

Fire, Smoke and Forest Fuel Management

Presented to
Idaho Senate Resources & Environment Committee
January 21, 2008

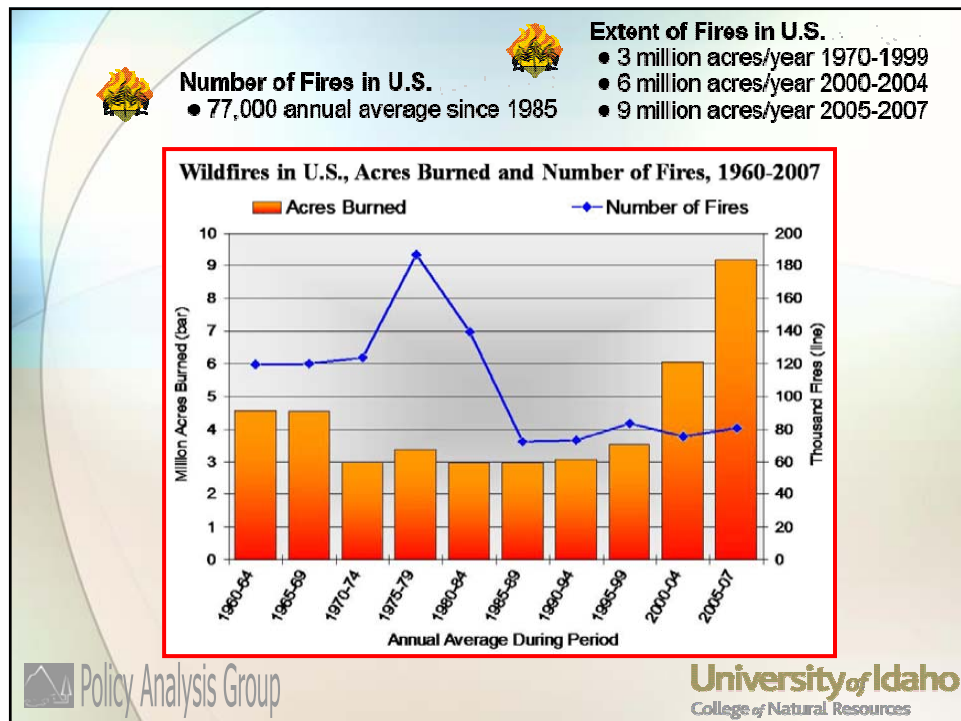
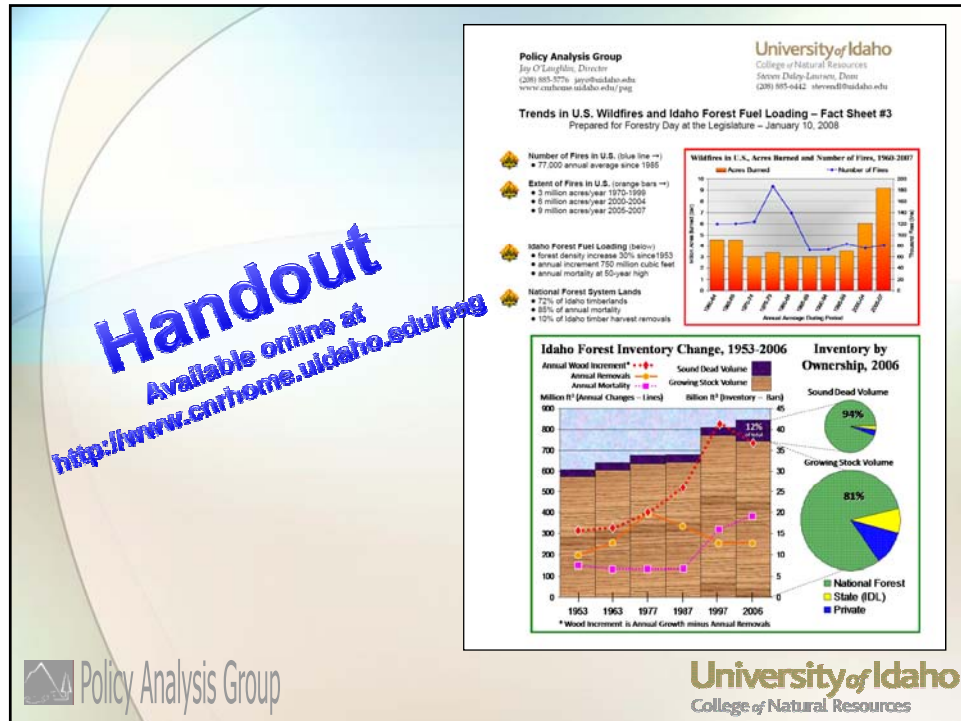
Jay O'Laughlin, Ph.D.
Professor and Director,
Policy Analysis Group
College of Natural Resources
University of Idaho, Moscow



