consensus on letting some fires burn in certain areas, but such a decisions leaves county sheriffs hopelessly in the middle of a legal dilemma. While our State works on legislation to update the outmoded law, better cooperation between the Federal and state government would be extremely helpful.

Conclusion:

The point of this discussion ought to be cleaning up dirty air and reducing the haze problem. Since the EPA rules will not accomplish this, and will create the problems outlined above, they should be sidelined. Congress ought to act swiftly and decisively to stop the implementation of these regulations, and to insist that the process authorized and funded by Congress should be followed, including a direction to consider the scientific evidence of the Grand Canyon study. At the same time, Congress should act quickly to require under the Clean Air Act that Federal managers, in proposing prescribed fires, should reduce the resulting emissions to the extent possible. If there is a large cost associated with better land management, as the Grand Canyon Study hinted, then Congress should be prepared to pay that cost before it authorizes the Forest Service to torch the Western landscape and darken our skies.

STATEMENT OF JOHN S. SEITZ, DIRECTOR, OFFICE OF AIR QUALITY PLANNING AND STANDARDS, OFFICE OF AIR AND RADIATION, U.S. ENVIRONMENTAL PROTECTION AGENCY

Madame Chairman, Members of the Subcommittee, thank you for inviting me to discuss issues surrounding fire management and the Environmental Protection Agency's (EPA's) proposed rule to improve visibility and reduce regional haze in our national parks and wilderness areas.

As you know, in July 1997, EPA revised the national ambient air quality standards (NAAQS) for ground-level ozone and particulate matter. These updated standards have the potential to prevent as many as 15,000 premature deaths each year, and up to hundreds of thousands of cases of significantly decreased lung function

and aggravated asthma in children. In the review of the standards, EPA concluded that the most appropriate way to address the visibility impairment associated with particulate matter would be to establish a regional haze program in conjunction with setting secondary PM standards equivalent to the suite of primary standards. EPA proposed new regulations addressing regional haze in July 1997.

Madame Chairman, as you know, virtually all of our national parks and wilderness areas are subject to some degree of regional haze visibility impairment. This fact has been extensively documented by monitoring conducted since 1978 by the National Park Service, EPA, the United States Forest Service, and other agencies. Haze obscures the clarity, color, texture, and form of what we see, and it is caused by natural and anthropogenic pollutants that are emitted to the atmosphere through a number of activities, such as electric power generation, various industrial and manufacturing processes, car and truck emissions, burning activities, and so on. These emissions often are transported long distances affecting visibility in certain parks and wilderness areas that have been identified by Congress for protection under the Clean Air Act. These areas are known as "Class I" areas.

We also know that the causes and severity of regional haze vary greatly between the East and the West. The average standard visual range in most of the Western U.S. is 60 to 90 miles, or about one-half to two-thirds of the visual range that would exist without man-made air pollution. In most of the East, the average standard visual range is 15 to 30 miles, or about one-sixth to one-third of the visual range that would exist under natural conditions. One of the major challenges associated with this problem is that these conditions are often caused not by one single source or group of sources near each park or wilderness area, but by mixing of emissions from a wide variety of sources over a broad region.

Background

The Clean Air Act established special goals for visibility in many national parks, wilderness areas, and international parks. Section 169A of the 1977 Amendments to the Clean Air Act sets a national goal for visibility as the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." This section also calls for EPA to issue regulations to assure "reasonable progress" toward meeting the national goal. EPA issued regulations in 1980 to address the visibility problem that is "reasonably attributable" to a single source or group of sources. These rules were designed to be the first phase in EPA's overall program to protect visibility. At that time, EPA deferred action addressing regional haze impairment until improved monitoring and modeling techniques could provide more source-specific information, and EPA could improve its understanding of the pollutants causing impairment.

As part of the 1990 Amendments to the Clean Air Act, Congress added section 169B to focus on regional haze issues. Under this section, EPA was required to establish a visibility transport commission for the region affecting visibility in the Grand Canyon National Park. EPA established the Grand Canyon Visibility Transport Commission in 1991 to examine regional haze impairment for the 16 mandatory Class I Federal areas on the Colorado Plateau, located near the Four Corners area of New Mexico, Colorado, Utah and Arizona. After several years of technical assessment and policy development, the Commission completed its final report in June 1996. The Commission's recommendations covered a wide range of control strategy approaches, planning and tracking activities, and technical findings which address protection of visibility in the Class I areas in the vicinity of the Grand Canyon National Park.

Under the 1990 Amendments, Congress required EPA to take regulatory action within 18 months of receiving the Commission's recommendations. EPA proposed the regional haze rules in July of last year in conjunction with the final national ambient air quality standards for particulate matter. In developing the proposed regulations, EPA took into account the findings of the Grand Canyon Visibility Transport Commission, as well as findings from a 1993 National Academy of Sciences Report and information developed by the EPA Clean Air Act Advisory Committee (CAAAC).

The National Academy of Sciences formed a Committee on Haze in National Parks and Wilderness Areas in 1990 to address a number of regional haze-related issues, including methods for determining the contributions of manmade sources to haze as well as methods for considering alternative source control measures. In 1993, the National Academy of Sciences issued a report entitled, "Protecting Visibility in National Parks and Wilderness Areas" which discussed the science of regional haze. Among other things, the Committee concluded that "current scientific knowledge was adequate and available control technologies exist to justify regu-

latory action to improve and protect visibility." The Committee also concluded that progress toward the national goal will require regional programs operating over large geographic areas. Further, the Committee felt strategies should be adopted that consider many sources simultaneously on a regional basis.

In developing the proposed regional haze rule, EPA also took into consideration recommendations and discussions related to regional haze from the CAAAC Subcommittee on Ozone, Particulate Matter, and Regional Haze Implementation Programs established under the Federal Advisory Committee Act (FACA). The Subcommittee included wide representation from states, local and tribal governments, industry, environmental groups and academia. This Subcommittee met regularly over the past two and one-half years to consider a variety of implementation issues associated with the revised national ambient air quality standards and the proposed regional haze rule. It also focused discussions on how best to develop more cost effective, flexible strategies for implementing these requirements.

EPA's Proposed Regional Haze Rule

EPA's proposed regional haze rule is designed to establish a program to address visibility impairment in the Nation's most treasured national parks and wilderness areas. In this rule, EPA is proposing to improve visibility, or visual air quality, in 156 important natural areas found in every region of the country. These areas range from Grand Canyon, Mesa Verde, and Bryce Canyon in the southwest; to Yellowstone, Sawtooth, and Mt. Rainier in the northwest; to Shenandoah and the Great Smokies in the Appalachians; to Yosemite, Sequoia, and Point Reyes in California; to Acadia, Lye Brook, and Great Gulf in the northeast; to the Everglades and Sipsey Wilderness in the southeast; to Big Bend, Wichita Mountains, Badlands, and the Boundary Waters in the central states. More than 60 million visitors experience the spectacular beauty of these areas annually. The proposed regional haze rule, in conjunction with implementation of other Clean Air Act programs, would significantly improve visibility in these areas. Further, EPA expects visibility to improve well beyond these areas, across broader regions of the United States.

The regional haze proposal establishes a requirement for states to implement strategies to meet "reasonable progress targets" for improving visibility in Class I areas. These targets would be designed to improve visibility on the haziest days and to prevent degradation of visibility on the clearest days EPA is proposing to express the progress targets in a way that provides flexibility from one region of the country to another by using the "deciview" as a measurement. The deciview index expresses the overall effect on visibility resulting from changing levels of the key components of fine particulate matter (sulfates, nitrates, organic and elemental carbon, soil dust) which contribute to the degradation of visibility. These components are routinely measured by an interagency visibility monitoring network that has been in place for several years in national parks and forests. Like the decibel scale which is used to measure sound, the deciview index measures perceived changes across the range of possible conditions (for example, from clear to hazy days). A change of one deciview is considered to be perceptible by the average person. Visibility monitoring data show that over the past several years, visibility impairment on the worst days ranges from 27 to 34 deciviews in eastern locations and 13 to 25 in western locations. A deciview of zero represents the absence of natural or man-made impairment in visibility.

EPA's proposed presumptive "reasonable progress target" has two elements: (1) for the 20 percent of days having the worst visibility, the target is a rate of improvement equal to 1.0 deciview over either a 10-year or 15-year period [EPA has solicited comments on each option]; and (2) for the 20 percent of days having the best visibility, the target is no degradation. For example, in a place like the Shenandoah National Park, where ambient fine particle levels for the worst days average 20 micrograms per cubic meter, a reduction of up to 2 micrograms per cubic meter would be needed to achieve a 1 deciview improvement. Whereas in the Grand Canyon, where ambient fine particle levels for the worst days average about 5 micrograms per cubic meter, a reduction of up to one-half a microgram would be sufficient to achieve a 1 deciview improvement.

EPA's proposed rule also provides important flexibility to states by allowing them to propose alternate progress targets for EPA approval. An alternate target can be proposed for a Class I area if the state can demonstrate that achieving the presumptive targets would not be reasonable. States can consider such factors as the availability and costs of controls, the time necessary for compliance, and the remaining useful life of the air pollution sources in determining whether achieving the target would be reasonable. Alternatively, some states may find they can go further and achieve up to a 2-3 deciview improvement at some parks or wilderness areas, or that programs already adopted or in the process of being implemented will achieve

such an improvement. The proposal suggests that states consult with other contributing states, the Federal land managers, and EPA in developing alternate targets.

Last month, President Clinton signed the Transportation Equity Act for the 21st Century (TEA-21) which, among other things, included a provision to ensure that states' control strategies and plans for regional haze are harmonized with those required for PM_{25}. This dovetails with the goal expressed in our proposed rule to coordinate the state plan deadlines under the regional haze rule with those required for meeting the PM_{25} standard. EPA's regional haze proposal also encourages states to work cooperatively to develop modeling approaches, emission inventories, and regional implementation strategies.

EPA also proposed that either every three or five years after the adoption of their initial control strategies and plans (EPA has solicited comment on both options), states would review progress in each Class I area in relation to their established progress targets. States would also be expected to include a plan for expanding the current visibility monitoring network so that it is "representative" of all 156 Class I areas. EPA is working with the states and Federal land managers to coordinate this network expansion with the deployment of the new monitoring network for the national ambient air quality standard for fine particulates. EPA is evaluating ways to efficiently use resources such that existing and new visibility monitoring sites can also provide information about transport of fine particulate pollution as it relates to the newly revised national ambient air quality standards. EPA expects to deploy more than 70 new visibility monitoring sites by December 1999.

Also as part of their initial plan submittal, states would need to address important technical activities to pursue on a regional basis, such as improvements in particulate matter emission inventories and modeling capabilities, as well as plans for assessing sources potentially subject to best available retrofit technology (or BART). As specified in the Clean Air Act, sources potentially subject to BART are any sources, from one of twenty-six groups of industrial "source categories," which began operation between 1962 and 1977, and which have the potential to individually emit 250 tons per year or more of any pollutant that impairs visibility. The twenty-six source categories include such sources as electric utilities, smelters, petroleum refineries, and pulp and paper mills. If the state determines that a source contributes to visibility impairment in any Class I area, a BART determination would include an examination of the availability of control technologies, the costs of compliance, the energy and non-air environmental impacts of compliance, any pollution control equipment in use at the source, the remaining useful life of the source, as well as the degree of improvement in visibility as a result of compliance. As with all aspects of this proposal, we solicited comments on how to address the BART requirement and will take these comments into account in developing the final rule.

Under the proposed regional haze rule, state plans would provide for adoption of emissions management strategies concurrently with other strategies for $PM_{2.5}$ nonattainment areas. These submittals would include measures to reduce emissions from sources located within the state, including provisions addressing the BART requirement, if applicable. I would like to make two important points about the emissions reduction strategy. First, it can take into account air quality improvements due to implementation of other programs, such as the acid rain program, mobile source programs, or the national ambient air quality standards program. And second, the emissions reduction strategy can include a mix of strategies that address emissions from both stationary, areas and mobile sources. EPA's proposed rule does not focus on stationary sources only, as some have claimed. The proposed planning framework provides states with flexibility in designing their overall program for improving visibility.

