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ENDING THE FOREST FIRE GRIDLOCK

MAKING FIRE FIGHTING IN THE WEST A STATE AND LOCAL RESPONSIBILITY

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EXECUTIVE SUMMARY

For the past five years, spending by the federal government for forest fire prevention and suppression has averaged almost $900 million per year. This amount is almost half of the total direct federal spending for land management for all other purposes. The high levels of federal spending reflect an increased danger of devastating forest fires in Western states, and the widespread fires that occurred in the hot and dry fire seasons in the summers of 1994 and 1996.

The increased risk of forest fire is a result of failed federal policies. Because the federal government has long – suppressed forest fires, many Western forests today possess an abundance of flammable materials, built up over many years. If a fire does erupt and get out of control, these forests are in a tinder box condition. The resulting forest fires burn with greater intensity than the more frequent fires of the past, often burning up the entire forest and doing major damage to the soil as well.

The U.S. Forest Service and other federal land management agencies now admit the error of their past ways. They propose to remove flammable materials from the forest by controlled burning, thus preventing future accumulations of wood that would sustain larger fires. They also propose limited timber harvesting with the purpose to reduce fire risks. However, owing to public opposition and other obstacles, the federal agencies are not likely to be successful in either of these plans.

The Forest Service has lost the confidence of the American public. The management of the National Forests is in a state of seemingly permanent gridlock. The only way to make the difficult decisions required by the current fire conditions in the National Forests is to decentralize forest fire management. State and local groups will have to work out among themselves the fire management regime appropriate to their varying local circumstances. State and local processes of decisionmaking can provide the social legitimacy that the centralized scientific management of the Forest Service now lacks.

The main responsibility for protection against forest fire in the West thus should be shifted to state and local governments. By the Forest Service's own estimates, 60 to 70 percent of its expenditures for forest fire fighting have a main purpose to protect human life and property in the urban/forest "interface." State and local governments are the ones with zoning and other regulatory authority to require land and property owners to take appropriate actions to minimize fire risks in such areas.

The existing spending of the federal government for fighting forest fires should be converted to a block grant and given on a transitional basis to the states. Over time, this grant would decline eventually to zero.

The extensive firefighting apparatus of the federal government should be privatized. States would contract with the new private firefighting organization, in part using the funds from their block grants, to provide necessary fire protection services.

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INTRODUCTION

The forest fires that raged over much of Florida in the summer of 1998 could presage outbreaks of similarly devastating fires over significant portions of the American West — if not this year, then in the near future. Human lives will be lost and damage to property will be widespread. The summers of 1994 and 1996 were already two of the worst fire seasons in the West in recent memory, and more are likely to follow.

The tremendous risks posed today by forest fires are the result of failed federal policies of the past. In 1994, more than 500,000 acres in the national forests of Idaho burned, 2.5 percent of the total land area of the state. Paradoxically, a principal reason for this outbreak was the suppression of forest fires in Idaho for most of the 20th century. In one part of the Boise National Forest, fire had been entirely suppressed since 1911 as part of a scientific experiment. Due to this longstanding suppression effort, the density of Douglas firs in this study area was three times historical levels. The thinner, shorter and tightly packed firs posed a major fire hazard, not only because of the much increased volume and density of wood but also because the fierce competition for survival had left most of the trees in a weakened condition. Indeed, fully 60 percent of the Douglas firs at this scientific research site were dead.[1]

The tremendous risks posed today by forest fires are the result of failed federal policies of the past.

Few areas suppressed fire for quite so long. Nonetheless, the Forest Service's longstanding policy of active fire suppression has created widespread ecological changes in western national forests that are often favorable to the outbreak of larger and more destructive forest fires.[2] "Idaho's national forests are in decline," according to Jay O'Laughlin. Throughout much of the

[1] Jay O'Laughlin, "Forest Ecosystem Health Assessment Issues: Definition, Measurement, and Management Implications," *Ecosystem Health*, Vol. 2, No. 1 (March 1996), p. 28. See also, Jay O'Laughlin, et. al., *Forest Health Conditions in Idaho*, Idaho Forest Wildlife and Range Policy Analysis Group (Moscow, Idaho: University of Idaho, December 1993).

[2] See Stephen J. Pyne, *World Fire: The Culture of Fire on Earth* (New York: Henry Holt and Company, 1995), pp. 183-218. See also Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire* (Princeton, N.J.: Princeton University Press, 1982), pp. 260-294; and Stephen J. Pyne, *An Introduction to Wildland Fire: Fire Management in the United States* (New York: John Wiley, 1984).

state, they are filled with "dense stands" that pose a major risk of "catastrophic wildfire" – of seeing still further repetitions of the large fires of 1994.[3]

Almost 40 million acres are ecologically impaired and otherwise at risk of large fire outbreaks.

Not all the forests in Idaho have these problems. Indeed, they are largely confined to the national forest system. Idaho national forests have 33 percent greater wood volume per acre than Idaho state and private forests. The state and private forests have, in general, been more intensively managed, involving higher timber harvest levels per acre and greater application of labor and capital for thinning, disease control, reforestation and other purposes. Yet, contrary to a common public impression, the more intensively managed state and private forests "appear to be healthier than [the] unmanaged forests," which are mostly in the national forest system.[4]

What is true of the national forests of Idaho is true as well of many other parts of the national forest system throughout the West.[5] A century of active suppression of fire has in itself drastically altered the ecological condition of the national forests. The fires of 1994 were followed only two years later by fires that consumed even more acreage. In 1996, federal and state governments spent more than $1 billion for forest fire suppression, most of it for emergency measures. From 1993 to 1997, total federal spending on forest fire prevention and suppression averaged $878 million per year.[6] According to the Forest Service, almost 40 million acres – more than 20 percent of national forest lands nationwide – are ecologically impaired and otherwise at risk of large fire outbreaks.[7]

The Forest Service is an agency buffeted by political controversy and burdened by the failed legacy of scientific management.

Active forest management is often the only feasible way to restore the forests to a condition where they would be more economically productive, attain a higher level of environmental quality, and pose less risk of catastrophic fire. Intensive management would also yield a condition closer to the historic ecological state of these forests, prior to the dramatic effects of Forest Service fire policies of this century. Hence, it might seem that an appropriate application of intensive forest management might offer the possibility of a "win-win" situation all around.

Yet it is unlikely that the Forest Service is capable of adopting sensible practices for fire control and management. The Forest Service is an agency buffeted by political controversy and burdened by the failed legacy of scientific management. This paper reviews the history of fire management in the national forests and concludes that the failures of fire policy are beyond the capacity of the Forest Service to correct, and are merely one facet of the

[3] O'Laughlin, "Forest Ecosystem Health Assessment Issues," pp. 28- 29.
[4] *Ibid.*
[5] See Lance R. Clark and R. Neil Sampson, *Forest Ecosystem Health in the Inland West: A Science and Policy Reader* (Washington, D.C.: Forest Policy Center, American Forests, 1995).
[6] U.S. General Accounting Office, *Federal Lands: Wildfire Preparedness and Suppression Expenditures for Fiscal Years 1993 Through 1997*, T-RCED-98-247 (Aug. 4, 1998), p. 8.
[7] Enoch Bell, et. al., *The Economics Assessment Report*, Report Submitted to Fire and Aviation Management, U.S.D.A. Forest Service, Sept. 1, 1995, p. 15.

Forest Service's larger fundamental problems. In order to deal with the failed legacy of a century of federal forest fire policy, the responsibility for forest fire management should be transferred elsewhere, out of federal hands.

A CENTURY OF FIRE SUPPRESSION

Before European settlement, fire was a pervasive presence in Western forests.[8] Many fires were started by lightning. Perhaps even more were set by Native Americans, who actively used fire as a way of manipulating the landscape for hunting, transportation, farming and other purposes.[9] According to the leading authority on the history of fire, Stephen Pyne, "it is often assumed that the American Indian was incapable of modifying his environment and that he would not have been much interested in doing so if he did have the capabilities." The truth is much different, that "he possessed both the tool and the will to use it. That tool was fire." Indeed, fire for American Indians was "a wonderful instrument without which most Indian economies would have collapsed."[10]

The arrival of European settlement in the West, greatly reduced the frequency of fire.

Owing to both natural and human causes, fire historically visited most Western forests on a frequent basis, in many places as often as every 10 or 15 years. For example, recent research on the history of Sierra Nevada ecosystems finds that prior to the 20th century, fire visited most stands every 10 to 25 years.[11]

The arrival of European settlement in the West, greatly reduced the frequency of fire. The new settlers displaced native Indian populations from most areas, concentrating the few surviving Indians on reservations, and ending Indian burning practices. European arrivals introduced cattle and other domestic livestock, which, in a reenactment of the "tragedy of the commons," rapidly exhausted the supplies of many native grasses. These grasses had served as combustible fuel to sustain natural and Indian fires and to carry fire easily from one place to another.

Then, early in this century the federal government introduced a policy of active suppression of fire. Government experts rejected as "primitive" and "unscientific" the idea that fire should be used as a basic tool of forest management. As Samuel Hayes notes, the conservation movement of the

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[8] For a general bibliography of fire impacts on forests, see R. J. Mastrogiuseppe, M. E. Alexander, and W. H. Romme, *Forest and Rangeland Fire History Bibliography* (Missoula, Mt.: U.S. Forest Service, Intermountain Forest and Ranger Experiment Station, November 1983).