60 Minutes, CBS-TV
aired Dec. 30, 2007

- 🔥 **Climate change has caused more fires by drying fuels and lengthening fire seasons in the West by as much as two months.**
- 🔥 **An aggressive fire suppression policy has allowed a huge buildup of fuels by excluding fire.**
- 🔥 **The resulting super-hot megafires mean some forests may never grow back because the burned soil will no longer support trees.**





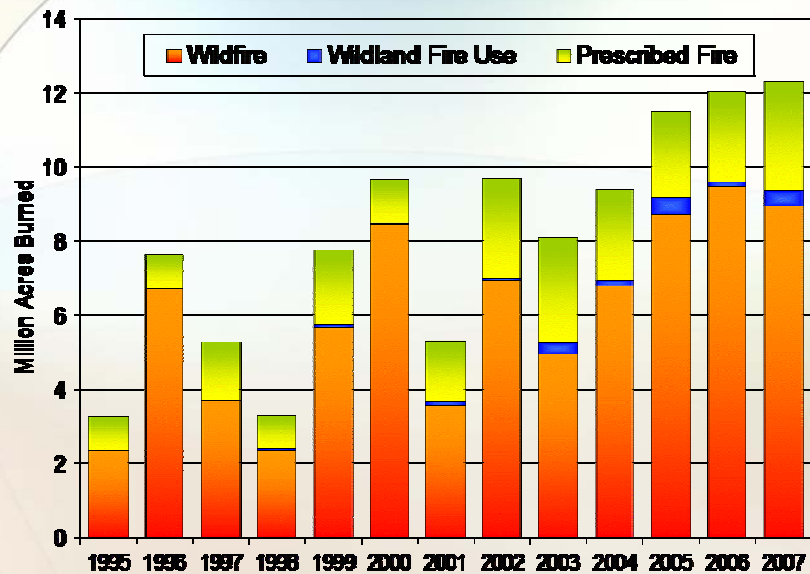
Torch and Shovel: The Means of Fire Management

Options

- 1. Let burn
 - 2. Suppress
 - 3. Prescribe burn
 - 4. Change combustibility
- } See chart, next page

Pyne, S.J. (2004). Chapter 2, in, *Tending Fire: Coping with America's Wildland Fires*. Island Press.

Wildland Fires in U.S., 1985-2007



Torch and Shovel: The Means of Fire Management

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Understanding Fire



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The most extensive and serious problem related to the health of national forests in the interior West is the overaccumulation of vegetation, which has caused an increasing number of large, intense, uncontrollable, and catastrophically destructive wildfires.

United States General Accounting Office
Report to the Subcommittee on Forests and Forest Health, Committee on Resources, House of Representatives