Process for Developing the Final Regional Haze Rule

EPA Administrator Browner signed the proposed haze rule on July 18, 1997. At that time, we made the proposed rule and other related materials available to the public on the Internet and through other means. It was published in the *Federal Register* on July 31. EPA held a public hearing that I chaired in Denver, Colorado on September 18. In response to requests by the public, we extended the public comment period by about six weeks, to December 5, 1997. We have held other sessions around the country to discuss the regional haze proposal, including a national satellite broadcast for all state and local air pollution agencies during which we discussed the proposal and answered questions from the viewers. I have also actively participated in meetings of the Western Regional Air Partnership, a follow-up organization to the Grand Canyon Visibility Transport Commission that is co-chaired by Governor Shutiva of the Pueblo of Acoma and Governor Leavitt of Utah. This is a voluntary organization established by several states and tribes which EPA will be working with to address western visibility issues.

Issues Surrounding Fire in Forest Management and EPA's Proposed Regional Haze Rule

EPA recognizes that fires have always been a natural part of forest ecosystems. Forest fires release important nutrients from flammable "fuels" or debris on the forest floor into the soil. Some plant species are dependent on fire for further reproduction. By reducing the undergrowth and debris on the forest floor, trees typically grow taller and healthier since there is less competition by other surrounding plants for nutrients. For many years, fires were aggressively suppressed in our Nation's forests, resulting in a number of problems, including long-term damage to the health of trees and increased likelihood of catastrophic wildfires. The absence of fire effects has allowed plant species (e.g., trees and shrubs) that would normally be eliminated by fires to proliferate, vegetation to become dense and insect infestations to go unchecked. We now believe that smaller, periodic fires that are well managed help reduce the risk of catastrophic wildfires.

In recognition of the serious problems caused by years of fire suppression, the U.S. Departments of Agriculture and the Interior jointly released the results of a Federal Wildland Fire Management Policy and Program Review in 1995. This report recognized the critical role fire plays in maintaining healthy wildland ecosystems and endorsed a significant increase in the use of planned, or managed, fire as a land and resource management tool. The Departments of Agriculture and the Interior adopted a policy that all future plans to manage fires on wildlands will incorporate public health and environmental considerations, including air quality. EPA also participated in developing the 1995 Program Review and endorsed its recommendations.

Unplanned wildland fires, such as catastrophic wildfires, can pose serious threats to property, and public health and safety. Wildfires cause extended periods of intense smoke, which contains particulate matter that can cause serious health problems, especially for people with respiratory illness. They can also affect visibility, a particular concern in national parks and wilderness areas.

On the other hand, fires can be planned and managed to minimize the smoke impacts that adversely affect public health and impair visibility. This can occur through techniques such as scheduling burning during favorable wind directions and weather conditions, and controlling the amount of fuel or acreage burned. Many state agencies already use these and other management techniques to reduce air quality problems associated with wildland and prescribed fires.

As mentioned earlier, in developing a common-sense implementation strategy for the new ozone and particulate matter standards and the regional haze program, EPA used the FACA to create a Subcommittee to obtain advice from outside experts representing industry, environmental, state, local, Federal and other stakeholders. Within the Subcommittee, EPA established a special workgroup comprised of fire and air quality experts from the U.S. Departments of Agriculture, the Interior, and Defense; the National Association of State Foresters, state/local air quality agencies and others to specifically address the potential impacts of wildland and prescribed fire (e.g., smoke particles) on air quality and visibility impairment.

In May of this year, EPA issued the "Interim Air Quality Policy on Wildland and Prescribed Fires." The policy encourages all land owners/managers to work cooperatively with state and local air pollution control officials to conduct integrated planning to successfully manage ecosystem health and air quality concerns. EPA's policy outlines the basic components of smoke management plans (SMPs) and urges states to adopt and implement SMPs to mitigate the impacts of smoke on the public's health and welfare, and to prevent violations of the national ambient air quality standards and visibility impairment.

In developing this policy, EPA considered the 1996 recommendations from the Grand Canyon Visibility Transport Commission (GCVTC), which among other issues, recommended smoke management plans, and the development or improvement of other tools as means of addressing smoke impacts from prescribed burning. The "Interim Air Quality Policy on Wildland and Prescribed Fires" complements EPA's "natural events" policy issued in 1996 to address the treatment of wildfires and other natural events in meeting PM air quality standards. Under the "natural events" policy, EPA has committed not to redesignate areas as nonattainment when natural events are clearly the cause of violations of the national ambient air quality standards for PM_{10}, provided the state develops a natural events action plan to address the public health impacts associated with future natural events, such as a wildfires. Natural event action plans include public notice and education programs, actions to minimize exposure to high particulate matter concentrations, and actions to minimize particulate matter emissions from controllable sources that contribute to natural events. The "Interim Air Quality Policy on Wildland and Prescribed Fires" incorporates the same type of flexibility and does not punish states that im-

plement effective smoke management programs, yet occasionally experience unavoidable smoke intrusions.

Conclusions

In summary, we believe that EPA's regional haze rule, when finalized, will establish a framework to improve visibility in our Nation's parks and wilderness areas, as the Congress intended in the Clean Air Act. Over the past several months, we have been busy reviewing public comments and considering options for addressing the concerns of various commenters. At the request of various interested parties, including the Western Governors Association, STAPPA/ALAPCO, NESCAUM, and industry and environmental groups, we have held additional meetings to discuss issues related to the rule. I want to be clear that we still have not made final decisions on these matters. Our goal is to ensure that the proposed new regional haze requirements are implemented in a common sense, cost-effective and flexible manner.

We also want to assure compatibility between Federal land management policies and EPA air quality programs (NAAQS, regional haze, visibility, conformity, etc.). Therefore, we plan to revisit the "Interim Air Quality Policy on Wildland and Prescribed Fires" when the final regional haze rules have been promulgated and when we receive recommendations from the USDA Air Quality Task Force on how to treat air quality impacts from agricultural burning. We intend to continue working closely with state and local governments, other Federal agencies and all other interested parties to accomplish these goals.

Madame Chairman, this concludes my written statement. I will be happy to answer any questions that you might have.

STATEMENT OF JANICE MCDOUGLE, ASSOCIATE DEPUTY CHIEF, STATE AND PRIVATE FORESTRY, UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE

MADAM CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I am Janice McDougle, Associate Deputy Chief for State and Private Forestry with responsibility for fire and aviation, forest health, and cooperative forestry programs. I am accompanied by Denny Truesdale, our national Acting Director of Fire and Aviation Management. I appreciate the opportunity to testify on the relationship between the Forest Service fire management program and the proposed Environmental Protection Agency (EPA) regional haze rule.

In October 1997, Bob Joslin, Deputy Chief for National Forest System, testified before the Senate Energy and Natural Resources Committee on the agency's history in air management. He talked about our research program, our role in new permit review for regulatory agencies, and how proposed changes might affect Forest Service programs. I would like to submit his testimony for the record, in addition to my comments.

Our fire management program, including wildfire suppression and fuels reduction efforts, affects air quality. Our air quality objective is to reduce the long term cumulative smoke impacts from all types of fire. The full effect of the regional haze rule on Forest Service programs is difficult to project until a final haze rule is promulgated and each state and tribe develops its own Implementation Plan, and related smoke management plans.

We appreciate EPA's efforts to integrate wildfire suppression and prescribed fire issues in their policies. I am confident that, among EPA, the states, tribes, and land management agencies, we can balance vital public interests in clean air and fire protection. We believe that EPA is developing a common sense approach that will provide a logical context for us to carry out our goals of restoring ecosystems, caring for the land, and serving people.

Before I discuss the regional haze issue specifically, I'd like to discuss the role of fire in ecosystems, the responsibilities the Forest Service has related to air quality, and our fire management program. Then I will discuss the EPA regional haze proposal and its potential effect on our fire management program.

Fire plays an important role in ecosystems; it is a natural, inevitable part of ecosystems in most forested areas of the country. A number of forest and brush types across the United States reflect fire-adapted ecosystems. Vegetation actually needs regular fire to maintain native species diversity and to promote regeneration. Over the last one hundred years, effective fire suppression efforts have changed the frequency of fires, allowing changes in the vegetation and ecosystem function.

In the 1995 Interagency Fire Management Policy and Program Review, the U.S. Department of Agriculture and Department of Interior recognized the significant role that fire plays in these fire-adapted ecosystems, and the departments called for

a substantial increase in the use of planned, or prescribed, fire as a management tool to restore forest health.

FOREST SERVICE ROLE IN AIR QUALITY

The Forest Service has two primary responsibilities related to air quality. We protect air quality related values, including visibility, in Class I Federal Areas and manage National Forest System lands in a manner consistent with regulations implementing the Clean Air Act. A part of our Class I Area protection includes integrated air quality monitoring.

Monitoring

The Forest Service manages over 191 million acres of our nation's public land as part of the National Forest System. Included within that land base are 88 areas that Congress designated as Class I Federal Areas with special air quality protection under the Clean Air Act Amendments of 1977. Visibility is used as an indicator of particulate matter and other pollutants that are transported over relatively long distances. These pollutants can adversely affect both natural resources and human health. Formal monitoring information from all Class I Areas, which includes measures of both visibility and particulates, is used to review permit applications for new major point sources of air pollution, to determine the impacts of existing sources of air pollution, and to identify trends nationally.

Fuel Treatment

The air quality objective in our fuel treatment program is to reduce the long term smoke impacts from the combined wildfire and prescribed fire programs. Local results will vary annually, and that is why our fire management plans must be considered as part of a state's long-term strategy for regional haze in accordance with the Clean Air Act.

The Forest Service has estimated that as much as 40 million acres could be at risk of high intensity wild fire. The Administration and Congress have increased funding to reduce this fire hazard. I will submit for the record a map that shows generally where fire-adapted ecosystems are located. The acres at risk are within those fire-adapted systems, are distributed across the United States, and reflect a variety of fuel conditions. Historical fuel conditions have changed in locations where fires have been suppressed and excluded. Increased fuels result in fires that will burn with high intensity, causing watershed and other resource damage, or increasing the threat to property, firefighters, and to public safety.

Each individual forest stand has unique site specific conditions. The Forest Service currently is inventorying stands to determine the resources at risk, the fuel conditions that exist, the likelihood of a fire starting in that specific location, and the cost of treatment. The Forest Service identifies areas as high priority if the have high value resources at risk, high hazardous fuel conditions, and frequent ignitions. After assessments are completed, local managers determine the need for treatment based on local land and resource management plans, consistent with the National Environmental Policy Act, and identify specific tools needed to treat specific situations.

The Forest Service decision to ignite a prescribed fire is based on localized fuel and weather conditions and the availability of personnel and equipment. Prescribed fire plans identify the conditions and resources required to meet the desired objectives, including smoke management. If all smoke management plans are in place and the prescribed fire can be conducted consistent with those plans, the agency completes the burn and monitors the effects. If prescribed fires cannot be implemented consistently with smoke management plans, the prescribed fires are modified or postponed to meet smoke management objectives.

CHANGING EPA RULES: NATURAL EVENTS POLICY, INTERIM AIR QUALITY POLICY, AND REGIONAL HAZE

The Grand Canyon Visibility Transport Commission was chartered under authority of the Clean Air Act amendments of 1990 by EPA to look at the regional haze standards and help develop equitable implementation strategies in the Grand Canyon Area. The Commission's recommendations and the 1995 Interagency Wildland Fire Policy Review were considered in development of the EPA Natural Events and Interim Wildland and Prescribed Fire policies that implement new standards for particulate matter and ozone. Congress has endorsed the recommendations of the Commission.

When the final regional haze rule is adopted, there may need to be some modifications to the natural events and wildland and prescribed fire policies. The guidance in those policies refine the roles of land managers and regulators in response to many issues that a haze rule is likely to address. We expect that the regional haze

rule will result in regulators and land managers working more closely together. We have recognized the need to increase collaboration and are taking steps to make it happen now.