[9] Stephen W. Barrett, "Indians and Fire," *Western Wildlands* (Spring 1980); Stephen W. Barrett and Stephen F. Arno, "Indian Fires as an Ecological Influence in the Northern Rockies," *Journal of Forestry* (October 1982).

[10] Pyne, *Fire in America*, p. 71.

[11] Kevin S. McKelvey, et. al., "An Overview of Fire in the Sierra Nevada," in *Status of the Sierra Nevada, Volume II: Assessments and Scientific Basis for Management Options*, Sierra Nevada Ecosystem Project, Final Report to Congress (Davis, Calif.: University of California, Wildland Resources Center Report No. 37, July 1996), p. 1034.

progressive era was grounded in a "gospel of efficiency."[12] What could be less efficient, it seemed to the early members of the Forest Service, than to let valuable timber burn in large amounts, a result of the spread of forest fires that were preventable. Gifford Pinchot, the founder and first chief of the Forest Service, wrote in 1917 that "the work of a Forest Ranger is, first of all, to protect the district committed to his charge against fire. That comes before all else."[13]

The practitioners of scientific management regarded knowledge obtained through formal research and other professional methods as authoritative, and tended to be dismissive of local knowledge grounded in practical experience. The great advantage of science was that, through the results of expert investigations, it would be possible to eliminate the waste and confusion that had inevitably attended to all the failed local experiments of the past. In short, the efficient method of science would supplant the haphazard and wasteful method of local trial and error.

Gifford Pinchot wrote in 1917 that "the work of a Forest Ranger is, first of all, to protect the district committed to his charge against fire."

In the Blue Mountains, local Indians had frequently burned the forests. Some of the earliest European arrivals imitated this practice. But the Forest Service rejected this approach as simplistic and old - fashioned. Indeed, as Nancy Langston writes in her book *Forest Dreams, Forest Nightmares*, they saw "burning as part of [the old] irresponsible laissez faire logging practices — practices utterly opposed to scientific sustained – yield forestry."[14] William Greeley, later to be chief of the Forest Service, said in 1911 that "firefighting is a matter of scientific management, just as much as silviculture or range improvement."[15] This led federal foresters to reject even the views of many local non-Indians who considered the government plan for eliminating fire to be "absurd."[16]

Pyne also relates the Forest Service thinking to the broader themes of the Progressive Era. The aspiration to scientific fire management early in this century involved "nothing peculiar, . . . nothing idiosyncratic to foresters." Rather, it was a natural outgrowth of the prevailing general "precepts of progressivism, the belief that scientific knowledge was essential and adequate, that public policy and public lands should be administered by experts trained in scientific management and shielded from political corruption and public whim." In the progressive gospel, the Forest Service efforts "reified" the widespread hopes to control nature for human use – "to wage a sublimated war on the forces of nature."[17]

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[12] Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (Cambridge, Mass.: Harvard University Press, 1959).
[13] Gifford Pinchot, *The Training of a Forester* (Philadelphia: J.B. Lippincott Co., 1917), p. 32.
[14] Nancy Langston, *Forest Dreams, Forest Nightmares: The Paradox of Old Growth in the Inland West* (Seattle: University of Washington Press, 1995), p. 249.
[15] Quoted in Pyne, *World Fire*, p. 185.
[16] Langston, *Forest Dreams, Forest Nightmares*, p. 253.
[17] Pyne, *World Fire*, p. 185, 192.

As a result, over the course of the 20th century, fire was largely eliminated from most Western forests. In the Sierra Nevada ecosystems, the expected incidence of fire in this century has been 10 percent or less what it would have been in the period before European settlement.

FIRE AND FOREST ECOLOGY

The removal of fire drastically altered the ecological workings of Western forests.[18] Aspen, for example, is a shade - intolerant tree species. Aspen depend on fire to remove the existing forest vegetation and to open the ground for the development of new aspen stands. Stated another way, aspen is mostly a "disturbance" species, which thrives in disequilibrium circumstances and fares poorly as a forest moves toward a "climax state." Without fire, as other more shade - tolerant trees gradually move into an area, the aspen will eventually lose out. Today, partly as a result of a century of fire suppression, by some estimates stands of aspen have been reduced by more than 50 percent of their former range throughout the forests of Colorado, Idaho, Utah and other states of the inland West.

The removal of fire drastically altered the ecological workings of Western forests.

The character of ponderosa pine forests, which in the 19th century covered large parts of the Northern and Southern Rocky Mountains and of the Sierra Nevada mountain range, has been greatly altered by fire - suppression.[19] Large ponderosa pines, like redwoods and certain other tree species, have thick bark and in other ways are themselves resistant to fire. In a typical ponderosa pine stand of the pre-settlement era, fire would sweep through the forest on a regular basis, perhaps every decade or two. Such fires would clear the forest floor of shrubbery and smaller trees of various invading species but would leave the large pines – often five feet or more in diameter — unharmed. The settlers arriving in the West commented frequently about the beautiful "parklike" conditions of the ponderosa pine forests; they could drive their wagons easily among the large trees spaced well apart. Sequoia and lodgepole pine forests have also been disrupted by the absence of fire.

At higher elevations, the suppression of forest fire has had a significant impact, but not to the same degree as in most lower and mid elevation forests. In the Sierra Nevadas, for example, high elevation forests of red fir typically experienced fire regimes that were "far less intense" than the mixed conifer and other forests lower down. Fire suppression has led to some increases in the density of the Sierra Nevada red fir forests but, on the whole, suppression measures "are thought to have had less effect . . . both because suppression

[18] Stephen F. Arno, "Forest Fire History in the Northern Rockies," *Journal of Forestry* (August 1980); Stephen W. Barrett, "Fire Suppression's Effects on Forest Succession within a Central Idaho Wilderness," *Western Journal of Applied Forestry* Vol. 3, No. 3 (1988).

[19] R. Steele, S. F. Arno, and K. Geier-Hayes, "Wildfire Patterns Change in Central Idaho's Ponderosa Pine-Douglas Fir Forest," *Western Journal of Applied Forestry* Vol. 1, No. 1 (1986).

activities began later (1920s to 1930s) . . . and because fewer fires would have burned there without suppression anyway."[20]

Decades of fire suppression in the national forests have left them economically less productive, and prone to much greater fire hazards.

Yet, on broad areas of forests across the West, smaller trees and shrubs that formerly had been kept down by frequent fire now survive and grew prolifically. In one study of the Cococino National Forest in Arizona, two researchers estimated that the number of trees had increased from 23 per acre in pre-settlement times to a present level of 851 trees per acre. In the Kaibab National Forest in Arizona, the increase was from 56 trees per acre many years ago to 276 at present.[21] In southwestern Montana, Douglas fir have encroached into areas that formerly had been grasslands, because frequent past rangeland fires that would have burned the Douglas fir instead are now suppressed.[22]

TINDER BOX FORESTS

The total land area of the national forest system is 192 million acres; excluding wilderness areas, there are 152 million acres. The Forest Service estimates that 57 million of these acres involve ecological systems where periodic fire should be a normal part of the ecosystem workings. At present, however, fully 39 million of these acres contain excess fuels buildups or other problems that make their current forest condition unsustainable.[23]

Decades of fire suppression in the national forests have left them economically less productive, more subject to disease and insect infestation, less aesthetically attractive, and ironically prone to much greater fire hazards. The severe fire seasons of 1994 and 1996 – coming after the Yellowstone and other large fires across the West in 1988 – were no accident. They were partly a result of a century of federal fire policy that has sought to eliminate fire from the Western landscape but instead has merely changed its time and place. Like failing to balance the budget, the burden is not eliminated but deferred into the future (and to the watch of some later politician). One might say that current federal fire policies are "unsustainable." And when the fire debt eventually is fully repaid, as with money debt, the repayment will likely come with interest. Indeed, Pyne labels current federal fire policies in the West as "the environmental equivalent of the S&L scandal."[24]

One might say that current federal fire policies are "unsustainable."

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[20] Chi-Ru Chang, "Ecosystem Responses to Fire and Variations in Fire Regimes," in *Status of the Sierra Nevada, Volume II*, p. 1088.

[21] Study results given in R. Neil Sampson, et. al., *Assessing Forest Ecosystem Health in the Inland West* (Washington, D.C.: 1995), p. 7.

[22] Stephen F. Arno and Geore E. Gruell, "Douglas-Fir Encroachment into Mountain Grasslands in Southwestern Montana," *Journal of Range Management* (May 1986). See also Stephen F. Arno and George E. Gruell, "Fire History at the Forest-Grassland Ecotone in Southwestern Montana," *Journal of Range Management* (May 1983).

[23] Bell, *The Economics Assessment Report*, p. 15.

[24] Stephen J. Pyne, "Flame and Fortune," *Evergreen* (Winter 1994-1995), p. 7.

Following the widespread forest fires of 1994 and 1996, the many more such fires expected in the future will be more intense, more difficult to control and more ecologically harmful than the forest fires of the past. That is partly because, if a fire breaks out now, existing forests are like a torch waiting to be lit. The new dense stands of thinner trees burn rapidly and with greater heat than the more frequent, but lower intensity, ground fires of earlier times. Also, fire often breaks out now in trees either weakened, dying, or dead, and thus all the more flammable. The intense competition for survival among large numbers of small trees leaves them exposed to insects, microbes and other agents of disease.