April 1999

WESTERN NATIONAL FORESTS

A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats




April 1999

GAO/RCED-99-65

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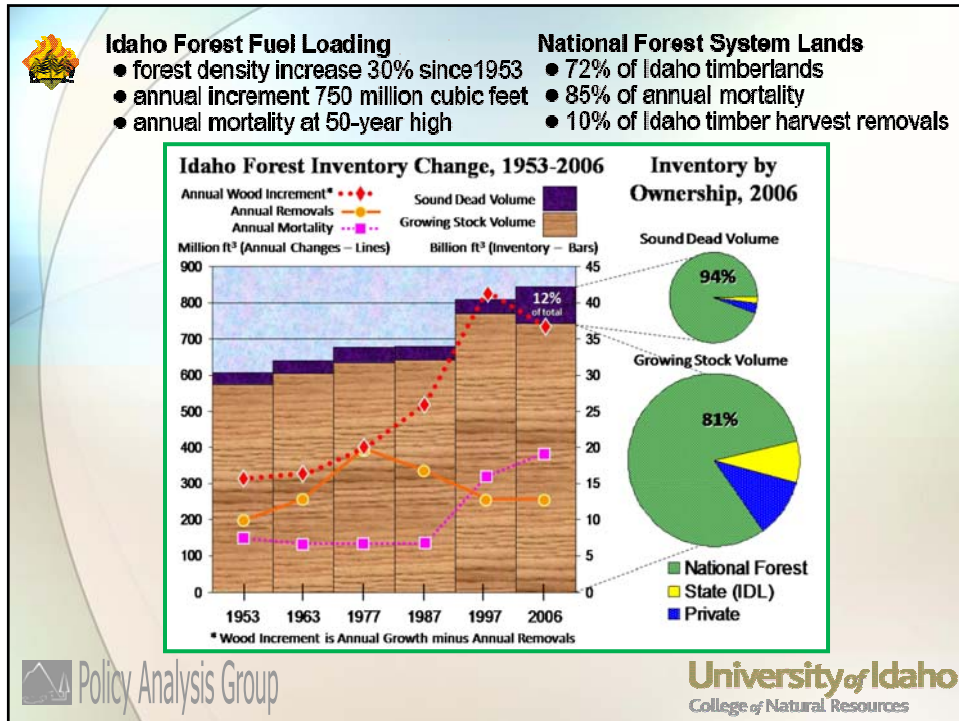
National Fire Plan

2000

The National Fire Plan addresses five key points:

-  **Improve Fire Prevention & Suppression**
-   **Reduce Hazardous Fuels**
-  **Restoration & Post-fire Recovery**
-  **Promote Community Assistance**
-  **Accountability**

The National Fire Plan is a cooperative, long-term effort among various governmental partners.



Wood Increment – Asset or Liability?

The annual increment of growing stock can be either a boon to forest health and human utility, or a liability.

Much of the forest is already overcrowded with excessive fuel.

Rampant net growth will increase the perils of insects, disease and catastrophic fire.

In testimony to Congress, Prof. Wallace Covington (2002) stated that the ecosystems of frequent-fire forests “are so degraded and fragile that they are no longer sustainable, and a liability rather than an asset to present and future generations.”

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Jerry Williams (2004)
Director, USFS Fire & Aviation (ret., 2005)



Fire Management today

Volume 65 • No. 4 • Fall 2005

**RECONCILING FRICTIONS IN POLICY
TO SUSTAIN FIRE-DEPENDENT ECOSYSTEMS**

**FIRE POLICY
FRICTIONS**

“... to get serious about reducing wildfire losses, we need to treat fuels at scales much larger than we are today. So long as the rate of fuels accumulation remains greater than the rate of treatment, over-accumulated biomass will continue to fuel severe wildfires that thwart our best efforts at control.”

United States Department of Agriculture
Forest Service

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HEALTHY FORESTS ACCOMPLISHMENTS

Millions of Acres of Hazardous Fuels Reductions and Landscape Restoration Activities



Year	Target Remaining	Non-Wildland Urban Interface	Wildland Urban Interface
2000*	1.5	0.0	0.0
2001	2.0	0.5	0.0
2002	2.5	1.0	0.0
2003	3.0	1.5	0.0
2004**	4.0	2.0	0.0
2005	4.5	2.5	0.0
2006	4.0	2.0	0.0
2007	4.5	2.5	0.0

Legend: □ Target Remaining, ■ Non-Wildland Urban Interface, ■ Wildland Urban Interface

Western Forester

Hazardous Fuels Reduction Versus the 400-Pound Gorilla

BY DOUG CHANDALL

As I was preparing to write this article, I received an email stating that the National Interagency Fire Center upgraded the National Preparedness Level for wildland fire risk to Level 5, the highest level—the point at which the potential exists to exhaust all available resources.