All of the EPA changes reinforce the states and tribes responsibilities for implementation of the Clean Air Act and development of programs to implement these new rules. The Federal land managers' role to protect air quality related values is to monitor, provide recommendations, and help mitigate potential problems that Federal management or other proposed actions might generate.

Natural Events Policy

EPA's Natural Events Policy was the first policy change resulting from the interagency wildland fire policy. The Natural Events Policy considers air quality impacts from wildfire as a natural event. When air quality standards are violated due to a natural event, EPA will not penalize states or tribes who develop and implement a plan to respond to health impacts and fire managers who mitigate the effects of the wildfire on air quality. This means that wildfire generated air quality problems will trigger cooperative development of emergency notification plans, appropriate suppression actions, and communication of anticipated smoke dispersal so that people can be advised of and take actions to protect their health. The policy also encourages the treatment of hazardous fuels to minimize the effects of wildfires on air quality.

Interim Air Quality Policy on Wildland and Prescribed Fires

The EPA Interim Policy on Wildland and Prescribed Fires expands on the natural events policy, applies to all wildland fires on public lands, and integrates two public policy goals: (1) to allow fire to function, as nearly as possible, in its natural role in wildland ecosystems, and (2) to protect public health and welfare by mitigating the impacts of smoke on air quality and visibility. The policy provides guidance on mitigating smoke caused by fires in the wildlands and the wildland/urban interface. It identifies the responsibilities of wildland managers and state and tribal air quality managers (air regulators) to work together to coordinate fire activities, minimize smoke, manage smoke from wildland and prescribed fires, and establish emergency action programs to mitigate any unavoidable impacts on the public.

The EPA policy allows flexibility in regulating prescribed fires and includes incentives for states or tribes to adopt and implement smoke management programs. When adequate smoke management plans exist and a prescribed fire is burning within smoke management plans, the EPA will not punish states or tribes for exceeding air quality standards.

Proposed Regional Haze Rule

Administrator Browner proposed a regional haze rule in July, 1997, and EPA is responding to concerns received during its public comment period, which closed in December, 1997. The proposed regional haze rule is designed to improve visibility in all Federal Class I Areas through efforts to achieve reasonable progress targets agreed to by states or tribes and EPA. The proposed rule expands monitoring, calls for improved inventory and modelling systems, plans emissions reduction including assessing sources that do not have existing emission controls.

I do not know when the final rule will be promulgated but I anticipate that the new regional haze rule will enhance collaboration in monitoring efforts and improve the effectiveness of the Forest Service fire management program.

New EPA standards and policies, in combination with the proposed regional haze rule, will integrate data from Forest Service Class I monitoring sites with state data. Expansion of Forest Service monitoring to identify the individual components of haze in Class I Areas is a likely result of any new haze rule.

The effects on individual forests' fire management programs from these new EPA policies will vary based on the strength of individual state or tribal smoke management programs, and existing coordination. Where state or tribal implementation plans have adequate smoke management plans, our efforts will be focused on complying with the plans and cooperating to improve long range plans. Those existing plans will establish the strongest foundations for transition to the future haze rule.

Where states or tribes do not have adequate smoke management plans, the Forest Service will focus on the development of voluntary smoke management agreements, particularly if it anticipates any significant increase in prescribed fire. Broader smoke management plans will then need to be developed to implement an effective prescribed fire program once the haze rule is promulgated.

The Forest Service, consistent with current policy, will continue, and improve, efforts to work with regulators to (1) notify them of plans for the use, and any significant increase in the use, of fire for resource management, (2) consider the air quality impacts of fire and take appropriate steps to mitigate those impacts, (3) consider

appropriate alternative treatments, and (4) participate in the development and implementation of State or Tribal implementation plans.

Our wildfire suppression program will continue to utilize smoke management considerations in the development of wildfire suppression strategies and tactics. I would expect to see greater coordination between regulatory agencies and incident management teams.

SUMMARY

Certainly, it is a challenge for the Forest Service to meet both land management and air quality objectives. I believe that the EPA has worked hard to come up with an interim policy that maximizes opportunities to protect public and private property while assuring the protection of public health and welfare. The Forest Service's objective is to reduce the long-term impacts of smoke from both wildland and prescribed fires. The Forest Service has utilized smoke management planning for over 20 years to mitigate the impacts of its fire program.

To obtain the desired benefits to wilderness ecosystems, visibility, and public health, we will need to further improve our prescribed fire program planning and implementation, including fuelwood utilization, modifying project level planning and monitoring, improving Forest Service and regulators practical prescribed fire and smoke management skills, and improving our visibility monitoring. As prescribed fire practitioners, we are subject to the same state and tribal air quality authorities as others. This may include enforcement actions such as fines, direction to modify our programs, and reviews to determine whether fires were authorized, whether burn plan were followed, and why prescriptions may have failed. We are working hard to ensure that these types of actions are rare.

We can effectively implement both wildland and prescribed fire programs under the Natural Events Policy and the Interim Policy on Wildland and Prescribed Fires. Their implementation will position all land managers for transition to the future haze rule by giving us better information, improved skills, and a better ability to assess the impacts to our programs from the haze rule, once it is developed.

The Forest Service is committed to the partnership with the EPA, states, and tribes, and will be working closely with them as we move forward towards implementing the final regional haze rule. We believe that current policies are a common sense approach that will form the basis for what we will need to do under the regional haze rule.

That completes my formal statement. I would be happy to answer any questions.

STATEMENT OF ROBERT C. JOSLIN, DEPUTY CHIEF, UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE

Thank you for the opportunity to testify on the importance of the proposed Environmental Protection Agency (EPA) regional haze regulation to the Forest Service. I am Bob Joslin, Deputy Chief for National Forest System of the Forest Service. I am responsible for the management of 191 million acres of our nation's National Forests and, in particular, 88 areas that Congress designated for special air quality protection under the Clean Air Act Amendments of 1977.

I want to share some of the specific actions the Forest Service has taken to protect the lands we are managing and how we see our role changing in light of the proposed changes to the EPA regional haze rules.

FOREST SERVICE HISTORICAL PROGRAM

The Forest Service has a long history of involvement in air quality issues, particularly from the standpoint of visibility. There is a clear correlation between the quality of recreational use of national forests and visibility; influences of our wildfire suppression program on air quality is well documented; and air quality conditions have historically influenced our ability to detect wildfires. We have actually been monitoring visibility since the early 1920's and developed the Byram's Haze meter in 1925. These measurements were taken at lookouts during fire season well into the 1950's. While the observations were used to distinguish between dust and clouds and smokes from wildfires, the principles of noting perceptible changes to the scene and contrast for long distances is the underlying principle of many of the visibility monitors used today.

With passage of the 1977 Clean Air Act Amendments, Congress designated 88 Wilderness Areas managed by the Forest Service as Class I Federal Areas and, as such, provided them with special visibility protection. At the time, we surveyed the designated areas to determine if visibility was an important value, requiring some level of protection. We used the enabling legislation that established the wilderness to determine the importance of good visibility and found that for all but 2 wilder-

nesses, Rainbow Lakes in Wisconsin and Bradwell Bay in Florida, visibility is an important value.

Along with negatively impacting the experience of wilderness users, reduced visibility can be used as an indicator of particulate matter and other pollutants being transported over relatively long distances and the potential for adverse effects to vegetation. The existence of visibility problems in relatively unoccupied locations such as the Class I Federal Areas is a further indicator of the breadth of air quality problems in the country. At the time of designation we had some indications of point source smoke plume impacts and regional haze in all of our Class I Federal Areas.

We began seasonal monitoring for visibility in some of the more sensitive Class I Federal Areas as early as 1982 using fixed cameras and their photographic data. Since that time the agency has significantly improved our visibility monitoring technology and increased the number of areas we monitor in. We currently conduct some form of formal monitoring in 72 of our 88 Class I Federal Areas. Monitoring information is used in the review of permit applications for new major point sources of air pollution, in determining the impacts of existing sources of air pollution, and visibility modelling relative to special air pollution studies.

Along with the National Park Service and EPA, we participated in the National Academy of Sciences study of the state of the science related to visibility. They reviewed our monitoring efforts and the data collected and concluded that there was sufficient data to make regulatory decisions. The Forest Service evaluated the recommendations and invested in the more sophisticated IMPROVE network of monitoring stations.

IMPROVE—the Interagency protocol for monitoring that we operate in cooperation with my colleagues here is the protocol recommended in the proposed regional haze rule. IMPROVE provides protocols for monitoring extinction, and absorption which are key visibility indicators and establishes standards for the installation and operation of visibility monitoring stations. Stations have filters that collect both PM2.5 and PM10 sized particles. The filters that collect the PM2.5 particles are then analyzed to help determine what type sources are contributing to the visibility problem.

The proposed Regional Haze rule contemplates using comprehensive data from stations that have three or more years of records. To give you a run down of the monitoring being done in the Forest Service: 15 Class I Federal Areas have three years of comprehensive data and 3 more will meet that standard by the end of 1998. 48 areas have limited data (most often camera data) or less than 2 years of monitoring. Six areas do not have independent monitoring but are covered well by the monitoring done at an adjacent area. 14 Forest Service Class I Federal Areas have no data because they are near Areas monitored by other agencies.

The Clean Air Act Amendments of 1990 ushered in a new era in visibility concern with the establishment of the Grand Canyon Visibility Transport Commission (Commission). The Forest Service was an original, and ongoing, participant in the Commission and provided analysis of the exiting conditions in the 8 Class I Wilderness Areas that were part of the study. The agency was also active in the development of control strategy options including providing the Commission with analyses of the possible impacts of both wildfire and of increased prescribed fire programs in the west. Of the 16 Class I Federal Areas considered by the Commission, 8 are managed by the Forest Service. The commission process brought together not only the Federal land managers, but also tribes, states, state regulators, and the EPA.

The Commission looked at land management protection responsibilities as well as the polluting side of our land management activities. We endorse the Commission Recommendations that represent a considered strategy for the protection of the 16 areas. However, it should be noted that the Commission analyzed visibility protection for less than 10 percent of the Class I Federal Areas that the Forest Service manages and that those areas are similar in nature and regional concerns. Its regional nature is responsive to regional issues and its recommendations may not be fully applicable across the country. We commend the states and tribes involved for their commitment, and continue to work with them in the follow on "Western Regional Air Partnership" (WRAP).

RESEARCH

Research conducted by the Forest Service has determined that viewing the scenery through "clean, fresh air" is one of the most important wilderness attributes as determined by our wilderness users. This statement is probably true for most users of National Forest System lands. A significant Forest Service contribution to Clean Air Act objectives is provided through our Research program which focuses on the response of ecosystems and their components to air pollution including the

effects of air pollution on trees and forests as well as "acid rain" deposition from both point sources and regional air pollution.

A better understanding of the relationships between air pollution and forest ecosystem health is vital to making informed decisions to protect all forest ecosystems from damage by air pollutants. The need for an ecosystem approach to air pollution research is stressed in the Forest Ecosystems and Atmospheric Pollution Research Act of 1988 (Public Law 100-521) which directed the Forest Service to undertake adequate long-term monitoring of the health of forest ecosystems. In 1990, we began implementation of a national Forest Health Monitoring program in six New England states. This program is currently conducted in close cooperation with 21 State forestry agencies and the EPA's Environmental Monitoring and Assessment Program.

Research and development efforts are also underway to identify the amount and composition of emissions from prescribed and wildfire in support of the Grand Canyon Recommendations.

FOREST SERVICE MANAGEMENT ACTIONS—PERMIT APPLICATION REVIEW

The Forest Service has a number of responsibilities in the implementation of the Clean Air Act. The 1977 Clean Air Act Amendments require us to protect air quality related values, including visibility, in Class I Federal Areas through the permit review process. Those related resource values include soils, vegetation, and stream and lake chemistry as well as their dependent fish and wildlife populations. Effects on these related resources may take years to be identified, but we do know that we have many Class I Federal Areas with visibility problems and some level of associated changes in water chemistry, soil degradation, and visible damage to vegetation.