Due to high forest densities, advancing fires can now often reach up into the lower branches and from them spread to the "crown" of the ponderosa pines and other large old trees. Thus, instead of leaving the larger trees undamaged, as in the forest fires of the past, the entire forest is today more likely to burn, and sometimes at intensities and temperatures previously unknown to these areas. Indeed, the temperatures can be so hot that – rather than replenishing the soil, as fires historically did – they now may destroy the biotic community altogether or fuse the soil, leaving an ugly and sterilized forest environment in which any regeneration will be much - delayed. As one ecologist warns, "the trend of increasing intensity of fires may have adverse consequences on soil nutrients" because it can "volatilize large amounts of nitrogen and other volatile nutrients, disrupt soil structure, and induce water repellency and erosion."[25]

Fires expected in the future will be more intense, more difficult to control and more ecologically harmful than the forest fires of the past.

The high - intensity fires are less frequent but when they do occur, they are likely to burn the entire forest. In the Upper Columbia River Basin (including lands in parts of Idaho, Montana, Nevada, Utah and Wyoming), 58 percent of the acres burned on Forest Service and Bureau of Land Management lands now involve "stand-replacing" fires in which the entire forest goes up in flames. Historically, before the current fuels buildups in these forests, only 19 percent of total acres burned involved such high – intensity fires. On the other hand, historically more frequent "low – severity fires" used to cover 31 percent of the forest acreage burned, but this figure today has declined to 11 percent.[26]

Fully 98 percent of forest fires today are rapidly and effectively controlled under current policies. If a fire is not quickly controlled in the fire - prone forests of the West, however, there may be no stopping it – especially in periods of drought and wind when the fire hazard in a dry forest escalates. Indeed, the 2 percent of fires that are not successfully controlled account for 94 percent of burned acres and 60 percent of forest firefighting expenditures. It is these few, but very large, fires that do the real damage to homes and other

[25] Chang, "Ecosystem Responses to Fire and Variations in Fire Regimes," p. 1078.

[26] U.S. Forest Service and U.S. Bureau of Land Management, *Upper Columbia River Basin Draft Environmental Impact Statement, Volume 1*, Interior Columbia Basin Ecosystem Management Project (Boise, Idaho: May 1997), p. 2-20

Table 1

WILDLIFE STATISTICS
Includes Forest Service, DOI, and State and Private Lands

YEAR	NUMBEROF FIRES	ACRESBURNED
1996	93,363	6,065,998
1995	130,226	2,300,135
1994	114,043	4,732,581
1993	97,322	1,606,868
1992	104,189	1,883,613
1991	117,209	3,537,224
1990	122,763	5,454,771
1989	121,714	3,264,191
1988	154,573	7,398,889
1987	143,877	4,152,575
1986	139,980	3,308,133
1985	113,840	4,434,748
1984	118,636	2,266,134
1983	161,649	5,080,553
1982	174,755	2,382,036
1981	249,370	4,814,206
1980	234,892	5,260,825
1979	163,196	2,986,826
1978	218,842	3,910,913
1977	173,998	3,152,644
1976	241,699	5,109,926
1975	134,872	1,791,327
1974	145,868	2,879,095
1973	117,957	1,915,273
1972	124,554	2,641,166
1971	108,398	4,278,472
1970	121,736	3,278,472
1965-69	119,986	4,561,235
1960-64	119,558	4,582,276
1955-59	115,070	6,202,802
1950-54	178,545	12,628,789
1945-49	173,245	19,219,874
1940-44	188,996	26,619,923
1935-39	199,340	31,957,424
1930-34	169,696	46,328,966
1925-29	129,364	35,827,651
1920-24	57,846	16,181,483
1916-19	33,118	12,625,730

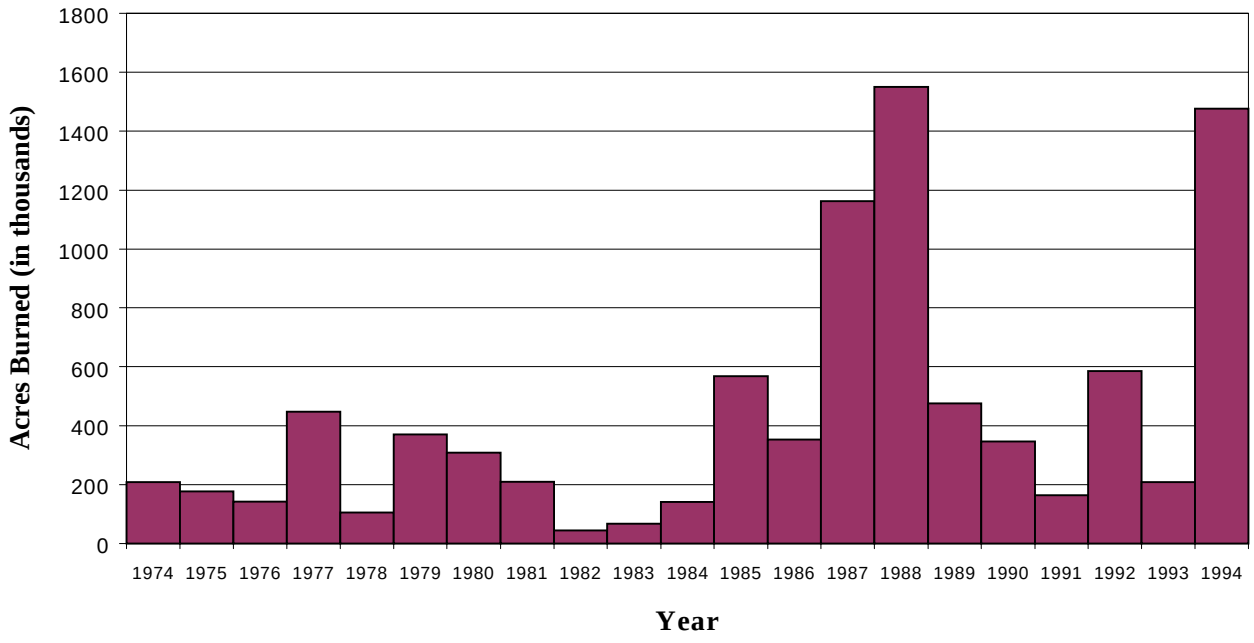
*data for years prior to 1970 is averaged in 5 year increments
Source: U.S. Forest Service, Forest Fire Database, 1997

property. They are the ones that endanger the lives of firefighters and frighten the public, creating virtually irresistible political pressures for massive government expenditures for (often ineffective) emergency fire suppression.

It took time to turn the national forests into giant tinder boxes. By 1926, the Forest Service had a policy of keeping all forest fires below 10 acres in size. In 1935 it adopted its "10:00 A.M. policy," setting a Forest Service-wide target that every reported forest fire should be controlled by 10:00 A.M. of the next day. After World War II, the Forest Service escalated its fire – suppression efforts to meet such goals, including the "Smokey the Bear" campaign.[27] As shown in Table 1, by the early 1950s all these efforts were succeeding in sharply reducing the number of acres burned by forest fires nationwide each year.

The low point was reached in the mid 1970s; the level of forest fires averaged 2.3 million acres per year burned from 1972 through 1975. Since then, there has been an upward trend, as seen in Figure 1 for lands under National Forest protection. The declines in acres burned over by fire showed up earlier and the recent increases have been greater in the forests of Idaho, Montana, Oregon and Washington State, comprising the Upper Columbia River Basin of the inland West, as shown in Figure 2.