It has quadrupled the number of acres treated and the amount of money spent on hazardous fuels reduction, a huge increase over any previous administration. From 2000 to 2003, the U.S. Forest Service and Department of the Interior will have treated nearly 20 million acres. Since 2003, the first year of the administration's Healthy Forests Initiative, about 7.8 million acres have been treated in the wildland-urban interface (WUI), representing almost 40 percent of all

levels (in board feet) on national forests. The response was remarkable: net annual growth was approximately 20 billion board feet (BBF); net annual mortality was

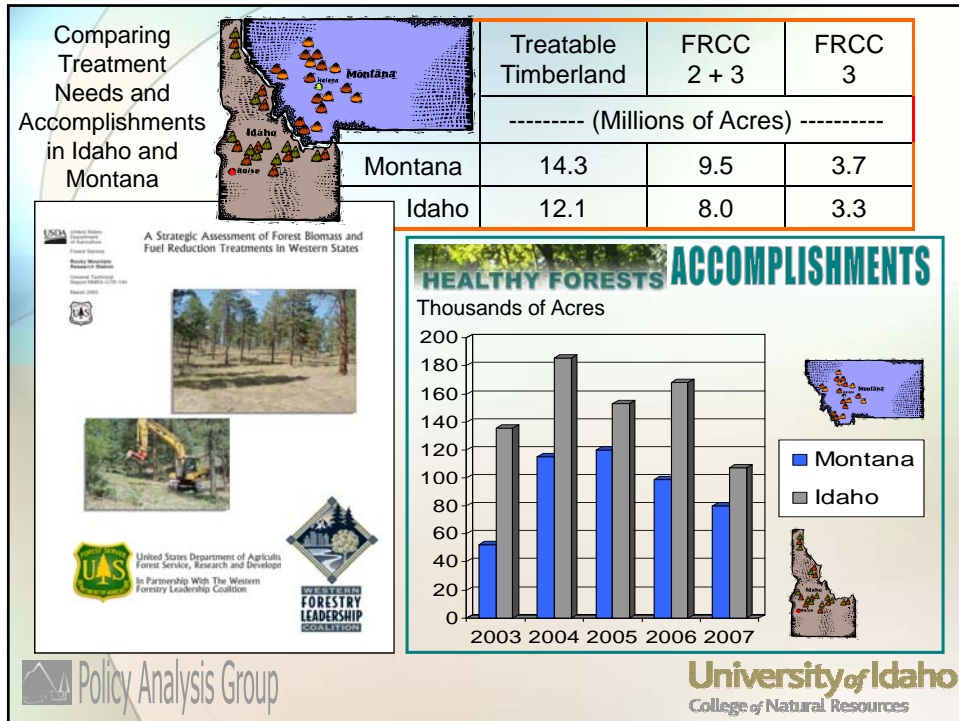
“... much positive activity in recent history. . . .

“Momentum has shifted from conflict and neglect to a recognition that there's actually a gorilla in the room [federal forest growth, mortality, and removals relationship; i.e., annual forest net growth]. . .

“[With] approximately 190 million acres at risk of uncharacteristic wildfires [almost 100 million acres in western forests, mostly on federal lands], treating four to five million acres a year just doesn't cut it (so to speak).”

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nfp National Fire Plan

Implementation of any significant fuel reduction effort will generate large volumes of biomass and require the development of additional workforce and operations capacity in western forests.



USDA United States Department of Agriculture
Forest Service
Randy Mendenhall
Research Station
General Technical Report GTR-485
March 2005

United States Department of Agriculture
Forest Service, Research and Development
In Partnership With The Western Forestry Leadership Coalition

WESTERN FORESTRY LEADERSHIP COALITION

The National Fire Plan is a cooperative, long-term effort among various governmental partners.



Western Forester
November/December 2006 Oregon • Washington State • Island Empire • Alaska Societies Volume 31 • Number 6

Biomass Energy and Biofuels from Western Forests



A recently thinned ponderosa pine stand near Klamath Falls, Ore.

BY MIKE CLOUGHESY AND ROGER LORD

The conversion of woody biomass to energy in the western United States presents a unique opportunity to simultaneously address three challenging needs: restoring forest health, fire resiliency and wildlife habitat, finding renewable energy alternatives, and revitalizing rural economies.