The role of the Forest Service, and our sister agencies, has been to notify states when our expertise, measurements and analysis indicate that proposed, or existing, air pollution sources, are adversely affecting the lands we manage. We view our role in visibility protection as being an active partner with the appropriate State and EPA in working to ensure that new sources are using the best control technologies and mitigation to minimize their visibility impacts. We have very effective working relationship with all states that host Forest Service Class I Areas.

Monitoring information is used by the Forest Service to aid in the review of new source applications, or major modification to existing sources under the Prevention of Significant Deterioration (PSD) provision of the Clean Air Act. This means that when an applicant wants to start or modify an activity that will result in new pollution we have the responsibility to review their application, identify the potential impacts to Class I Federal Areas, and make mandatory recommendations to the state for mitigation.

Since a 1990 GAO review of Federal agency activities in support of the Act, the Forest Service has tracked the number of permits we review and publish that information in the Annual Report of the Forest Service. Generally, we review between 40 and 60 applications per year. Of all the applications we have reviewed over the years we are aware of only one where the project did not proceed and that was, in part, due to concerns related to potential Class I Federal Area impacts. Our approach, frequently successful, has been to seek solutions through collaboratively identified mitigation. We do believe that our participation has resulted in modifications to a number of projects so that they did not adversely affect our Class I wildernesses.

REVIEW OF EXISTING SOURCES

A second component of the Prevention of Significant Deterioration (PSD) provision allows the Forest Service to identify existing sources that can be "reasonably attributed" to be the cause of adverse visibility impacts in Class I Federal areas. Regulatory agencies then identify the best available retro-fit technology (BART) needed to mitigate the identified impacts.

The agency has taken actions in several states to protect visibility and fragile ecosystems from existing sources. In 1993 Regional Forester Elizabeth Estill formally certified to the governor of Colorado that visibility in the Mt. Zirkel Wilderness were being adversely affected by emissions from two coal-fired power plants in northwestern Colorado. Supporting information provided by the Regional Forester included impacts to aquatic ecosystems. The agency worked with the State and Region VIII EPA in verifying the adverse effects of the two sources on the Wilderness. As a result, the State issued an order to one of the two sources to significantly reduce emissions, and construction of the necessary control equipment at that facility is underway as we speak. Studies to determine the amount of air pollution control that is appropriate for the other source are ongoing.

In 1996 Regional Forester John Lowe notified the State of Washington that the visibility in the Goat Rocks and Alpine Lakes Wildernesses was being adversely affected by pollution from a coal-fired power plant in Centralia, Washington. Supporting information provided by the Regional Forester included impacts to wilderness water quality. This source is the largest in the western United States, emitting up to 75,000 tons/year of sulfur dioxide, more than half of the sulfur emitted in the state. In that case the Forest Service and Park Service worked collaboratively with the plant owners and regulatory agencies to achieve a mediated settlement that will provide a 90 percent reduction in sulfur emissions from that plant by 2002.

OVERALL AIR QUALITY MODELLING

We have found though monitoring that poor visibility can be an indicator of other problems in the ecosystems such as acute vitrification of soils in the Los Angeles area. We have 30 years of research on ozone damage to the vegetation and the visibility situation can be so severe in the San Gorgonio Wilderness, on the worst days, that the photo labs will not print the photograph from our camera station—there is nothing to see.

THE CHANGING RULES

There are three clear changes in air quality standards and regulations that EPA has promulgated or proposed that may significantly benefit forest health and users of National Forest System lands: the promulgated changes to the fine particulate (PM 2.5) and ozone standards, and the proposed change to the regional haze rule. The three work together. The new ozone rules include a secondary standard that is identical, except for monitoring requirements, to the new primary standard and should provide substantially improved protection. This will help address the effects that our researchers have documented ozone on vegetation in southern California and the southern Appalachian mountains. In addressing ozone, controls will be provided for nitrogen oxides that are affecting Class I Areas in the Northeast, southern California, and the Rocky Mountains. If this were to progress, there would be irreversible losses of soil nutrients. Even now the Forest Service is evaluating the cost effectiveness of applying lime to areas to reduce acidification.

The new particulate standards, combined with the proposed regional haze rule enlist everyone in considering pollution controls that will benefit both human health and welfare. The PM2.5 standard reflects the size of particles that have more of an effect on visibility. The precursors to Ozone form some of these particles and degrade the visibility. The EPA has proposed an integrated approach that has the potential to move us toward progress on three fronts at the same time.

EPA's changes are directed much more to the States and say little about the Federal Land Manager role. However, our "affirmative responsibilities" to protect air quality related values remain intact. The states have responsibility for implementation of the Clean Air Act and the development of programs to make progress in implementing these new rules. The Federal land managers' role is, and should be, monitoring, providing recommendations, and helping to mitigate potential problems.

Implementation of the proposed haze rule may affect our land management activities. We believe that we will have to be more responsive in our prescribed fire program planning and implementation. Some of the potential changes include: (1) maximizing the utilization of fuelwood, (2) modifications to project level planning and monitoring, (3) improving our practical prescribed fire and smoke management program skills, and (4) there may be some potential need to modify our visibility monitoring. Future modifications to other Forest Service management activities will be explored in the next several years.

As I mentioned earlier, we are implementing many of the Grand Canyon recommendations and are working to improve our understanding of the differences between smoke released through prescribed fire and wildfire.

POTENTIAL CHANGES IN FOREST SERVICE ROLE

The Forest Service is in the midst of preparing comments on the proposed regional haze rule for EPA's consideration and to say anything about those potential comments at this time would be inappropriate. We appreciate the efforts that EPA has undertaken to assure that our comments, and the public's, help influence the final rule.

The Forest Service does take its role as Federal Land Manager under the Clean Air Act very seriously. We do a lot of monitoring and coordination with the states that doesn't show up much in the budget or on the front pages of any newspapers. We have a cadre of over 35 professional people working full time in air quality across the country and an additional 55 who handle local issues as the need arises. The Forest Service role in implementing the Clean Air Act may change depending on the final rule and how the individual states implement it.

The reasonable progress standards of 1 DeciView per 10 to 15 years will require that we continue to assist states in monitoring and data analysis. If a state or regional institution chooses not to use that standard, then we might have a larger role in working with them to establish a different measure of reasonable progress. This may mean cooperative efforts similar to the Grand Canyon Commission which will take time but, as you can tell from Governor Levitt's testimony, result in strong commitments.

We already coordinate closely with the states that have visibility Implementation Plans (IPs). The proposed rule will mean that more states and tribes will need to develop regional haze IPs. We would anticipate that our workload in support these efforts will increase until such time as the plans are in place. Our role in monitoring will continue to be a cooperative one between the FS, EPA, DOI, and the states but on a potentially larger scale.

Regardless of the changes that EPA has proposed, the Forest Service believes that we need to increase the use of prescribed fire. We will do what we can to find markets for, and mechanically remove, excess fuels but believe there still will be increases in smoke emissions and a resultant impact on visibility. Solid smoke management on our part will result in a program consistent with state implementation plans and visibility objectives. Efforts currently underway with EPA, in support of the interagency fire policy, and in cooperation with the Grand Canyon Visibility Transport Commission, indicate that we need to do a better job of quantifying how much we need to burn and where.

The proposed rule would change and strengthen the states' role in determining what to do about existing sources that are causing visibility impairment. The rule, as proposed, allows the states flexibility in addressing a specific set of sources that would move us towards a more collaborative approach to identifying the appropriate best available retro-fit technology. We strongly endorse that approach.

CLOSING

Visibility is an important resource that our forest users value. While it is difficult to put a dollar value on its importance, when we ask what brought people to recreate or use the national forests and wildernesses, "clean air" always makes it to the top of the list.

Forest Service Class I Federal Area visibility and related resource impacts are a microcosm of a far larger picture. Progress that can be made in addressing these issues in an integrated way, from the standpoint of landscape scale and intergovernmental coordination, will go a long way towards addressing the problems we face nationally. Over the last 20 years we have learned much about air quality relationships with the ecosystems that we manage and the effects of our management activities. We are looking forward to working with the EPA and States to improve decisions about needed pollution controls and land management activities.

That completes my formal statement. I would be happy to answer any questions.

BRIEFING PAPER

REGIONAL HAZE

SUMMARY

This oversight hearing will focus on the Environmental Protection Agency's (EPA) proposed rule on regional haze and the effect of the United States Forest Service (USFS) fire and fuels management policies on regional haze. The hearing will concentrate primarily on the interrelationship between prescribed fires, silvicultural treatments, and the proposed regional haze rules.

The EPA is currently developing a final rule on regional haze. The rule would require a one deciview improvement (a measure of visible improvement) every ten to fifteen years. There are many concerns with the proposed rule. These concerns range from doing too little, to doing too much. One concern, especially from Westerners, is that the EPA's rule would place significant management restrictions on land managers and increase economic burdens on utilities and manufacturers. There are also concerns that the emissions from wildfire and prescribed fire will not be fully accounted for by the EPA and, therefore, will place a heavy burden on industry.

The USFS has acknowledged that 40 million acres of its lands are at high risk of catastrophic fire. At the same time, the USFS has stated its intentions to increase its use of prescribed fire without adequately addressing alternative methods for fuels reduction—to prevent catastrophic wildfires, minimize damage from wildfires

when ignited (through use of fuel breaks or mechanical thinnings), and recover economically valuable materials prior to burning.

BACKGROUND

On July 31, 1997, the EPA published a notice of proposed rulemaking for regional haze regulations in the *Federal Register*. These regulations would establish a program that addresses regional haze in Class I Federal areas (national parks, wilderness areas, and national monuments). The EPA proposes that visibility should improve by one "deciview" (a measure of visible improvement) every 10 to 15 years. The comment period on the proposed rule was extended once and ended December 5, 1997. The rule (as proposed) would require states to revise their State Implementation Plans (SIP) for air quality to address regional haze within twelve months after promulgation of a final rule.

On June 9, 1998, the President signed Public Law 105-178, the Transportation Equity Act for the 21st Century (TEA-21). The law includes provisions that allow nonattainment areas for the 1997 Particulate Matter 2.5 ($PM_{2.5}$) standard to submit their revised SIP for regional haze at the same time they submit their revised SIP for the National Ambient Air Quality Standards (NAAQS) for fine particulate matter. This would ensure that EPA's implementation schedules for particulate matter and regional haze are consistent. It is important to note that the air quality implementation schedule for areas that are designated as "attainment" will not be delayed by TEA-21. The EPA has received requests to reopen the rulemaking comment period to put all areas, attainment and nonattainment, on the same implementation schedule.

Legislative History

In 1977, Congress added Section 169(A) to the Clean Air Act (CAA). This section established a national visibility goal for Class I Federal areas. The 156 Class I areas include national parks, wilderness areas, and national monuments. Section 169(A) is intended to prevent any new, and mitigate any present, manmade impairment to visibility in these areas.

Thirteen years later, in 1990, Congress again amended the CAA, and required the EPA to establish the Grand Canyon Visibility Transport Commission (Commission). The Commission released its recommendations in 1996, including one specifically dealing with fire. The Commission recommended minimizing emissions and visibility impacts through public education, enhanced smoke management plans, and the removal of administrative barriers to using alternatives to prescribed burning.

Between the time that Congress established the Commission and the release of the Commission's recommendations, the National Academy of Sciences (NAS) published *Protecting Visibility in National Parks and Wilderness Areas* (1993). The NAS report found that visibility in the East is currently one fifth of its natural range and that visibility in the West is one-half of its natural range. The NAS report made eight conclusions to improve air quality.

ANALYSIS

Land Management Opportunities to Reduce Emissions

The hearing will examine the effect of the EPA's proposed rule on the use of prescribed fire on national forests. Significantly, the Forest Service has stated that forty million acres of its land are susceptible to catastrophic wildfire and will significantly increase its use of prescribed fire to address this risk. The Department of the Interior has also announced a 400 percent increase in the use of prescribed fire.