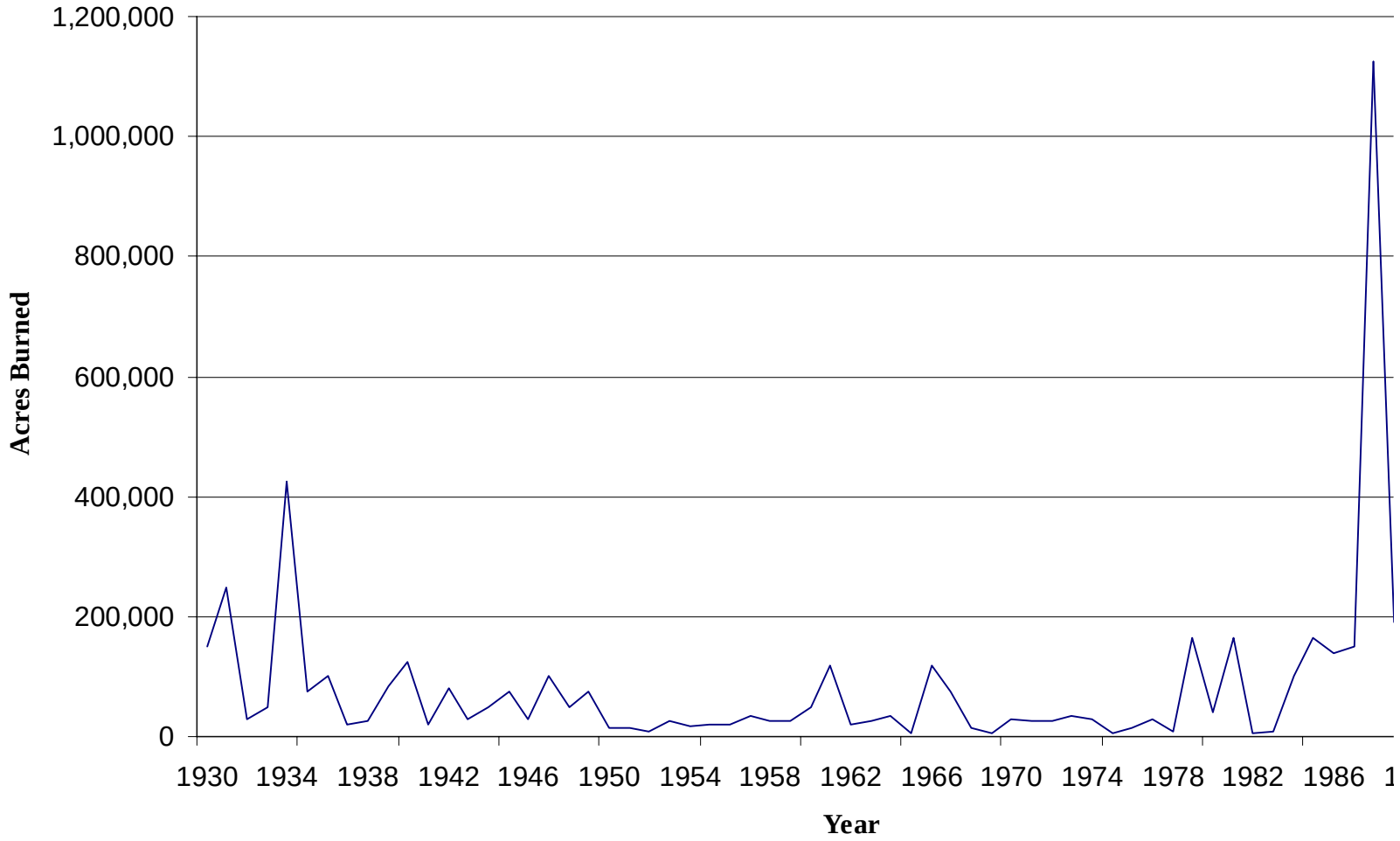
Figure 1
Number of Acres Burned Under National Forest Protection
1974-1994



Source: U.S. Forest Service, National Forest Fire Report, 1994 *(August 1996), p.16.*

[27] Susan J. Husari and Kevin S. McKelvey, "Fire-Management Policies and Programs," in *Status of the Sierra Nevada, Volume II*, p. 1102.

Figure 2
Wildfire Acreage in Forest Service
Northern and Intermountain Regions 1930-1994



Source: U.S. Forest Service and U.S. Bureau of Land Management, Upper River Basin Draft Environmental Impact Statement, *Volume 1 (Boise, ID: 1998), Ch. 2, p. 179.*

Table 2

Forest Service Fire protection and fire fighting expenditures (1994$ in millions)
FY1970-1994 by major class of expenditure

	Forest Fire Protection		Fighting Forest Fires (Suppression)				
Fiscal Year	**Presuppression**	**Other**	**FFP Total**	**Suppression**	**Other**	**FFF Total**	**GrandTotal**
1970	104.2	16.4	120.6	101.2	3.9	105.1	225.7
1971	105.2	15.6	120.9	289.6	8.3	297.9	418.8
1972	100.7	12.0	112.7	201.71	10.0	211.8	324.4
1973	99.0	11.1	110.1	194.6	6.4	201.0	311.1
1974	103.0	11.3	114.2	316.0	15.2	331.2	445.4
1975	123.8	18.5	142.3	301.3	11.4	312.7	455.0
1976	94.5	18.7	113.2	371.4	7.0	378.4	491.6
76TQ	33.9	5.9	39.8	172.9	4.0	176.9	216.8
1977	257.3	76.3	333.7	220.7	18.2	238.9	572.6
1978	225.0	85.0	309.9	59.6	7.3	66.9	376.8
1979	228.2	32.8	260.9	159.0	10.3	169.3	430.2
1980	250.3	41.2	291.5	114.6	10.5	125.2	416.6
1981	249.9	35.0	284.9	161.1	13.7	174.8	459.7
1982	191.5	27.6	219.1	41.6	4.1	45.7	264.8
1983	198.8	29.0	227.8	46.8	5.1	52.0	279.8
1984	196.0	26.5	222.5	87.4	6.0	93.4	315.9
1985	192.1	22.9	215.0	217.9	8.5	226.4	441.4
1986	185.7	13.4	199.2	145.4	6.7	152.1	351.3
1987	186.6	14.3	200.9	323.3	10.8	334.1	535.0
1988	186.5	16.2	202.7	511.6	35.8	547.4	750.2
1989	171.4	17.0	188.4	376.2	25.9	402.1	590.5
1990	180.6	20.5	201.0	249.9	38.5	288.4	489.4
1991	177.0	20.9	197.9	119.6	28.8	147.7	345.6
1992	179.5	20.0	199.5	269.6	38.1	307.7	507.2
1993	169.7	25.1	194.8	111.9	73.8	185.7	380.5
1994	141.3	47.3	188.6	667.6	95.0	762.5	951.1

Source: U.S. Forest Service, Fire Economics Assessment Report *(September 1, 1995), p. 26.*

Table 2 shows how Forest Service fire expenditures were generally declining from the mid 1970s to the mid 1980s, as the agency began to recognize that much of its previous fire–suppression efforts had been counterproductive. However, since the mid 1980s, as large fires have become more intense and destructive, and as acreage burned has increased, Forest Service expenditures for fire protection and firefighting have climbed rapidly. By 1994, as compared with $217 for emergency fire suppression in 1985, that number seemed small, as the Forest Service devoted a record $667 million to emergency fire suppression. Combined Forest Service spending on fire for all purposes in 1994 equaled one–third of the agency's total budget.[28] With Interior Department and other federal spending added in, total federal forest fire emergency expenditures reached $925 million in 1994, with additional large state and local spending on top of that. Including also routine presuppression and other fire protection expenditures budgeted in advance, total federal spending on forest fire management in 1994 was well in excess of $1 billion. In addition to the large financial costs, a total of 34 firefighter lives were lost in that year.

As much as 60 to 70 percent of current agency expenditures for firefighting are devoted to protecting lives and physical structures in the "wildland/urban interface."

When forest fires again raged across the West in 1996, this time they covered 6.1 million acres, compared with 4.7 million acres in 1994. The federal government now was forced to spend $721 million, and state governments to spend another $325 million for emergency suppression purposes. Forest Service fire management in all categories absorbed $835 million in all, or about a quarter of the total agency budget for all purposes in 1996.[29]

The greater intensity of recent fires and the greater ecological damage that has resulted are only partial explanations for the rise in fire spending. Another important factor is the spread of human populations and housing development into forested areas. By some Forest Service estimates, as much as 60 to 70 percent of current agency expenditures for firefighting are devoted to protecting lives and physical structures in the "wildland/urban interface."[30] With many western forests in an incendiary condition, and with populations moving into forested areas surrounding many Western urban centers, large fires often pose significant risks to human well-being. Nonetheless, current levels of spending for fire protection are economically questionable; more is often spent to protect a piece of private property than the market value of this property.

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[28] U.S. Forest Service, *Course to the Future: Positioning Fire and Aviation Management* (Washington, D.C.: May 1995), p. 2.

[29] U.S. Forest Service, Department of Agriculture, *Report of the Forest Service, Fiscal Year 1996* (Washington, D.C.: July 1997), p. 152.

[30] The Forest Service reports that "Most knowledgeable people believe that the protection of private property consumed a disproportionate share of firefighting resources — an estimated 60 percent of resources on all of the fires in 1994." See U.S. Forest Service, Department of Agriculture, *Fire Suppression Costs on Large Fires: A Review of the 1994 Fire Season* (Washington, D.C.: Aug. 1, 1995), p. 13.

RETHINKING FIRE POLICY

Questions were first raised concerning federal fire policies in the 1960s and 1970s among a circle of ecologists and fire experts. But not until the 1990s did fire policy become a central element in the broader debate over the future management of the national forests.[31] This greater attention has reflected in part the new emphasis being place on ecological management and the recognition that fire policy can play a critical role in shaping the character of many forest ecologies.[32] It has also reflected a concern over the rapidly rising costs for fire suppression and the growing incidence of large, destructive fires in the West. Still, while these matters have been increasingly discussed in the forest policy community, the broader public, for the most part, has remained unaware of these developments. Many Americans still hold to the "Smokey the Bear" attitudes, so effectively promoted for many decades by the Forest Service, that forest fire is an evil, a waste of good resources as well as a hazard to human life and property, to be defeated at all costs as part of the scientific advance of progress in the world.[33]

Many Americans still hold to the "Smokey the Bear" attitudes, that forest fire is an evil, a waste of good resources.

In the mid 1990s a number of leaders in the American forestry profession commenced an active campaign to change public attitudes about forest fires. Expert study after expert study has explained how the federal fire policies of this century have now reached an economic and environmental dead end.[34] The first systematic statement to this effect was released in 1994 by the National Commission on Wildfire Disasters, chaired by Neil Sampson, then executive vice president of American Forests, one of the oldest and most respected organizations giving voice to the views of the American forestry profession. The commission declared that "millions of acres of forest in the Western United States pose an extreme fire hazard from the extensive build-up of dry, highly flammable forest fuels."[35]

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[31] It should be noted that the Bureau of Land Management in the Interior Department also manages valuable federal forests in Oregon and northern California.