What is Woody Biomass?
Biomass refers to the sum total of all organic material in trees, agricultural crops and other living plant material. Woody biomass is any biomass composed of wood. In Oregon, it arises from these sources:
• Wood products residue in the wood

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Forest Biomass to Energy in Oregon: the Stars are Aligned

Presented by
Roger Lord
Mason, Bruce & Girard
Western Forest Economists Meeting
May 2006

MB&G

... opportunity to simultaneously address three challenging needs:

- Restoring forest health, fire resiliency, and wildlife habitat
- Finding renewable energy alternatives
- Revitalizing western economies

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slide # 10 • Jay O'Laughlin
WGA-FHAC_WIFLC_6-19-07

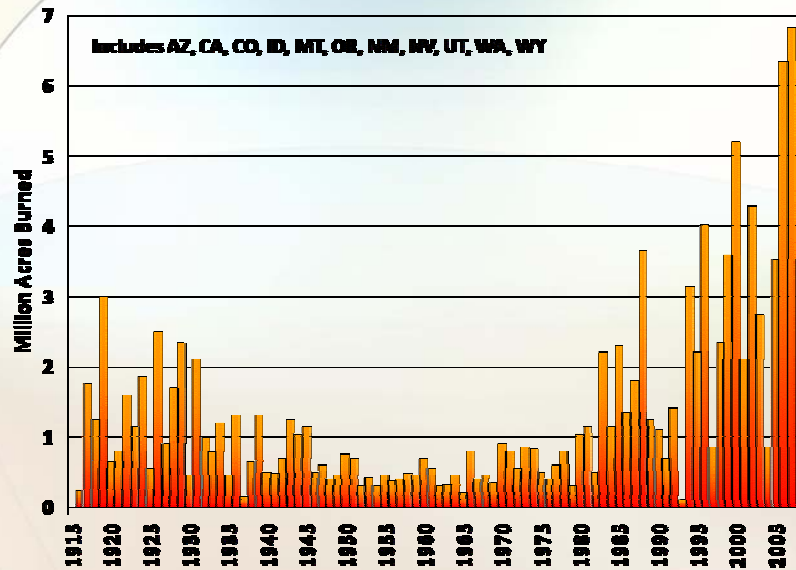
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Forest biomass causes problems when not used.

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Wildfires in 11 Western States, 1916-2007



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What lies ahead?

Increases in wildfire burn areas of 74 to 118% in the next century seem likely for the western U.S.

Steven W. Running (2006).
"Is global warming causing more, larger wildfires?"
Science 313: 927-928.



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What to do?



Prof. Jerry F. Franklin
Univ. of Washington

"Forests face new threat:
Global market change"

*Issues in Science &
Technology* (2004)

Prof. K. Norman Johnson
Oregon State Univ.



Unsustainably high accumulations of fire fuels on many Western lands exemplify the need for active management to restore and maintain functional forests. ... Major programs are now needed to restore fuel loads to characteristic levels, and maintaining them at appropriate levels will require active management in perpetuity, using tools such as prescribed burning and periodic fuel removal. [thinning]

Fuels Management

The overall importance of climate in wild-fire activity underscores the urgency of ecological restoration and fuels management to reduce wildfire hazards to human communities and to mitigate ecological impacts of climate change . . .

A.L. Westerling, et al. (2006).
"Warming and earlier spring increase
western U.S. forest wildfire activity."
Science 313: 940-943.



Active Management

We must change our approach to fuel and forest management. Today's wildfires are so extreme in their behaviour and effects that critical habitat for threatened and endangered species is destroyed, watershed function is disrupted and human habitat value reduced for centuries to come. To act now means a healthy, biologically diverse forest that is an asset, not a threat, to future generations.

Covington, W.W. (2000). Helping western forests heal: the prognosis is poor for US forest ecosystems. *Nature* 408:135-136.

It is time for ecologists, natural resource professionals, and others with relevant expertise to bring coherent, objective facts, and informed recommendations to the public and to national, regional, and local decision-makers.

Covington, W.W. (2003). Restoring ecosystem health in frequent-fire forests of the American west. *Ecological Restoration* 21(1): 7-11.