Fire is an important tool in the management of our forests. As the agencies move towards restoring the historical presence of fire in Federal forestlands, they must also reduce the fuels that have accumulated during eighty years of diligent fire suppression. In many areas, mechanical methods to reduce fuels prior to the use of fire will not only minimize the particulate emissions from fires but also allow for the utilization of many forest products which, if left to burn, would be economically lost. Similarly, wildfires that burn today are larger and more intense than historical wildfires. Acre for acre, wildfires contribute more particulate matter to the air than prescribed fires. Land managers have taken innovative approaches to mitigating the effects of wildfires in specific areas using fuel breaks. Such plans could prove useful in reducing the particulate emissions from wildfires.

Concerns with the Proposed Rule

Many private and industrial forest landowners are concerned that the EPA's NAAQS and proposed regional haze rules will discriminate against the use of prescribed fire on public and private lands, while allowing "natural" wildfires to burn in parks and wilderness areas.

Others have pointed out that the increased emissions from wildfire and prescribed fire will offset any gains in air quality that the utilities and other industries may achieve by reducing point source emissions under the CAA. They argue that the proposed regional haze rules, in particular, will have a greater impact on industrial facilities and operations than the ozone and particulate matter NAAQS, since the NAAQS apply to specific nonattainment areas while the regional haze program could apply to all areas within the 50 states.

EPA responds that under the proposed rule, fine particulate matter from "natural" wildfire would be acceptable. EPA's proposal would also permit emissions from prescribed fire as long as the fire is conducted in compliance with state smoke management programs. Yet a report by the Commission pointed out that "emissions from fire, both wildfire and prescribed fire, is likely to have the single greatest impact on visibility in Class I areas through 2040." In addition, it remains unclear to what extent the EPA and the CAA will limit the states' discretion under the regional haze rule.

Additionally, EPA has suggested that emissions from fires on Federal lands would somehow be mathematically "removed" from the measured levels of visibility impairment. However, critics are concerned that unless EPA can guarantee that it can account for all fires on Federal lands, and distinguish their effects from all other combustion sources, states will be forced to over-regulate non-Federal sources to make up for unaccounted emissions from Federal fires. EPA has admitted that the data on fires collected by Federal land managers does not allow this. According to the EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires,* "The data are not collected for the purpose of calculating air pollutant emissions and are probably inadequate for that purpose."

Regional Impacts of the Proposed Rule

It is important to note that the West will incur a disproportionate amount of the regulatory burden as most Class I Federal areas are located in the West. In addition an increment of improvement in the West will require significantly more effort than in the East, due to better overall air quality in the West.

Recommendations

Environmental groups believe the proposed rule does not go far enough because they think the one deciview standard is to low will take too long to achieve improved air quality. Others believe the standard is too high, especially where air quality is already good.

The Western Govemors Association (WGA) recommended that EPA modify its rule and develop a program for the Western U.S., building from the recommendations of the Grand Canyon Commission. Others have expressed concern that under the WGA proposal the impact on visibility from prescribed fires in the West would increase.

Finally, several groups have asked that EPA reopen the comment period on the proposed rule. An extension would provide additional time for the public to address specific concerns that have been raised with the proposed rule and would be reasonable given the delayed implementation schedule under TEA-21.

TESTIMONY OF DON MATLICK

I would like to thank you, Chair Chenowith and all the members of the subcommittee for this opportunity to testify before you at this hearing. I have never testified before Congress, so it is a memorable day for me.

I have been asked by committee staff to share information with you on the topic of the Oregon approach to managing and regulating forest land prescribed burning on federal lands in the northeast section of our state. The process was developed in the past few years using an interdisciplinary team of federal land managers and air quality regulators. The final product was well accepted and supported by the members of the group. The group used a new approach to address the concerns of the land managers and the air quality regulators. I believe the approach we used and the final agreement have been successful at balancing the need to conduct an increasing amount of prescribed burning for forest health restoration, while simultaneously protecting air quality.

I will give a brief summary of the problem, the process, and the ultimate resolution in my written comments. I will also attach a paper by Brian Finneran of the Oregon Department of Environmental Quality as further reference for you.

I will also make a few comments about the federal fire and vegetative management policy and the proposed regional haze rules.

BACKGROUND

Forest health in the northeastern section of Oregon became a major concern in the late 1980's when many thousands of acres of forests were showing signs of poor health. Forests that were too dense, had an improper balance of tree species, and an extended drought were all contributing factors to a major portion of the forest being under stress. Very significant tree mortality was occurring.

There was also a very significant increase in the amount of wildfire in the area, burning many more acres than the historical average. The type of wildfire also changed, resulting in many more severe fires. Large "crown" fires became a more frequent event.

Federal land managers decided that in order to restore and maintain the forest ecosystem in northeast Oregon, prescribed fire would have to be used significantly more than in the past. The federal land managers wanted to increase their use of prescribed fire four-fold, from about 30,000 acres per year to about 120,000 acres. Prescribed fire would have many desirable effects upon the forest ecosystem; reducing the density of trees, selecting for the desirable species, and restoring a more natural forest stand structure.

THE PROBLEM

The problem then became the increased smoke from that potential increase in the use of prescribed fire. How would air quality be affected and how could the burning be accomplished under the provisions of the Clean Air Act?

THE RESOLUTION PROCESS

A group of people came together to work on the problem of allowing additional federal land prescribed burning while protecting the air quality. The group did recognize that ecosystem restoration was critical, that prescribed burning would play a key role, and that air quality problems should be minimized.

The final resolution of the problem depended upon finding a new "frame of reference" for dealing with the problem. That new "frame of reference" was the group's recognition that by doing more prescribed burning we would eventually have less wildfire and wildfire smoke in the future. The parties did recognize this "trade-off", which was key to the final agreement. The group also recognized that smoke from prescribed burning could be managed so it is less of a problem than the unmanageable smoke from wildfire. To the best of my knowledge, no regulatory process had officially recognized this "trade-off" of prescribed fire and wildfire smoke as a key part of the process.

THE AGREEMENT

The final agreement incorporated several key elements and allowed roughly a three-fold increase in prescribed burning (not the four-fold increase the land managers sought). Those key elements of the northeast Oregon smoke management program include:

- **A "no net increase" in total emissions, a key element being the use of a base of wildfire emissions plus prescribed fire emissions. We wanted to maintain the total amount of emissions at or below the historical averages.**
- **An annual emission limit was established for the use of prescribed fire on federal lands. The emission limit was developed using historical wildfire and prescribed fire emissions and compared against a "natural" emission level.**
- **A mandatory smoke management program for federal lands in the area, which includes daily forecasts and burning instructions issued by trained meteorologists, designed to keep smoke from populated areas. Daily reporting of prescribed burning is required.**
- **"Real-time" air quality monitoring in key cities in the area.**
- **Federal land managers would use non-burning alternatives in the restoration process when appropriate, instead of prescribed fire. The managers would also use emission reduction burning techniques when possible.**

The agreement has allowed federal land managers to significantly increase their prescribed burning for forest ecosystem restoration while protecting public health. The federal land managers have increased their prescribed burning to the point that they reached the emission cap late last year.

CONCLUSIONS

I believe there are several key points to be learned from the process we went through to develop the northeast smoke management plan, they are:

- **When "emission producers" and regulators agree that there is a problem, they can often solve the problem locally, if there is significant flexibility within the national rules and guidelines.**

- **The regulatory agencies should encourage the development of new processes at the local level, which best meet the local needs. The regulatory agencies should be prepared to accept those local solutions.**

COMMENTS CONCERNING THE FEDERAL LAND MANAGERS FIRE AND VEGETATION POLICY AND THE EPA's PROPOSED REGIONAL HAZE RULES

- **We support the federal land management fire and vegetation policies. We do hope, however, that the federal land managers will have enough flexibility to be able to use all the ecosystem restoration tools available. If the federal land managers cannot adequately use thinning through harvest, mechanical treatments, or salvage of dead or dying trees, it will force them to rely too heavily upon prescribed fire and they will not be able to fully achieve their ecosystem restoration goals.**

- **We encourage the EPA to incorporate a significant amount of flexibility into the final regional haze rules, in order to allow local solutions. In Oregon's case, that recognition should include the fact that many of our Class I visibility areas receive almost all their public visitation during the summer months. That could mean a high level of protection measures during the summer months and relaxed standards during the other months, which would allow more ecosystem treatments. We also believe the standards could differentiate between very high use areas, such as Crater Lake National Park and The Grand Canyon, and the lesser used Class I areas. We also believe that the regional haze rules should incorporate some flexibility to account for the increased level of ecosystem restoration prescribed fire.**

Thank you for the opportunity to comment. I would be happy to respond to any questions you may have now or at a later date.

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OREGON PSD STRATEGY TO ADDRESS FOREST HEALTH PRESCRIBED BURNING[1]

March 1995

Brian R. Finneran[2]

ABSTRACT

Some of the highest tree mortality in the country is occurring in the forests of the Blue Mountains in northeastern Oregon. The frequency and magnitude of wildfire in the four national forests (six million acres) which comprise this area has increased dramatically over the last 10 years. The Oregon Department of Environmental Quality (ODEQ) has been actively working to address this forest health problem. Over the last three years air regulators and forest land managers from Oregon and neighboring states have been working together to develop a comprehensive strategy to balance the need for a 4-fold increase in prescribed burning to restore forest health with the need to protect air quality. A consensus agreement was recently reached and put in the form of a Memorandum of Understanding (MOU), based on the concept of a "no net increase" in forest emissions in order to satisfy state Prevention of Significant Deterioration (PSD) and other air quality requirements. This concept involves a new approach of combining wildfire and prescribed burning PM10 emissions to establish a PSD baseline, and then keeping the combined emissions at or below the baseline in order to avoid consuming PSD increments. Included in the MOU is an annual emission limit on future prescribed burning and an annual "target" emission level for wildfire, which if complied with would ensure emissions do not exceed the PSD baseline. Also included is a mandatory smoke management program, a "real-time" air monitoring network, and commitments by federal forest land managers to increase efforts in slash utilization, mechanical removal, and fire suppression. ODEQ believes this comprehensive strategy will satisfy both forest ecosystem management objectives and state Clean Air Act requirements.

KEYWORDS: PSD, Clean Air Act, PM10 emissions, "no net increase" concept, MOU

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[1] A paper presented at the Environmental Regulation & Prescribed Fire Conference, March 14-17, 1995. Tampa, Florida.