[32] See Stephen F. Arno and James K. Brown, "Managing Fire in Our Forests: Time for a New Initiative," 86 *Journal of Forestry* 44-46 (1989); Stephen R. Arno and James K Brown, "Overcoming the Paradox in Managing Wildland Fire," *Western Wildlands* (Spring 1991).

[33] There have been a number of popular articles emphasizing the ecological importance of forest fires. See, for example, John G. Mitchell, "In the Line of Fire: Our National Forests," *National Geographic* (March 1997); Michael Parfit, "The Essential Elements of Fire," *National Geographic* (September 1996); Michael Paterniti, "Torched," *Outside* (Sept. 1995); William K. Stevens, "Fire Seen as Vital for Nature, Igniting Ecological Debate," *New York Times* (Oct. 25, 1994), C1. However, given the longstanding view that fire is a menace, these articles have thus far had only a limited impact on public opinion.

[34] See U.S. Department of Agriculture and U.S. Department of the Interior, *Final Report on Fire Management Policy* (Washington, D.C.: May 1989); National Association of State Foresters, *Fire Protection in Rural America: A Challenge for the Future*, A Report to the Congress and Other Policy Makers (Washington, D.C.: January 1994); *Report of the National Commission on Wildfire Disasters* (Washington, D.C: 1994); U.S. Forest Service, *Western Forest Health Initiative Report* (Washington, D.C.: 1994); U.S. Forest Service, *Fire Management Strategic Assessment Report* (Washington, D.C.: 1994); U.S. Department of the Interior, U.S. Department of Agriculture, *Federal Wildland Fire Management: Policy and Program Review* (Washington, D.C.: Dec. 18, 1995); and Forest Health Science Panel, *Report on Forest Health of the United States* (Washington, D.C.: April 4, 1997).

[35] *Report of the National Commission on Wildfire Disasters* (Washington, D.C.: 1994), pp. 9-10.

Existing federal fire policies, the commission reported, were having negative impacts on timber supplies, watershed conditions, wildlife habitat, air quality (from the smoke of large fires), and the protection of homes and other physical property located in forest areas. These policies were also harmful to the basic ecological functioning of the forest: "As we learn more about ecosystems and their essential components, we realize that wildland fires are one of the natural processes that may be essential to the maintenance of a healthy ecosystem." Forest managers therefore faced a challenge of "determining how to manage fire at an acceptable scale and intensity, given today's conditions and demands."[36]

Two main options for limiting future damage from large fires were identified. Excessive fuels buildup might be removed by prescribed burning – allowing certain natural fires to continue to burn and deliberately setting other fires in appropriate times and places. However, in many cases the commission recognized that fire would be "too risky to be used as a management tool."[37] Fires allowed to burn anywhere near urban areas might, for example, pose a large risk of destroying valuable homes and other properties, if they got out of control. In other places a forest fire might create unacceptable air pollution; it might become a "crown" fire, destroying the entire forest; or it might burn at too high a temperature and thus do major ecological damage to the soils and other forest components.

By 1994, the need for major changes in fire policy had become a top concern of Forest Service management.

Hence, if any action were to be taken at all, in many areas it might have to be something other than prescribed burning. The main alternative is mechanical removal of unwanted trees and shrubs. Commercial thinning and other forms of timber harvesting might have to serve, at least in the first round of removal of excess trees and other vegetation from Western forests, as a modern substitute for the historic workings of fire. If the timber is worth anything economically (which in some cases it is not), the value of the timber can also help to cover the costs of excess fuels removal. It might help to justify taking removal actions in the eyes of skeptical federal budget examiners.

By 1994, the need for major changes in fire policy had become a top concern of Forest Service management. As it moved to reverse a policy direction that dated all the way back to 1910, the Forest Service now publicly acknowledged in a number of reports that its past fire suppression had had many harmful consequences. A 1995 Forest Service publication, *Course to the Future: Repositioning Fire and Aviation Management*, stated that as a result of past policies, "the potential for large, catastrophic wildfires continues to increase." Basic changes in fire policy were also needed to "improve our firefighter safety" and at the same time to "increase our cost efficiencies."[38]

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[36] *Ibid.*, p. 11.
[37] *Ibid.*
[38] See, for example, U.S. Forest Service, *Course to the Future,* p. 1.

Interestingly enough, a 1995 report by Sampson and Lance Clark indicated that it was on the national forests and other federal forests where the greatest problems exist. Private industry forests are in better shape:

> The majority of forest health problems in the region exist on the public lands. Most privately held forests in the Inland West are owned by timber companies that intensively manage their lands. Managed forests are not the same as the pre–European forests, but that management generally meant some sort of stocking control, avoiding the fuel buildup from fire exclusion that has become such a hazard on federal forests.[39]

The emerging new consensus on the harmful effects of past fire suppression received an official blessing at the highest levels in 1995 when the secretary of agriculture and the secretary of the interior jointly released a report on *Federal Wildland Fire Management.* The report reiterated that "past land-use practices, combined with the effects of fire exclusion" have caused changes in forest conditions that pose the risk of "more rapid, extensive ecological changes beyond any we have experienced in the past," partly because, paradoxically in light of past federal efforts to eliminate fire, "today's fires tend to be larger and more severe." In short, the effects of "100 years of fire suppression" had left "millions of acres of forests and rangelands at extremely high risk for devastating fires to occur."[40]

"We must dispel the myth that emergency fire costs are free."

THE FEDERAL MONEY TREE

In 1995, following the expenditure by federal agencies of almost $1 billion in the 1994 fire season for emergency suppression purposes, then Forest Service Chief Jack Ward Thomas sent a message to his troops that "we must dispel the myth that emergency fire costs are 'free.' This is a completely unacceptable attitude – especially in terms of its tremendous impacts on taxpayers and to other Forest Service programs."[41] Chief Thomas elaborated in a 1995 speech at the University of Montana on the perverse incentives facing federal fire prevention efforts:

> It is well past time to face up to the costs of fire management. "Funding games" with the federal land agency budgets should cease. These games make it appear that budgets for fire management are much lower than is actually the case. Fire management is funded at too low a level to make proactive, effective management possible. And, then, agencies are afforded an "open checkbook" to fight fires of adequate size and

[39] Clark and Sampson, *Forest Ecosystem Health in the Inland West*, p. 2.
[40] Department of the Interior, Department of Agriculture, *Federal Wildland Fire Management: Policy and Program Review* (Washington, D.C.: Dec. 18, 1995), pp. 7, 8, 17.
[41] U.S. Forest Service, *Course to the Future*, Transmittal letter from the chief.

> intensity to provide adequate political impact. Such an approach is misleading in both terms of the actual budget allocated to fire management over the long term and in terms of making the best and most effective use of those funds.[42]

Thomas' critique reflects the fact that each year funds for fire suppression are initially appropriated based on the average expenditure for the previous 10 years – an average of $296 million per year from 1986 to 1995. However, when appropriated funds are exhausted, as is sure to happen early in any bad fire season, the agency receives special funds, such as the Emergency Contingency Fund, which had a balance of $100 million in 1996. When this fund is exhausted, moneys can be borrowed from still other accounts, such as the Knutson-Vandenberg (K-V) Fund. Moreover, there is an implicit understanding that emergency firefighting money drawn from K-V or other sources will later be replenished with supplementary appropriations from Congress. For example, the 1996 Forest Service budget approved by Congress included $420 million to pay back the K-V Fund for moneys withdrawn in earlier years in support of fire suppression. The net effect is to create a "blank check" for firefighting expenditures.

The Forest Service projects that on average its total fire expenditures will increase every year into the future by $19 million per year.

Forest Service spending for various fire protection and suppression purposes set a new record in 1988, equal to $750 million (in 1994 dollars). More than $500 million was spent in 1989 and 1992 on fire. Then, 1994 yielded another all–time record, $951 million in total fire spending, followed by another bad fire season and very high costs in 1996. Based on the trendlines of the past 20 years, the Forest Service projects that on average its total fire expenditures will increase every year into the future by $19 million per year.[43] If so, billion-dollar federal fire seasons might well become routine in the near future.

Since 1990, the Interior Department DOI has worked from a combined fire budget for all of the DOI agencies with firefighting responsibilitiies – the Park Service, Bureau of Land Management, Fish and Wildlife Service, and Bureau of Indian Affairs. The fire accounts are handled in much the same way as the Forest Service. When initially appropriated funds for the year are used up, the DOI can continue spending as needed by drawing on other accounts. In 1994 and 1996, emergency fire efforts of the various Interior agencies involved total suppression costs of $167 million and $173 million, respectively. Combined with routinely budgeted fire protection and other fire management activities, the Interior Department's total expenditures for forest fire typically exceed $225 million per year.