Wildland Fire Management Position Statement

DRAFT

The SAF advocates silviculture (thinning and prescribed fire) and forest biomass utilization to help manage for healthy forest conditions (watershed, wildlife, etc.) while reducing the accumulation of hazardous fuels and the threat wildfires pose to homes, communities, forest resources, and firefighters (see SAF 2005a, 2005b).





Wildland Fire Management Position Statement

DRAFT

The SAF supports full implementation and funding of the National Fire Plan and the revised 10-year Comprehensive Strategy Implementation Plan as a means toward containing wildfire suppression expenditures.



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Wildland Fire Management Position Statement

DRAFT

The SAF advocates policy changes leading to federal budget funding mechanisms for wildfire suppression activities that recognize the overwhelming influence of large fires on suppression expenditures and the compromised ability of public agencies to perform planned hazardous fuel reduction projects, protect communities, and do other resource management activities because funds are diverted to wildfire suppression.



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Wildland Fire Management Position Statement

DRAFT

When Community Wildfire Protection Plans suggest the implementation of projects on federal lands, the SAF recommends that federal agencies work closely with state and local governments and communities to implement these projects. The SAF believes that homeowners and private forest landowners have the primary responsibility of protecting their property from wildfire.



Wildland Fire Management Position Statement

DRAFT

The SAF recognizes the need to identify priority areas outside the wildland-urban interface (WUI) zone for wildfire hazard reduction through active fuels management.





Wildland Fire Management Position Statement

DRAFT

The SAF supports *wildland fire use (WFU)* as an *appropriate management response* to wildfire ignition but only when federal agencies have involved the public in developing the *fire management plan* necessary to authorize WFU. The SAF believes fire management plans should be closely linked with land and resource management plans.



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Wildland Fire Management Position Statement

DRAFT

The SAF recommends changes in federal, state and local smoke management policies to encourage rather than discourage the use of *prescribed fire* and *wildland fire use (WFU)*.



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Jerry Williams (2004)
Director, USFS Fire & Aviation (ret., 2005)



Fire Management today
Volume 65 • No. 4 • Fall 2005

**RECONCILING FRICTIONS IN POLICY
TO SUSTAIN FIRE-DEPENDENT ECOSYSTEMS**
Jerry Williams

As a fireman, I've lived with the paradox of fire: it's both a threat and a friend. At a time when wildfire potential has never been greater, societal expectations for protection have never been higher and political tolerance for failure has never been lower.

FIRE POLICY FRICTIONS

“... the time has come to move beyond fire policy alone and broaden our focus to include how we first manage the land and society's expectations for the land.”

United States Department of Agriculture
Forest Service

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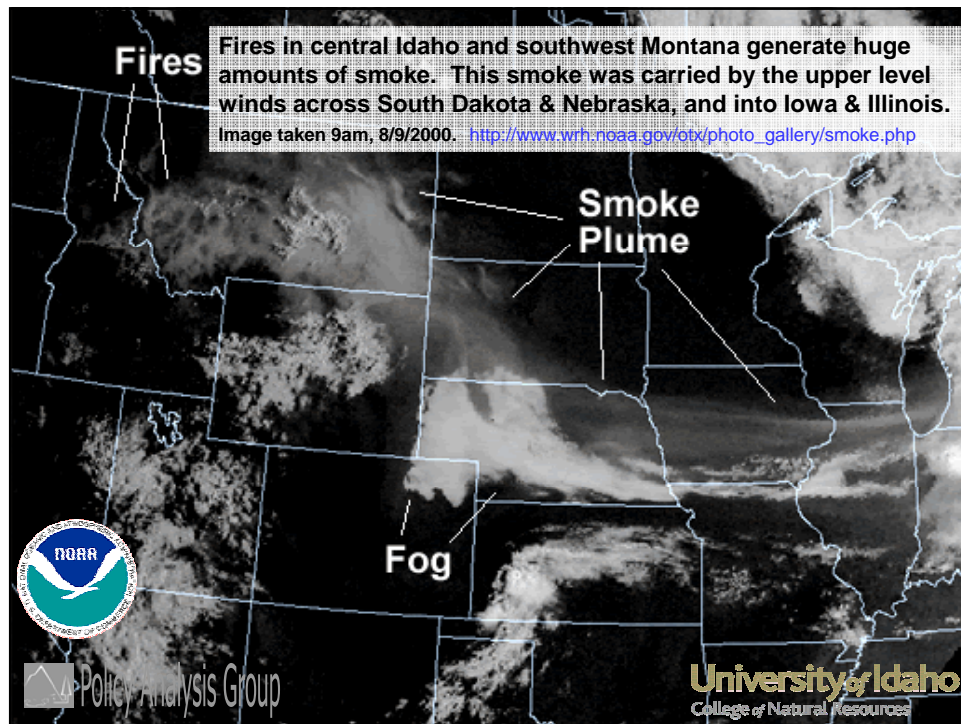
Air Quality & Smoke Management