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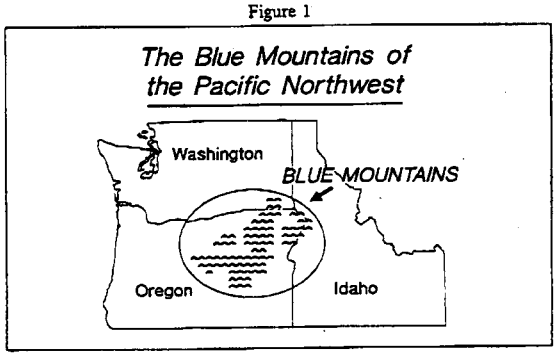
INTRODUCTION

As shown in Figure 1 on the following page, Oregon's Blue Mountains cover the northeastern corner of the state, extending into portions of southeast Washington and western Idaho. The majority of the forested lands are managed by the USDA Forest Service, with a smaller area managed by the USDI Bureau of Land Management (BLM). The forest health problem in this area

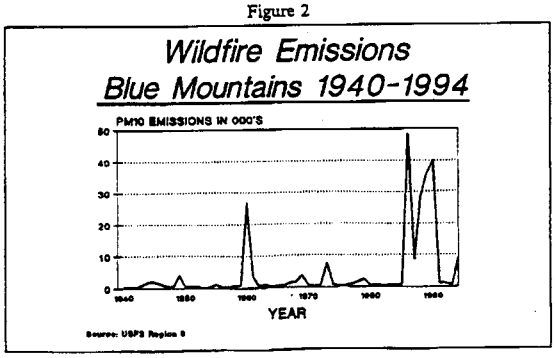
Figure 1



has been well documented.[1] The combination of fifty years of wildfire suppression, inappropriate tree species manipulation, and an eight-year drought has resulted in widespread insect infestation and disease outbreaks. As much as 50 percent of the six million acres of federally forested lands in this area is currently dead or dying.[2]

As illustrated in Figure 2, this has resulted in a dramatic increase in wildfire emissions over

Figure 2



the last 10 years, and conditions conducive to catastrophic wildfire.[3] Federal forest land managers believe a significant increase in the use of prescribed fire is needed to help restore and maintain the forest ecosystem. As a result, the Forest Service is planning a 4-fold increase in prescribed burning, or from approximately 30,000 to 120,000 acres per year.[4] This increase is expected to be gradual, beginning in 1995. Also planned is a shift from traditional broadcast and pile burning to greater understory burning. In terms of air pollution, this increase in prescribed burning and shift towards understory burning is estimated to produce annually approximately 21,000 tons of PM10. For comparison, this is nearly equal to the annual PM10 industrial emissions in Oregon, and about 80 percent of current statewide emissions from prescribed burning.[5]

Forest Ecosystem Concerns

From an ecosystem standpoint, ODEQ recognizes the importance of fire in the forest as a means of fire hazard reduction, disease and insect control, and general ecosystem maintenance. Historically, low-intensity/high-frequency wildfires have played a significant role in maintaining forest ecosystem health in Oregon's Blue Mountains.[6] However, an active wildfire suppression program over the last 50 years has altered the natural 15 year fire return cycle in this region. As indicated by the wildfire emissions in Figure 2, early fire suppression efforts were successful. The mid-1980's marked a turning point in forest health and wildfire. Heavy fuel accumulations and the gradual replacement of native pine tree species with predominately fir species, poorly adapted to the dry climate and much more susceptible to drought and insect epidemics and disease outbreaks, set the stage for more frequent and higher intensity wildfires which we are seeing today.

AIR QUALITY CONCERNS

From an air quality standpoint, ODEQ and many state air quality agencies recognize that if the massive quantities of brush, dead trees, and other forest debris created by forest health problems are not reduced, PM10 emissions from wildfires will continue to increase, threatening air quality and public health/safety. Not only have many areas in the West recently witnessed a significant increase in wildfire, but the potential for catastrophic wildfires similar to the 1988 Yellowstone Fire still exists. If expanding the use of prescribed burning is part of the answer to this problem, it is essential that potential air quality impacts be assessed.

A 4-fold increase in burning, as well as a major shift from traditional broadcast and pile burning to understory burning, poses significant smoke management problems. Although understory burning produces fewer emissions per acre, it could cause greater amounts of ground level smoke, and the potential for greater localized smoke impacts. In areas such as Oregon's Blue Mountains where there was no mandatory smoke management controls, the concern was that the combination of increased burning and shift to understory treatment would lead to increased smoke impacts in "smoke-sensitive areas" (populated areas and wilderness/recreation areas).

From a regulatory standpoint, a 4-fold increase in prescribed burning could potentially violate PSD and other Clean Air Act provisions. Initial discussions between ODEQ and the Forest Service Region Six focused primarily on PSD. The objective of the PSD requirements in the Clean Air Act is to prevent air quality in "clean" areas which currently meet air quality standards from deteriorating beyond certain amounts or increments. Various options were discussed with the Forest

Service to protect air quality, such as smoke management and PM10 monitoring improvements, as well as the use of non-burning or reduced burning alternatives, such as biomass removal, utilization, and mechanical thinning.

Oregon PSD Requirements

There are many areas of the country where there is no PSD protection. Under federal rules, PSD protection starts or is "triggered" only when a new major stationary source submits a PSD application.[7] This initiates the tracking of PSD increment consumption for the "baseline" area or region of the state that has been designated as attainment under Section 107 of the Act. This can create situations where a state may have different baseline areas with different baseline dates for each of the three PSD Increments. States have the flexibility under the Act to redefine baseline areas for air quality management purposes, providing the PSD baseline date for that area has not been triggered.[8]

In Oregon, ODEQ chose to establish a statewide baseline date for PM10 of 1978 when it originally adopted its PSD provisions, even though in several areas of the state, including northeast Oregon, no major PSD sources had triggered PSD.

PSD and Prescribed Burning

One of the first topics raised in discussions between ODEQ and the Forest Service was on the applicability of PSD to prescribed burning under the Clean Air Act. There were two primary issues. One focused on whether PSD applied to area sources such as prescribed burning, or just "major emitting facilities", as defined in Section 169(1). The other focused on whether prescribed burning should be defined as a "temporary" activity and exempted from increment consumption, based on Section 163(c) relating to "emissions from construction or other temporary emission-related activities."

ODEQ agreed that the PSD provisions in the Act focused almost exclusively on the permitting of major stationary sources. However, Section 160 of the Act clearly states that the purpose of PSD is to: (1) protect public health and welfare; (2) protect air quality in national parks, wilderness areas, and other scenic areas; (3) insure that economic growth in the "clean" areas occurs in a manner consistent with the preservation of clean air resources; and (4) assure that emissions from any source do not interfere with SIP provisions to prevent significant deterioration (emphasis added). ODEQ felt that not only can emissions from prescribed burning degrade air quality, but increases in prescribed burning have the potential to consume PSD increment, which can lead to restrictions on future emission growth in the airshed.

In terms of the temporary nature of prescribed burning, the Environmental Protection Agency (EPA) specifically addressed this issue in 1989 in its public notice on the proposed PSD Increment for PM10.[9] Here EPA indicated that temporary sources are those that do not "contribute to measured air quality levels on a regular basis." In discussing prescribed burning, EPA distinguished between burning which is temporary and burning which is "itinerant", i.e., that which "may be temporary at a specific location, but moves to nearby locations and still affects the air quality within the same airshed." While EPA allows states with approved PSD programs to adopt provisions to exempt certain prescribed burning activity from increment consumption, the exclusion provisions in

the Act are intended to apply only on a case-by-case basis to "truly temporary" activities. ODEQ felt that prescribed burning in most cases is itinerant, and therefore subject to PSD. This interpretation has been supported by EPA Region 10 in discussions with the Forest Service.

Other Applicable Clean Air Act Requirements.

In relation to the proposed 4-fold increase in prescribed burning in Oregon's Blue Mountains, there were discussions between ODEQ, EPA, BLM and the Forest Service on other Clean Air Act requirements.

1. National Ambient Air Quality Standards (NAAQS).

Typically in Oregon, smoke impacts from prescribed burning are of an intensity and duration which rarely result in exceedances of the 24-hour PM10 NAAQS. However, occasionally these impacts occur at times when there are elevated PM10 emissions in communities, making it possible for prescribed burning to contribute to 24-hour NAAQS exceedances. Therefore, in response to the proposed 4-fold increase in prescribed burning, it was agreed that a mandatory smoke management program was needed in northeast Oregon in order to protect the PM10 NAAQS.

2. Visibility.

Oregon's Class I areas are protected from prescribed burning impacts under a state visibility protection program. However, this visibility protection is currently only provided to western Oregon Class I areas in the Cascade Mountains, and involves prohibiting prescribed burning during the summer months (when 90 percent of the visitation occurs) to prevent visibility impairment. There are three Class I areas in northeast Oregon which may be impacted by the proposed increase in prescribed burning, however, this burning is intended to occur mostly in the spring, with the remainder in the fall. Should some burning be shifted to the summer, ODEQ and the Forest Service would review visibility monitoring data to determine if measures to protect visibility are needed.

3. General Conformity.

As required by Section 176(c) the Act, states must adopt the General Conformity rule issued by EPA which specifies how federal actions above a certain threshold size will conform to SIPs. ODEQ recently adopted these rules, and in so doing added provisions which go beyond EPA's current General Conformity Rules by requiring federal prescribed burning in attainment areas to meet these requirements.[10] As a result, prescribed burning in federal forests in Oregon will be required to prepare and submit general conformity determinations to ODEQ. This rule will allow ODEQ to review planned prescribed burning activities in national forests where PM10 emissions exceed the de minimis level of 100 tons/year.

Inclusion of Wildfire Emissions

Given the prominent role that wildfire has played historically in the Blue Mountains (a 1:15 year fire return interval), it became increasingly apparent that any discussion of PSD must address impacts from wildfire as well as prescribed burning. Although wildfire emissions have typically been regarded as "natural" and not included in PSD baseline calculations, it is clear that man's disruption of the natural fire cycle and forest management practices in the Blue Mountains has

created an unnatural situation where wildfire emissions have been artificially increased. Such an increase in wildfire emissions must be considered "anthropogenic", and if they reoccur on a regular basis within the same airshed, should be included in the PSD baseline. Any air quality analysis involving an increase in prescribed burning should also consider how much wildfire emissions could be lowered by reducing fuel loadings through prescribed burning and other methods. This raises the question - to what degree can increases in prescribed burning emissions be traded or offset by decreases in wildfire emissions accomplished through the use of prescribed fire and mechanical removal to reduce fuel loadings?

The use of prescribed fire for fire hazard abatement is a common forest management practice. However, on a large-scale basis there is limited information available on the emission reductions that can be expected from a prescribed burning/wildfire tradeoff program. A recent modeling study conducted by the USDA Forest Service Region 6 has attempted to assess this tradeoff.[11] In this study, a Fire Emission Tradeoff Model was developed in order to predict the combined emissions from prescribed fire and wildfire under different levels of prescribed fire treatment. Initial findings support the concept that wildfire emissions can be reduced by the use of prescribed fire.

Even though the use of prescribed fire for wildfire abatement is limited to the number of acres that can be treated in a given area, ODEQ believes that there is justification for including wildfire emissions in PSD baseline determinations in areas such as the Blue Mountains where wildfire emissions have been anthropogenically increased and are a major contributor to pollution levels in the airshed. Discussions with EPA Region 10 on this topic have resulted in support for combining prescribed burning and wildfire emissions for purposes of developing PSD strategies.

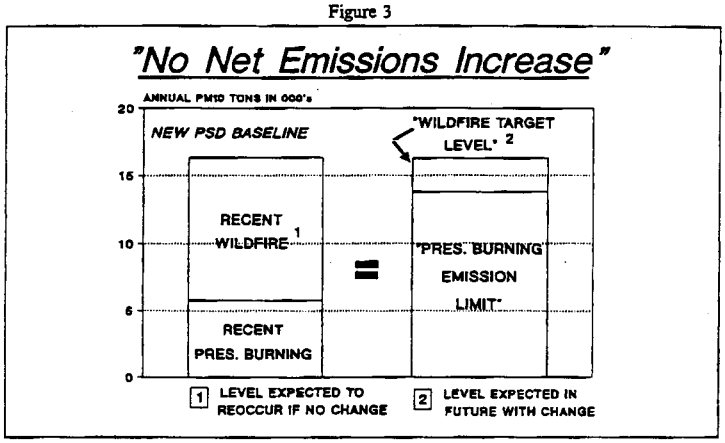
THE "NO NET INCREASE IN EMISSIONS" CONCEPT

Starting in late 1992, a series of meetings were initiated involving representatives from ODEQ, Forest Service, BLM, Oregon Department of Forestry (ODF), EPA Region 10, and the Washington Department of Ecology, to explore solutions to the forest health problem in the Blue Mountains. One of the key PSD issues involved the requirement to conduct a PSD increment consumption analysis for the 4-fold increase in prescribed burning being planned in this area. This analysis generally requires complex dispersion modeling, which in the case of prescribed burning is difficult given the problems associated with modeling open burning sources in complex terrain. In addition, this analysis would be very costly and time consuming, and delay efforts to address the forest health issue.