As with the Forest Service, in the heat of a fire emergency, the actual practice is that the money is spent and then the Interior Department figures

[42] Jack Ward Thomas, "The Instability of Stability," p. 13.
[43] U.S. Forest Service, *Fire Suppresion Costs on Large Fires*, p. A-3.

out where it will come from. Thus, unlike a normal government program, there is no fixed budget for emergency fire suppression that cannot be exceeded without the approval of higher-level executive authorities or the Congress. Many Forest Service and Interior employees are conscientious about economizing on fire spending but inevitably this will not be a universal attitude. Instead, as the Forest Service states, the reality is that "there is a powerful disincentive . . .to reduce spending," in part because "the line officer is not required to make up [emergency fire fighting] deficits from the unit's budget."[44]

When "free" money is available, it is a normal human propensity to make use of it. As one 30-year veteran firefighter commented, "A growing number of line officers, smokejumpers, hotshots, and other fire specialists are becoming increasingly disturbed, if not outright disgusted, by what they see as blatant overstaffing and wasteful spending on many of the large fires in the Lower 48."[45] In some cases, the government contracts for heavy lift helicopters at $28,000 per day, even though the helicopters sit idle for days on end. This is part of the reason why total Forest Service firefighting costs for such helicopters in 1994 were $58 million.[46]

Homeowners often fail to undertake even the most minimal steps reduce the degree of fire risk, and the federal taxpayer ends up paying the tab.

A 1995 Forest Service study concluded that, even while forest fire spending was growing rapidly, much of this spending served little constructive purpose:

> The cost of suppressing these large fires is increasing, yet we do not see a corresponding decrease in acres burned. We are becoming more aware, especially in fire-adapted ecosystems, that we are operating past the point of diminishing returns during large fire–suppression activities.[47]

Or, as the saying has it, the Forest Services rains dollars from the Treasury on forest fires, and then waits for rain from the skies to put the fires out.

Today, the Forest Service spends hundreds of millions of dollars in many years to bail home and other property owners out of the threat of advancing fires. Yet, many homeowners continue to build cabins and other structures in places where fire poses a large hazard and protection is difficult. They often fail to undertake even the most minimal steps – such as cutting down trees near the house, or using fire-proof roofing and siding materials – to reduce the degree of fire risk, and the federal taxpayer ends up paying the tab.

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[44] *Ibid*., p. C-1.

[45] Murray Taylor, "Dousing the Fiscal Flames," *Inner Voice*, published by the Forest Service Employees for Environmental Ethics (January/February 1997), p. 17.

[46] U.S. Forest Service, *Fire Suppression Costs on Large Fires*, p. 16.

[47] U.S. Forest Service, *Course to the Future*, p. 1.

The federal government today often finds itself spending millions (or potentially any amount, the legal obligation is almost whatever it will take) to protect say a $100,000 home. As the Forest Service reports, "The current perception by both the public and many fire suppression personnel is that the Forest Service will utilize whatever resources are available to prevent the loss of property without regard to its value, ownership or jurisdiction." Federal fire control is thus becoming another form of federally subsidized disaster insurance.[48]

Today, it is possible to spend nearly $1 billion on forest firefighting in a single year, much of it wasted, because a politician can never afford to say no when voters lives and property are at stake in a forest fire. In Yellowstone in 1988, according to Stephen Pyne, the federal government spent more than $130 million in "nominal suppression," a heroic effort that did not have "any significant effect on the fires or improvement of the ecosystem."[49]

Today, it is possible to spend nearly $1 billion on forest firefighting in a single year, much of it wasted

THE PRESCRIBED BURNING OPTION

The growing recognition of the grave threat posed by large forest fires in the West has prompted federal officials to consider various policy options. In an April 1997 speech, Interior Secretary Bruce Babbitt noted that "two decades ago we spent an average of $100 million each year to put out fires; today, we spend $1 billion, yet the crisis only grows worse." Current policy wreaks substantial environmental harm. The 1992 Foothills fire in Idaho, for example, "wiped out an entire population of native bull trout. It vaporized soil elements critical to forest recovery; then when the rains come, floods and mudslides will pour down hardpan slopes, threatening lives and property a second time."[50]

Babbitt endorsed a goal of seeking to restore the forests of the West to a more natural condition; "to restore health, character and structure to our forests, then, the obvious first step is to bring back their own ancient predator, wildland fire."[51] An absolute and literal application of Babbitt's policy recommendation would allow all natural fires (as set by lightning) to continue to burn without any hindrance. All human–caused fires – as unnatural events – would have to be put out as fast as possible. In addition, reversing existing policy, no new fires would be deliberately set as part of efforts to manipulate future forest vegetative and other conditions.

However much this might represent an ethical ideal of a true "natural" forest ecology, Babbitt was realistic enough to know that it was unworkable

[48] U.S. Forest Service, *Fire Suppression on Large Fires*, p. 13.
[49] Pyne, *World Fire*, p. 232.
[50] Bruce Babbitt, "A Coordinated Campaign: Fight Fire with Fire," speech at Boise State University, Boise, Idaho, Feb. 11, 1997.
[51] *Ibid*.

in the current day and age. Wolves might eventually be allowed to run free through many forests in the West – a policy enthusiastically pursued by Babbitt – but fire could never be allowed the same freedom. As Babbitt acknowledged, many forests are "choked with fuel," owing to past policy actions, so that in their current condition a new small fire might be "a drip torch [that] could set off an uncontrollable inferno."[52]

Hence, even though it was hardly a "natural" solution, Babbitt endorsed the existing policy of setting controlled fires to clear forests of fire–prone and otherwise unwanted trees and vegetation. In some cases, natural fires set by lightning could also be allowed to continue to burn for this purpose. The long-run goal would be a return to the fire patterns of pre-European times – frequent smaller fires instead of a few large intense burns spaced far apart. The current program of prescribed burning thus ideally should be only an interim step towards the goal of a forest ecosystem eventually functioning naturally on its own. It might be at least 50 or 100 years, however, before any such state of strictly natural fire would be attainable in most national forests across the West.

The practical feasibility of current plans for prescribed burning is in considerable doubt.

Yet the practical feasibility of current plans for prescribed burning is in considerable doubt. For one thing, it would release large amounts of smoke, which could pose a major conflict with air quality laws. According to the General Accounting Office, "Prescribed burning to restore the forest's health and to sustain diverse plant and animal communities may be appropriate under the Forest Service's planning statutes but may be difficult to reconcile in the short–term with air and water quality standards under the Clean Air and Clean Water acts."[53]

Prescribed burning can also create major risks to human life and property. Given funding and other resource constraints, it is not possible to reduce to zero the risk that a fire will get out of control; unexpected weather or other unplanned events can cause the best made fire plans to go seriously awry. For example, in the Okanogan Valley of British Columbia, a forest fire occurred in the summer of 1994 near the rural town of Penticton. With light winds blowing away from the town, forest managers decided to let the fire continue to burn, as a way of removing excess fuels and improving grazing conditions for wild mountain sheep. After a few days, however, a strong wind arose in the opposite direction, which caused the pine forest to erupt in a sheet of flame, moving rapidly toward the town. With heroic efforts, most of the town was eventually saved, but with a loss of 18 homes and large costs incurred for emergency fire controls.[54]

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[52] *Ibid*.

[53] U.S. General Accounting Office, *Forest Service Decision-Making: A Framework for Improving Performance*, GAO/RCED-97-71 (Washington, D.C.: April 1997), p. 11.

[54] Patrick Moore, *Pacific Spirit: The Forest Reborn* (West Vancouver, B.C., Canada: Terra Bella Publishers, 1995), pp. 63-64.

Prescribed burning may be incapable of attaining the natural forest condition sought by ecological management. In the forest fire patterns of the past, the frequent fires kept the amount of invading trees and other ground vegetation at low volumes. Fire removed this vegetation from the forest floor but did not damage the larger and older trees. Today, however, following years of fire suppression, a newly set fire might well erupt from the dense understory into the crowns of the older trees, causing their destruction as well. The much more intense heat of such a fire - creating a fire condition that would never have occurred before the 20th century – could also cause further major ecological damage to soils and other forest elements.

The residue of a forest fire is aesthetically objectionable to many national forest users. Until it begins to grow back, there will be a complete loss of forest functions.

Prescribed burning is also expensive. Typical costs, depending on the precautions required to ensure that the fire does not get out of control and other local circumstances, can range widely, running from $25 per acre to more than $300 per acre. If perhaps 50 million acres of federal forest in the West today would benefit from prescribed fire, the total costs for burning all this acreage might well approach $5 billion. Meeting a target of 2 to 3 million acres per year is likely to require $200 million to $300 million annually. Many observers doubt that anything like this amount of money will actually be made available by the Congress.

There are other nonmonetary costs as well, including the loss of hiking, fishing, bird watching and other recreational opportunities, at least in the short run following a fire. The residue of a forest fire is aesthetically objectionable to many national forest users. Until it begins to grow back, there will be a complete loss of forest functions, and the forms of recreational use associated with these functions in the area of the fire. The new resident of a second-home cabin adjacent to a national forest is likely to oppose any plan to burn over the lands near his property and in his viewing area.

For all these reasons, prescribed fire is likely to be an option for only a limited part of the national forests of the inland West – generally most feasible on the more remote areas with more wild characteristics. As urban populations move further into, and make more use of, the forests, the area where prescribed burning is acceptable may shrink further still. In 1993 the Forest Service's own Office of Fire and Aviation Management stated that it was skeptical concerning the prospects for any widespread use of prescribed fire on the National Forests of the West:

> Although Forest Service policy recognizes the ecological importance of fire, a serious dilemma precludes the agency's ability to effectively manage fire-adapted ecosystems. The adverse effects and occasional damage that results from prescribed fire failures are poorly tolerated by the public and frequently embarass the agency. . .