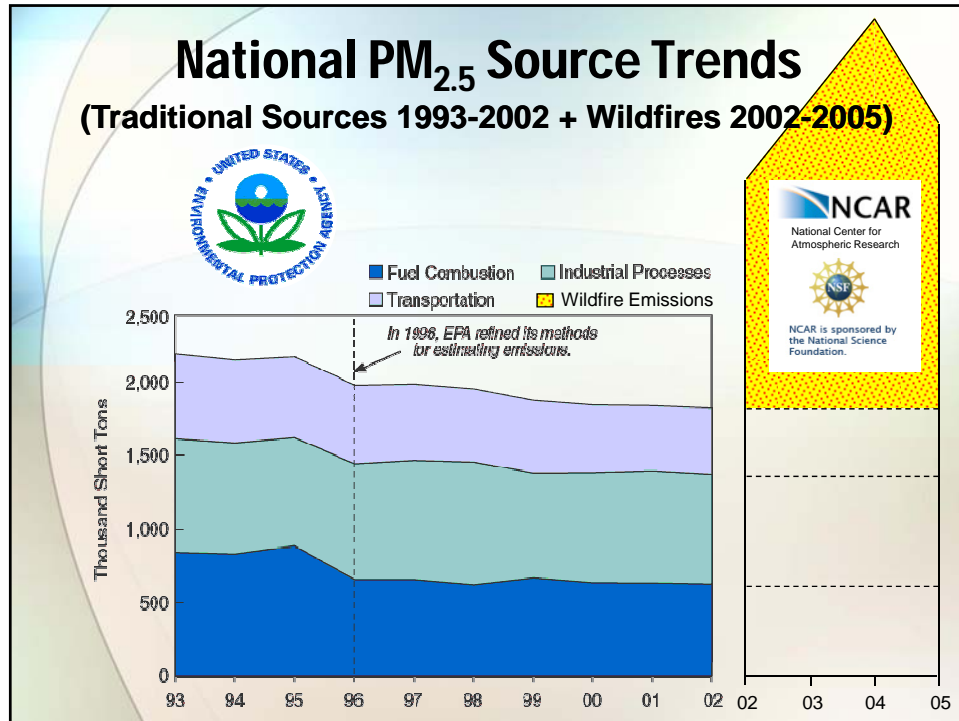
Trail Creek Fire, 2000, Boise National Forest, Idaho