In order to establish a level of burning that would not consume increment and allow state PSD requirements to be met, ODEQ proposed a "no net increase in emissions" approach of combining wildfire with prescribed burning emissions for determining a PSD baseline level. As illustrated in Figure 3 on the following page, this PSD baseline would serve as a "cap" on future emissions from prescribed burning and wildfire, thereby avoiding increment consumption. To accomplish this, a permanent annual "prescribed burning emission limit" and "wildfire emission target level" would be established, using as a baseline recent actual emissions. Prescribed burning emissions would be closely tracked during the year and the burning activity curtailed if the limit is reached. The wildfire target level reflects more of a projected estimate of future wildfire emissions

based on anticipated reductions in fuel loadings through the use of prescribed fire and increased mechanical removal of forest debris, plus increased wildfire suppression efforts. Wildfire emissions would be tracked over the first several years, and if the average during this time exceeds the annual target level, this level would be adjusted upward with a corresponding adjustment of the annual prescribed burning limit downward, so that total emissions would be consistent with the baseline.

Figure 3



It was recognized in discussing the "no net increase" PSD concept that the determination of baseline emissions was a key element. Under the Oregon PSD rules, 1978 was established as the baseline date for all attainment areas in the state. However, incomplete prescribed burning records from this time period made emission estimates difficult. Additionally, the wildfire emission inventory was incomplete, and it was felt that 1978 as the baseline date was not representative of normal wildfire emissions. ODEQ believed a more appropriate PSD baseline would be one that is "contemporaneous" with the planned increase in PM10 emissions in the baseline area (Blue Mountains), similar to the baseline setting approach under the federal PSD rules. Since no new major source had located in this area since 1978 (triggering PSD), ODEQ could consider amending its rules in order to better implement the "no net increase" concept.

THE FOREST HEALTH MOU

While the "no net increase" concept was developed to address PSD requirements, it also helps protect the NAAQS by not allowing future forest burning emissions to exceed current baseline emissions. This concept was part of a comprehensive strategy which included several significant air quality improvements for the Blue Mountains. In December of 1994 this comprehensive strategy was incorporated into a Memorandum of Understanding (MOU) between the ODEQ, the Forest

Service, BLM, and the Oregon Department of Forestry.[12] The key components of this MOU are as listed below.

1. Amend Oregon PSD Rules.

As part of the MOU agreement, ODEQ agreed to amend its PSD rules to establish a contemporaneous baseline date (1993) for the Blue Mountains area, from which prescribed burning PM10 emissions would be regulated under the "no net increase" concept. This change involved amending the state rule definition for "Baseline Concentration", and was supported by EPA Region 10.[13] ODEQ adopted this rule amendment in March 1995.

2. Mandatory Smoke Management.

A mandatory smoke management program would be established for the Blue Mountains and run by the Oregon Department of Forestry. This program would be similar to the current smoke management program in western Oregon, which has been successful in reducing smoke impacts over the last 10 years. It would require that all prescribed burning conducted by the Forest Service and BLM occur under optimum meteorological conditions to maximize smoke dispersal, particularly upwind of any of the larger communities in northeast Oregon. Burning must also follow specific fuel moisture and fuel loading conditions to minimize overall emissions. This smoke management program would meet many of EPA's Best Available Control Measures (BACM) for prescribed burning: (1) smoke dispersal evaluation, (2) burning planning, authorization, and administration, (3) real-time monitoring, (4) emission inventory, (5) emission reduction techniques, and (6) state oversight.[14] BACM represents the most stringent level of control for regulating this activity.

3. Air Quality Monitoring.

Included with the smoke management program is an air quality monitoring network to detect smoke impacts in the seven largest populated areas in northeast Oregon. This monitoring would consist of stationary nephelometers located with meteorological equipment. Data acquisition would be real-time and used by smoke managers to track smoke and visibility conditions, and issue smoke management instructions during the prescribed burning season (April through June). Real-time access to data would in some cases allow burning activity to be modified or terminated where smoke impacts are occurring.

4. Non-Burning Alternatives.

The Forest Service and BLM agreed in the MOU to increase efforts into slash utilization, mechanical treatment, low emission burning techniques, and fire suppression. This is particularly important in situations where the use of prescribed fire for wildfire abatement is not feasible due to the fire hazard associated with burning under heavy fuel loadings, such as in the urban/wildland interface. Any mechanical removal efforts would occur in a manner consistent with soil, wildlife, and watershed protection requirements.

5. Compliance with Emission Limits.

Provisions in the MOU require the Forest Service and BLM to track the number of acres burned from prescribed fire and wildfire each year and comply with the emission limits established through the "no net increase" PSD concept. An annual report must be prepared which summarizes air quality impacts and the general effectiveness of the smoke management program. ODEQ may also conduct an annual audit of burn records in order to assess compliance with smoke management burning instructions.

CONCLUSION

The proposed 4-fold increase in prescribed burning is expected to occur gradually over the next several years, starting in 1995. ODEQ anticipates the comprehensive strategy that has been developed will result in a net improvement in air quality in the Blue Mountains over the past 10-15 years. Under the "no net increase" concept, approximately 70% of the annual prescribed burning planned desired by the Forest Service would be allowed.

The highlights of this strategy are as follows:

- In those areas of the Blue Mountains where increased prescribed burning is planned, ground level smoke impacts will be reduced by trading uncontrolled wildfire for meteorological/fuel moisture/and fuel loading controlled prescribed burning.

- The no net increase approach will satisfy state PSD requirements, and combined with a mandatory smoke management program, will minimize smoke intrusions and help prevent prescribed burning from contributing to NAAQS violations.

- The reduction in summertime wildfire emissions that is anticipated will benefit visibility in the Class I areas in northeast Oregon and reduce regional haze during this time of year.

- This strategy incorporates many of EPA's Best Available Control Measures for prescribed burning, which represents the greatest level of stringency for this activity.

- Establishing a real-time air quality monitoring network will help detect smoke impacts, allow some modification of burning activity, aid in the daily smoke management decision-making process, and serve as an overall record on the effectiveness of the smoke management program.

ODEQ believes this strategy represents a successful first step on the part of state air regulators and federal forest land managers in developing an acceptable balance between forest ecosystem management objectives and air quality requirements.

United States
Department of
Agriculture

Forest
Service

Fire and Aviation
Management

Washington, D.C.

FS-590

August 1996

Land Management Considerations in Fire-Adapted Ecosystems:

Conceptual Guidelines

"THE EARTH, born in fire, baptized by lightning since before life's beginning has been and is a fire planet."

—E.V. Komarek

United States
Department of
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Washington, D.C.

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August 1996

Land Management Considerations in Fire-Adapted Ecosystems:

Conceptual Guidelines

Ecosystems are not defined so much by the objects they contain as by the processes that regulate them.

—Norm Christensen

Land Management Planning Considerations in Fire-Adapted Ecosystems:

Conceptual Guidelines

This **conceptual guide** is intended to increase the awareness of fire-related considerations among land management planners, fire planners, public affairs specialists, line officers, and interested individuals and organizations.

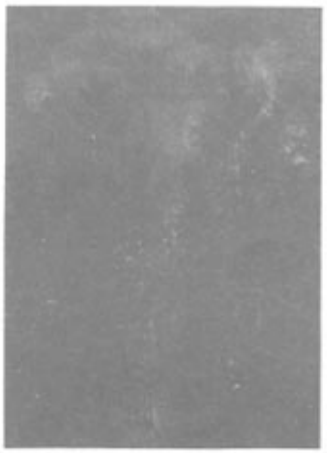
This guide will be used to establish the framework and foundation in the **Assessment Phase** of the Land Management Planning Cycle and to integrate **fire management considerations** into the succeeding steps of the Land Management Planning Cycle. Three other conceptual guides will follow:

- **Plan Development**
- **Plan Implementation**
- **Monitoring/Evaluation**

Fire-related Considerations

The following fire-related considerations are important themes that need to be integrated into the land management planning process.

Fire suppression has a place in wildland management.



Fire exclusion has environmental and economic consequences.

Ecosystems are always changing. Fire is a major agent of change.

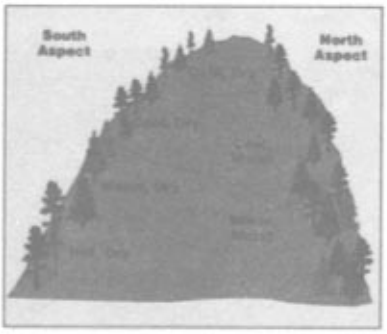
Using prescribed fire to meet ecosystem objectives results in social tradeoffs.

Ecosystems Are Always Changing.
Fire Is a Major Agent of Change.

The role of fire on the landscape is change; the effects of those changes are defined by the FIRE REGIME. Fire regimes describe the varied and dynamic fire characteristics present in the ECOSYSTEM. Fire regimes exist along a spatial and temporal continuum, which determines the possible range of effects that can be produced by fire's interaction with ecological landscapes.

Changes in an ecosystem from biological influences, physical influences, or social influences can cause measurable shifts or changes in fire regimes.

Ecosystem changes resulting from biological and physical influences are referred to as DISTURBANCE. In ecosystems without disturbance, fire plays different roles on different sites along the MOISTURE/ TEMPERATURE GRADIENT.



Historically on warmer and drier sites, fires typically burned frequently and at low intensities. This type of fire regime is referred to as STAND MAINTENANCE. Examples are ponderosa pine communities in the West and longleaf pine communities in the South.

Years showing pine fire frequency.

On cooler and moister sites, fire burned less frequently but at higher intensities. This type of fire regime is referred to as STAND REPLACEMENT.

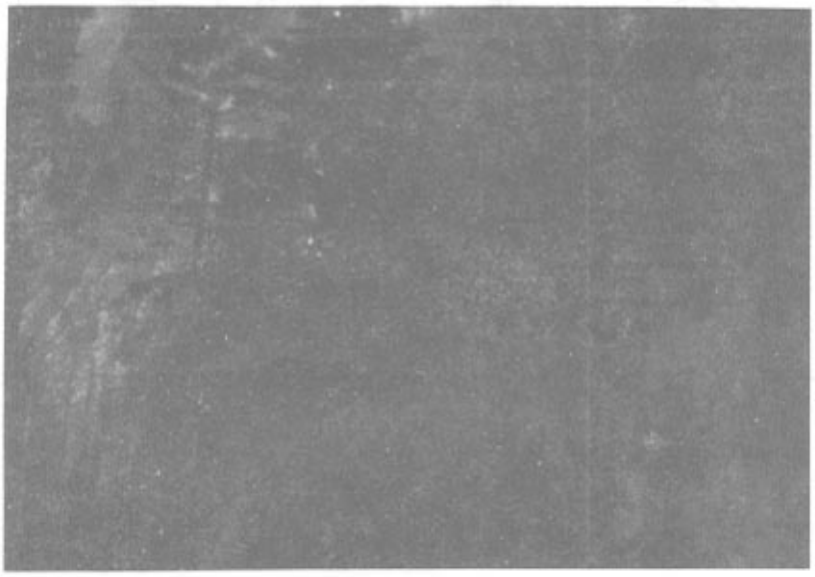
In FIRE-ADAPTED ECOSYSTEMS, significant changes in fire regimes have occured due to the prolonged absence of fire. These changes are first experienced in the short FIRE RETURN INTERVAL ecosystems because species composition and forest structure undergo rapid shifts when fire is excluded.