The costs and risks involved in an extensive reintroduction of fire will be high. The use and enjoyment of National Forest System lands has grown tremendously over the past several decades. These rising values, combined with unnaturally flammable fuel conditions and the enormous uncertainties surrounding wildland burning, severely constrain prescribed fire applications that can be managed within acceptable limits of risk.[55]

THE MECHANICAL REMOVAL OPTION

If prescribed burning is impractical for many forest areas, the choice may be as follows: Find an alternative means of reducing fire hazards, or accept that large, difficult-to-control and destructive fires will periodically break out to cut a large swath through the National Forests of the West. At present, the main alternative possibility for reducing excess fuels in the National Forests is simply to remove the timber by mechanical means. The Forest Service might cut down the dense thickets of immature trees that pose such a large fire hazard. If the wood is worth anything, it could be physically removed and used for timber or pulp. In that case, it would probably make sense to have the same company do the cutting and the harvesting of the timber. That is to say, fire management by mechanical means would, in many cases, amount to a new Forest Service timber sale program, now justified by forest fire and ecological objectives, rather than traditional timber harvest level or other economic targets.

Fire management by mechanical means would, in many cases, amount to a new Forest Service timber sale program.

To be sure, even in circumstances where prescribed burning would be technically and politically feasible, timber sales might better be employed to clean up the forest floor. As an economist would describe the situation, there is an "opportunity cost" to burning up good wood in prescribed fires. The average sale value of the commercially valuable trees available for harvest on the national forests of the inland West is perhaps $500 per acre. Rather than burn the wood, where positive net revenues from timber sales are possible, such revenues can at least be used in part to cover the costs of removal of excess fuels.

Some sales may not fully cover their costs but nevertheless offer sufficient revenues that, in combination with reductions in future fire risks (and resulting reductions in expected future costs of fire-control measures), along with the expected ecological gains, the sales will be socially justifiable. Given the current federal spending for emergency fire suppression of more than $500 million per year in bad fire seasons, there is a potential for large direct economic benefits, if any significant reductions in the probability of future large fires and the associated necessity of expensive fire-control measures can be achieved.

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[55] U.S. Forest Service, *Fire-Related Considerations and Strategies in Support of Ecosystem Management*, p. 28.

As recently as 1989, almost 12 billion board feet of timber were harvested from National Forest lands, yet by 1995, total Forest Service timber harvests nationally had fallen to 3.9 billion board feet.

In the Inland West the volume of timber that could be harvested in an effort to clear the woods of the debris of a century of fire suppression is very large. Since 1952, with fire largely excluded, the total biomass of the National Forests of the West located east of the summits of the Sierra Nevada and Cascade Mountains has increased by more than 40 percent. Most of this increase is in smaller trees of less than 17 inches in diameter, which have themselves increased by more than 50 percent in volume. Thus, contrary to a popular impression of a dwindling supply of timber today on the National Forests, the total wood volume in this region – if not always of high quality – has increased significantly. Moreover, this increase has occurred despite high levels of timber harvesting in the post-World War II era in the inland West. From 1960 to 1990, National Forest timber harvests in this region were typically around 2 billion board feet per year.

In the 1990s, however, timber harvests in the National Forests have been declining rapidly throughout the country. As recently as 1989, almost 12 billion board feet of timber were harvested from National Forest lands, about 20 percent of the total national supply of softwood timber. Yet by 1995, largely as a result of the spotted owl recovery plan and other environmental conflicts in other National Forest areas, total Forest Service timber harvests nationally had fallen to 3.9 billion board feet. Timber sales (which may precede actual harvest of the timber by several years) in 1994 were 3.1 billion board feet and fell still further in 1995 to 2.9 billion board feet, suggesting that future annual harvests were likely to remain at low levels.

As shown above in Table 2, over the same period the trend of Forest Service expenditures for firefighting rapidly escalated. By 1994, the total costs of firefighting exceeded the total revenues from the timber sold in that year by about 10 percent. The typical volume of wood that is burned up in forest fires in a year now significantly exceeds the annual volume of timber that is sold by the Forest Service. These developments point not only towards a new management regime grounded in ecological objectives for the National Forests but also a new economics of timber policy and management for these lands. If current trends continue, timber harvesting will be justified economically, not principally for the value of the timber, but for limiting exposure to future forest fire hazards and fire suppression costs.

If excess fuels removal by mechanical means now turns out to be essential for forest fire management over much of the Inland West, the Forest Service may, in some cases, find that it has to pay to have certain trees removed. There is, of course, a real danger here that a program of this kind will become a new version of the old pork barrel. The Forest Service has been widely, and justly, criticized for its "below-cost" timber sales. Fire management now provides a new and potentially wider range of possible justifications for timber sales that do not recover their costs.

If some economists are fearful that forest fire management will become an all-purpose justification for a new round of National Forest subsidies, fire management – even when designed to promote broader improvements in the forest ecology – is also opposed by many environmental activists. They see fire managment as the old Forest Service timber program in a new dress. Thus, for Interior Secretary Babbitt, mechanical fuels removal is, at best, a regrettable necessity. While acknowledging that it might sometimes be unavoidable, Babbitt warns that "mere 'thinning' is an invitation to turn a forest into a tree farm." Thinning was a reminder of the "timber salvage fiasco." Fire must have priority ahead of thinning where both are possible: "If our forest patient has a long history of poor eating habits and indigestion, then we need to burn off unhealthy fat, not practice forest liposuction."[56]

How can the agency that has mismanaged timber programs for decades now be given the responsibility to set timber sales according to some new fire management harvest policy of its choosing?

AN ILLEGITIMATE INSTITUTION

Although the complaints of environmental activists are often overwrought, the facts often weak, and the scientific arguments often contrived, environmental critics of Forest Service plans for thinning and other new timber harvesting are correct in one fundamental respect. How can the very agency that promoted economically and ecologically misguided policies of fire suppression for almost a century be trusted now to guide the forests out of their ecological problems? How can the agency that has mismanaged timber programs for decades now be given the responsibility to set timber sales according to some new fire management harvest policy of its choosing? Finally, how can an agency facing a basic conflict of interest – it has many employees who have been trained for and owe their very jobs to the high levels of Forest Service timber harvesting of the past, and may be out of work if there is no movement back towards earlier high harvest levels - now be expected to determine the harvest levels of the future in a disinterested and objective fashion?

The failures now apparent that resulted from past Forest Service fire suppression may not, as is often suggested, be due simply to an earlier lack of adequate scientific knowledge. It may be too easy to say simply that the good intentions of the Forest Service have been defeated over the course of the 20th century by the unexpected complexity and scientific inability to model and otherwise comprehend fully the workings of fire in Western forest ecologies. The Forest Service is filled with many devoted public servants and otherwise admirable people. Yet, fire suppression in the West is not an isolated incident; the agency throughout its history has failed to make proper use of good

[56] Babbitt, "A Coordinated Campaign: Fight Fire with Fire."

scientific information. Science has consistently taken a back seat to political and public relations considerations as the Forest Service has perceived them at any given moment.[57]

As long ago as 1962, Ashley Schiff found that the internal culture of the Forest Service was antagonistic to the generation and use of sound scientific information, despite its progressive-era roots.[58] The Forest Service saw itself engaged in a perpetual political struggle, and in its fierce battles with its many enemies it could not afford the luxury of scientific truth. Schiff concluded that the Forest Service over its history had all too often been willing to sacrifice scientific objectivity for public relations appeal. Smokey the Bear was not just an advertising slogan but a well-crafted way of presenting the Forest Service to the American public. As a result, Schiff explains, forest "administration itself suffered because research was too closely identified, from a spiritual and structural standpoint, with "the cause."[59]

Science has consistently taken a back seat to political and public relations considerations as the Forest Service has perceived them at any given moment.

As the sorry history of Forest Service fire suppression in the West shows, not much has changed in the past 35 years. The scientific role of fire on the National Forests has not been as great a mystery as the Forest Service and its current apologists often suggest. The National Park Service adopted a policy of prescribed burning as long ago as 1968 in Sequoia and Kings Canyon National Parks, reflecting a growing professional understanding in the 1960s of the ecological role of fire. Two professional foresters (one employed at a Forest Service research station) stated in 1996 that "a number of [good] works on fire in natural resources management have been available for decades," at least since the 1940s. Yet, despite considerable scientific knowledge to the contrary, "the ecological function of fire has been ignored, denied or treated as an interesting but inconsequential, academic curiosity by most managers and policymakers" in the Forest Service.[60]

After decades of Smokey the Bear, it would, admittedly, have been difficult for the Forest Service to change public attitudes, to admit that it had been embarassingly wrong, to explain that fire was actually a necessary part of a well–functioning forest system. Rather than face the unpleasant necessity to try to inform the public, the agency instead continued for many more years on its longstanding crusade against fire. It made little effort to alter traditional attitudes both internally and externally that fire "should be regarded as a

[57] See Robert H. Nelson, "Mythology Instead of Analysis: The Story of National Forest Management," in Robert T. Deacon and M. Bruce Johnson, eds., *Forestlands: Public and Private* (San Francisco: Pacific Institute for Public Policy Research, 1985).
[58] Ashley L. Schiff, *Fire and Water: Scientific Heresy in the Forest Service* (Cambridge, Mass.: Harvard University Press, 1962); for a similar story with the respect to the failures of Forest Service timber predictions, see Sherry Olson, *The Depletion Myth: A History of Railroad Use of Timber* (Cambridge, Mass.: Harvard University Press, 1971).
[59] Schiff, *Fire and Water*, p. 169.
[60] Carl N. Skinner and Chi-Ru Chang, "Fire Regimes, Past and Present," in *Status of the Sierra Nevada, Volume II*, p. 1062.

nuisance, as a destructive agent." It has only been in the mid 1990s, and "in response to attempts to define and carry out more comprehensive ecosystem management, [that] the ecological role of fire [has] been generally acknowledged" by the Forest Service.[61] By then the damage was done.