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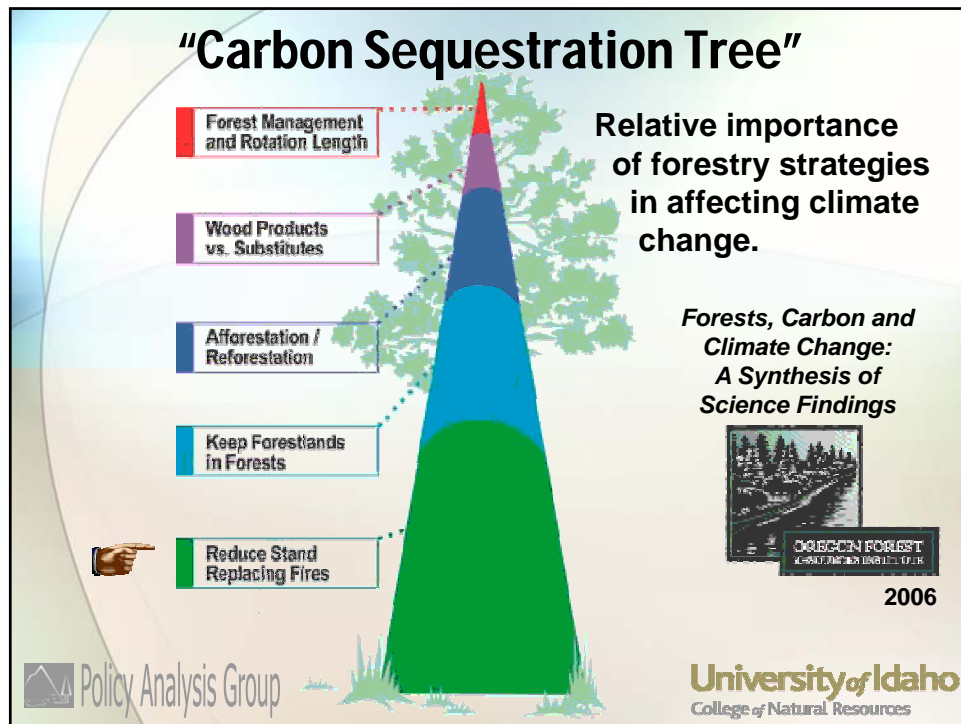
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Air Quality & Smoke Management

- PM_{2.5} is a significant human health problem, including premature death
- Analysis suggests that the new tighter PM_{2.5} standard will result in 2,500 to 5,700 fewer premature deaths per year
- These new standards focus additional attention on the prescribed fire/wildfire air quality tradeoff issue by potentially reducing opportunities to use prescribed fire.













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United States General Accounting Office

Testimony


Before the Task Force on Resources and the Environment,
Committee on the Budget, House of Representatives

For Release on Delivery Expected at 2:00 p.m., EDT Wednesday September 13, 2000


REDUCING WILDFIRE THREATS

Funds Should Be Targeted to the Highest Risk Areas

Statement of Barry T. Hill, Assistant Director, Energy, Resources, and Science Issues, Resources, Community, and Economic Development Division



2000



GAO/T-RCED-00-296

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nfp  **National Fire Plan**

A Collaborative Approach
for Reducing Wildland Fire
Risks to Communities
and the Environment


*10-Year Strategy
Implementation Plan*





December 2006

The National Fire Plan is a cooperative, long-term effort among various governmental partners.


nfp  **National Fire Plan**

Purpose

Provide a collaborative framework for an organized and coordinated approach to the implementation of the National Fire Plan in Idaho. This will be accomplished through the maintenance of viable working groups at both state and county levels that meet the intent of the National Fire Plan, the Disaster Mitigation Act of 2000, and the Healthy Forests Restoration Act of 2003.

**Idaho
Statewide
Implementation
Strategy
for the
National Fire Plan**

December 2006



The National Fire Plan is a cooperative, long-term effort among various governmental partners.

Land and resource management decisions always involve risk, including the decision not to take action.



Jack Ward Thomas and Mike Dombeck (1996).
"Ecosystem management in the interior Columbia River basin."
Wildlife Society Bulletin
 24(2):180-186.



Managers need to have a way to compare the short-term risks posed by active management against the long-term risks posed by continued inaction, and to communicate these risks in a meaningful way to the public.



Keynote Address
Dale Bosworth, Chief
USDA Forest Service







Risk Comparison

For HFRA (Healthy Forests Restoration Act of 2003) hazardous fuel-reduction projects to reduce wildland fire risks the courts are instructed to compare short- and long-term effects of action and no action before issuing injunctions on such projects:

Section 106: Judicial Review in United States District Courts. ... (c) Injunctions. (3) Balancing of Short- and Long-Term Effects As part of its weighing the equities while considering any request for an injunction that applies to an agency action under an authorized hazardous fuel-reduction project, the court reviewing the project shall balance the impact to the ecosystem likely affected by the project of (A) the short- and long-term effects of undertaking the agency action; against (B) the short- and long-term effects of not undertaking the agency action.

Strategic Placement Of Treatments "SPOTS"

-  The SPOTS framework establishes a consistent way to define risk and test potential solutions.
-  The framework can be used collaboratively across agency boundaries and would be useful even lacking complex modeling software or data.



Fire, Smoke and Forest Fuel Management