Sustaining SHORT INTERVAL FIRE-ADAPTED ECOSYSTEMS is emerging as an important challenge

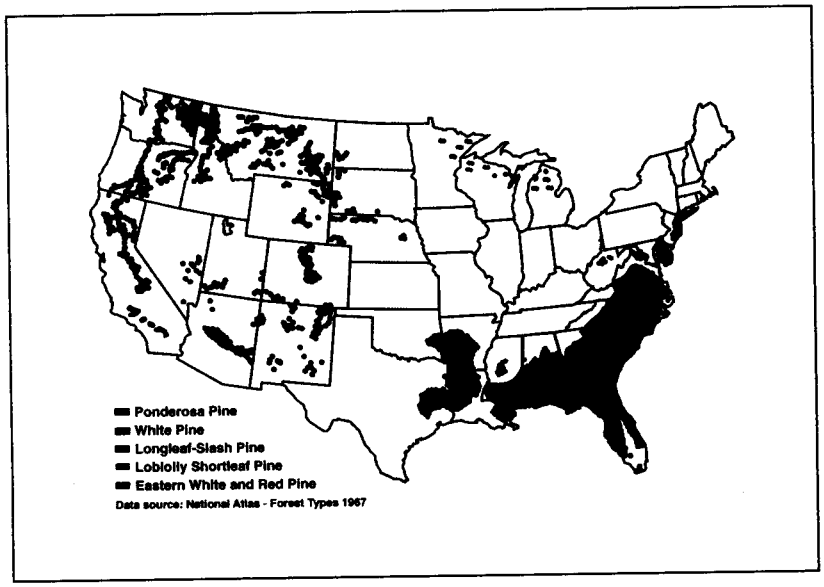
Succession

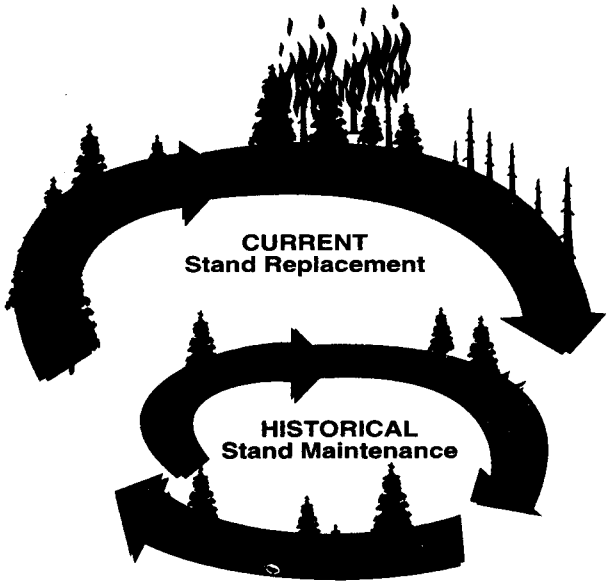
These photos show changes in species composition and ecosystem structure over time in the absence of low-intensity fire. Periodic surface burning maintained the open condition illustrated in the 1909 photo. All four photos are from the same field of view.

In short-interval fire-adapted ecosystems, successional changes have predisposed LATE SERAL STANDS to insect attack, disease outbreak, and severe high-intensity WILDFIRES.



Historically, short interval fire-adapted ecosystems are characterized as having NONLETHAL surface fires with a fire return of less than 25 years. Long-needle pine types commonly represent this kind of fire-adapted ecosystem. The effects related to FIRE EXCLUSION have caused the fire regime to shift to a fire regime characterized by LETHAL stand replacement intensities and moderate to long fire-return intervals. (Refer to burning cycles in a long-needle pine fire-adapted ecosystem.) Nearly all significant forest health problems and many of the most destructive wildfires occur in these ecosystems, where fire has been excluded for prolonged periods and the natural fire regime has shifted. The extent of the problem is widespread as these ecosystems occur on nearly 30 percent of National Forest System lands.



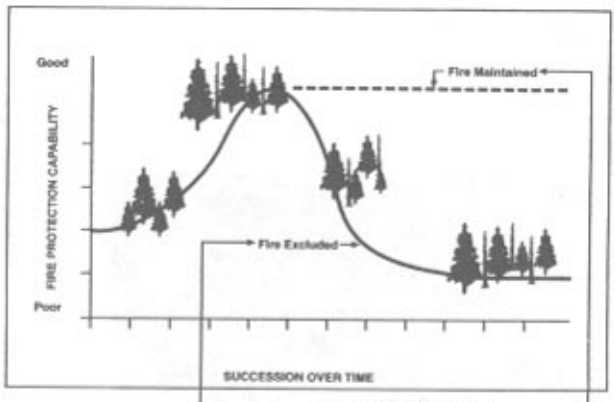


The burning cycle diagram illustrates the FIRE REGIME SHIFT from a stand maintenance to a stand replacement fire regime.

Fire Suppresion has a Place in Wildland Management

Fire suppression has an important place in wildland management. Forest Service mandate calls for commodity production and amenity protection. High value natural resources and private property in the vicinity of national forest lands require a capable and effective fire suppression organization.

Within short-interval fire-adapted ecosystems, suppression capabilities are limited and the economic costs are considerably higher when ignitions occur in LATE SERAL forest conditions.



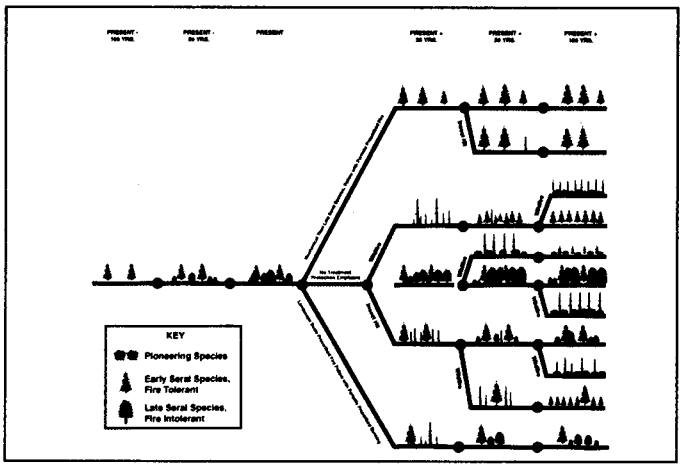
Forest condition representing high rates of fire spread and high resistance to control. (Fire excluded)

Forest condition representing low rates of fire spread and low resistance to control. (Fire maintained)

Fire Exclusion Has Environmental and Economic Consequences

The environmental consequences of fire exclusion are most apparent in short interval fire-adapted ecosystems. Stand replacement wildfires have displaced stand maintenance burning over wide areas of the country and have impeded our ability to provide outputs on a SUSTAINABLE basis (refer to Decision Tree.)

Projection of Possible Conditions in a Short Interval Fire-Adapted Ecosystem (Warm/Dry Habitat Group)



The Decision Tree, above, illustrates possible conditions and outcomes associated with various treatment alternatives. It assumes historical weather patterns, insects, disease, and fire will recur and focuses on scenarios expected to occur within 50-year intervals.

Using Prescribed Fire To Meet Ecosystem Objectives Results in Social Tradeoffs

PRESCRIBED FIRE can have important ecological benefits necessary to maintain fire-adapted ecosystem resilience and health, but its use can also result in social tradeoffs.

Smoke

- Although short interval fire-adapted ecosystems have evolved with fire and the smoke from fires, smoke impacts human health and impairs visibility.
- Land management planning can address the need to increase prescribed burning and, at the same time, improve air quality through better smoke management.
- The tradeoffs between smoke from prescribed fires and smoke from wildfires can be analyzed and needs to be displayed.

Risks

- Because an element of uncertainity is always present in the natural environment, some prescribed fires may escape and become wildfires.
- External and internal mechanisms favor short-term RISK avoidance. Risk avoidance is costly in the longrun.
- Land management planning can address how to identify, measure, and evaluate risk. Then, over time, resource managers can develop alternatives to reduce or mitigate risk. (Refer to Decision Tree.)

Healthy Ecosystems

- Fire is an essential process to the health and resilience of many ecosystems. Fire increases biodiversity.
- Public acceptance, smoke issues, and risk of escape constrain the expansion of prescribed fire programs.
- Land management planning should address education, information exchange, smoke management, and risk management.

Wildland-Urban Interface

- Development at wildland boundaries is expanding.
- Land management planning can address what is at risk from fire, and how the risk can be reduced.

Sample Checklist for Fire-Related Considerations in Land Management Planning

Information and Assessment Phase

- What are the natural fire return intervals and fire intensities of different forest ecosystems?
- Are there grassland, riparian, shrub, or forest ecosystems in need of restoration processes to improve their productivity or ecosystem health?
- Are there air quality considerations associated with smoke from prescription fire or wildfire?
- If wildfire occurs in the habitat of threatened, endangered, or sensitive species, will consultaiton with the appropriate agencies be needed?
- What is the status of the forest fire history information? Is GIS a possibility?
- Does desired condition address ecosystem structure, function, and species composition?
- Will these ecosystems be resilient over time from insect, disease, or high intensity stand-replacement wildfire?
- Are we working with local communities to minimize wildfire impacts?
- Are the consequences of fire exclusion being evaluated in fire-adapted ecosystems?
- Can prescribed fire be used to meet ecosystem objectives?
- How do fire suppression activities affect fire-adapted ecosystems?

Summary

This conceptual guide, Land Management Considerations in Fire-Adapted Ecosystems, provides baseline information for addressing fire management considerations in the Information/Assessment Phase of land management planning. The fire-related considerations are:

- Ecosystems are always changing. Fire is a major agent of change.
- Fire suppression has a place in wildland management.
- Fire exclusiton has environmental and economic consequences.
- Using prescribed fire to meet ecosystem objectives results in social tradeoffs.

These considerations should set the foundation for the integration of fire, as an ecosystem process, into the development, implementation, and monitoring/evaluation phases of the land management planning process.

"The Earth does not belong to man, man belongs to the Earth. All things are connected, like the blood that unites us all. Man did not weave the web of life, he is but a strand in it; whatever he does to the web, he does to himself."

Glossary

DISTURBANCE—any relatively discrete event, either natural or human-induced, that causes a change in the existing condition of an ecological system.

ECOSYSTEM—An arrangement of organisms defined by the interactions and processes that occur between them. Ecosystems are often defined by their composition, function, and structure.

> **FIRE-ADAPTED ECOSYSTEM**—An arrangement of populations that have made long-term genetic changes in response to the presence of fire in the environment.
>
> > **SHORT INTERVAL FIRE-ADAPTED ECOSYSTEM**—Ecosystems experiencing low intensity surface fires with a fire return interval of less than 25 years. Examples include long-needle pine fire-adapted ecosystems such as ponderosa pine.

ECOLOGY—The study and science of the interrelationships between organisms and their environments.

FIRE EXCLUSION—The disruption of a characteristic pattern of fire intensity and occurrence (primarily through fire suppression).

FIRE INTENSITY—The rate of heat release (BTU/second) per unit of fire front.

FIRE RETURN INTERVAL—The number of years between two successive fires documented in a designated area.

> **FIRE REGIME**—The fire pattern across the landscape, characterized by occurrence interval and relative intensity. Fire regimes result from a unique combination of climate and vegetation. Fire regimes exist on a continuum from short interval, low intensity (stand maintenance) fires to long interval, high intensity (stand replacement) fires.

FIRE REGIME SHIFT—A change of the fire pattern across a landscape resulting from changes in climate and vegetation.

FIRE SUPPRESSION (FIRE CONTROL)—All of the work and activities connected with fire extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

LETHAL—A term applied to **stand replacement fires** emphasizing destruction of the living overstory.

> **NONLETHAL**—A term applied to **stand maintenance fires** emphasizing the survival of the living overstory vegetation.

MOISTURE/TEMPERATURE GRADIENT—Relationship of the change in value between moisture and temperature.

PRESCRIBED FIRE—A wildland fire burning under specified conditions that will accomplish certain planned objectives. The fire may result from either management or natural conditions.

RISK—The probability of the occurrence of a hazard and/or the consequences of that hazard (Hazards are undesirable events.)

SUCCESSION—The process of vegetation change, over time, following a **disturbance.**

SERAL STAND—Refers to a specific forest composition and structure following a disturbance. Patterns of vegetation, over time, are referred to as seral stages.

LATE SERAL STAND—The seral stage occurring late in a forward progression or sequence of vegetation changes.

SUSTAINABLE—The ability to maintain a desired ecological condition or flow of benefits over time.

WILDFIRE—Any wildland fire that requires a suppression response.

WILDLAND—An area in which development is essentially nonexistent, except for roads, railroads, powerlines, and similar transportation facilities. Structures, if any, are widely scattered and are primarily for recreation purposes.

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