In a world of much greater humility about the capabilities of scientific understanding of large ecological and economic systems, a large central bureaucracy like the Forest Service may simply not be capable of implementing a set of forest purposes that may be difficult to define and may vary greatly from place to place across the West. Moreover, the fact that the Forest Service has so obviously for so long put its own survival needs well above other considerations may not merit much public confidence in the future. The many past management and policy failings of the Forest Service cannot simply now be forgotten; a loss of public trust and confidence is not easily restored.

Today, the Forest Service no longer has the social legitimacy to set future timber harvest levels, to determine appropriate measures to limit forest fire risk, to implement ecological management, or to follow through successfully on virtually any difficult task that it may be asked to perform. Indeed, a long–term close observer of the Forest Service, Randal O'Toole, recently commented that "the U.S.D.A. Forest Service will be 100 years old in 2005 – if it survives that long. There is a good chance that it won't."[62]

It is beginning to cost more to try to manage and suppress them than the future timber revenue gained as a result of any such fire control efforts.

A STATE AND LOCAL RESPONSIBILITY

In 1994, total Forest Service fire management, control and suppression costs were about $950 million.[63] In comparison, the total Forest Service revenues from all timber sales were only about $875 million.[64] Thus, the costs of fire protection alone – ignoring any other timber management costs – were enough in 1994 to put overall Forest Service timber management into the red. If fire costs were expected to continue at such levels, and the national forests were operated like a business, national forest timber management should simply fold up and declare bankruptcy. Resource-wise, the economic answer today is simple: Let the fires burn. Overall, it is beginning to cost more to try

[61] *Ibid.*
[62] Randal O'Toole, "Expect the Forest Service to Be Slowly Emasculated," *The Seattle Times* (May 7, 1997).
[63] U.S. Forest Service, *Fire Economics Assessment Report*, p. 27.
[64] U.S. Forest Service, Department of Agriculture, *Report of the Forest Service, Fiscal Year 1994* (Washington, D.C.: June 1995), pp. 164-65.

to manage and suppress them than the future timber revenue gained as a result of any such fire control efforts.[65]

This is only part of the economic picture. In any business-like calculation, one would also have to consider the fact that the total direct costs in recent years of administering the timber program have been about $600 million to $800 million per year.[66] With the declines in timber sales, and administrative costs not falling as much, net timber revenues have been falling rapidly – from about $500 million in net revenue in 1991 (by the Forest Service's own calculation) to around $60 million in 1995. And these costs leave out the great majority of the expense of firefighting. On a net basis, 1991 was the last year in which net timber revenues exceeded firefighting costs alone. In 1994, firefighting costs were more than $700 million greater than net timber revenues.

The protection of life and property is best assigned to that level of government where this task can most effectively be accomplished.

Yet, timber produces by far the largest amount of revenue for the Forest Service. In 1994, total gross revenues of the Forest Service from all sources were equal to $1.3 billion. The total budget for the National Forest system was equal in 1994 to about $3 billion. So, all things considered, the total National Forest system is also a large money loser – a remarkable fact, considering that the National Forests contain some of the most valuable natural resource assets in the United States. The bottom line here is that, economically, the taxpayer would be better off simply letting nature do its thing – as some environmentalists would like. The economic answer would be to end most Forest Service management, including most firefighting efforts, letting natural processes work and saving the taxpayers large amounts of money.

To be sure, National Forest fire protection in areas like Southern California has a main purpose to protect human life and property. Yet, the protection of life and property is best assigned to that level of government where this task can most effectively be accomplished. Local fire departments bear the principal responsibility for putting out fires that threaten physical structures. They have the ability and the responsibility to enact building codes, regulate land use and take other actions that can reduce the risk that buildings will be located in forest areas where they may be exposed to great risk of fire – and where governments at all levels may be forced to bear large costs if a forest fire does break out.

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[65] Of course, it would not be necessary to set a single policy for all National Forest lands. It might be economical to let fires burn in particular areas, weighing the costs of suppression versus the future timber harvests expected in these areas. However, it might be economical to put out the fires in other forest areas. Theoretically, the Forest Service has attempted to do something like this in the past, but in practice events have seldom turned out that way. The point here is that, overall, if a single policy were required, and given current costs, the economically rational policy would be to let the fires burn.

[66] U.S. Forest Service, Department of Agriculture, *National Summary: Timber Sale Program Annual Report, Fiscal Year 1995* (Washington, D.C.: December 1996), p. 22.

The police power to address such matters is a state and local function in the American constitutional scheme. The most important role of the federal government has been to pick up the check for much of the cost of fighting forest fires in the West, even when these fires mainly threatened property holdings on the edges of urban areas. The agency itself has stated a goal that "the Forest Service no longer assumes primary [forest fire] protection responsibility in urbanized and developing rural areas.'[67]

It might still be argued that, whatever the economics, National Forest firefighting – and other agency management activities – serve important ecological functions for the forests. If fire were allowed to burn more freely, it would destroy much existing vegetation, wildlife habitat and other natural features. As ecological understanding has advanced in the 20th century, however, there has been a much greater recognition of the constructive – indeed, essential – role of forest fires in normal ecological processes. The expensive Forest Service organization built over the course of this century to suppress fire has not only been economically wasteful but environmentally harmful. Federal fire policy, like the construction of Bureau of Reclamation dams or agricultural subsidies for the conversion of wetlands, is yet another example of the federal government actively pursuing policies significantly harmful to the environment at large cost to the national taxpayer.

Federal fire policy, is yet another example of the federal government actively pursuing policies significantly harmful to the environment at large cost to the national taxpayer.

A recent analysis found that "increasingly in recent years, federal wildland fire-control agencies have been put into the position of having to assume responsibility for structure protection during major wildfires."[68] Protecting structures does not benefit the public lands but offers a subsidy to the property owners who often have located in places exposed to high risk of fire and taken few precautions to minimize the potential damage from fire. Moreover, protection of structures was not supposed to be a Forest Service or federal government responsibility; that was the job of state and local fire departments. Diversion of federal resources for protecting homes and other properties is creating an inequity in that federal "taxpayers at large pay for these fire-protection services."[69] It also means federal resources are diverted from their intended purpose: protecting the forests and other natural resource assets of the federal lands.

Reflecting such concerns, an internal Forest Service staff paper in 1995 proposed that there should be a redefinition and clarification of federal versus state and local responsibilities for fire control and suppression. The principles for this new fire policy and management regime would be as follows:

- Fire protection on state and private lands is the responsibility of state and local governments;

[67] Forest Service, *Course to the Future*, p. 9.
[68] C. Phillip Weatherspoon and Carl N. Skinner, "Landscape-Level Strategies for Forest Fuel Management," in *Status of the Sierra Nevada, Volume II*, p. 1485.
[69] *Ibid.*

- Homeowners have a personal responsibility to practice fire safety; and

- The role of the Forest Service is stewardship of adjacent National Forests, cooperative assistance to state and local fire organizations, and cooperative suppression during fire emergencies.[70]

Ultimately, the primary responsibility rests at the state and local levels.

Such a policy would require the Forest Service to phase out of many of the fire control responsibilities it is currently performing in the vicinity of urban areas in the West, requiring a renegotiation of some existing intergovernmental agreements. Additional resources and technical assistance could be provided to the Western states, in order to improve their capabilities for their newly expanded forest firefighting role. The secretaries of interior and agriculture, in their joint 1995 report on federal fire policy, endorsed a qualified move towards this approach:

The role of federal agencies in the wildland/urban interface includes wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical assistance. No one entity can resolve and manage all interface issues; it must be a cooperative effort. Ultimately, however, the primary responsibility rests at the state and local levels.[71]

A PROPOSAL

If a fire breaks out today at a federal building in New York City, it is the city fire department, not a federal entity, that puts out the fire.

Such proposed shifts in policy move in the right direction but should be carried much further. State and local governments should assume responsibility for protecting not only state and local lands but also federal lands. If a fire breaks out today at a federal building in New York City, it is the city fire department, not a federal entity, that puts out the fire. In the past, the Forest Service had a large incentive to provide its own fire protection, because its goal was to protect valuable supplies of timber to meet its timber harvesting targets. As timber harvesting has declined rapidly in importance, however, this purpose is no longer of such critical significance.

Indeed, if the federal management goal is now to achieve some past "natural" condition of the forest ecology, fire suppression often no longer serves that goal. The large past expenditures of the Forest Service for fire suppression have often proven harmful to ecological objectives. The greatest reasons for controlling fire on federal lands now are the threat that the fire will spread to state and local lands, where lives could be lost, physical structures destroyed, and other major damages incurred. Yet, if state and local

[70] *Ibid.*
[71] Department of the Interior and Department of Agriculture, *Federal Wildland Fire Management*, p. iii.

governments are given the responsibility for protecting state and local lands and structures from fire, they will have ample incentive to suppress fires on federal land that pose a major danger of spreading beyond federal boundaries. In general, the performance of state and local land-management agencies has been superior to that of the federal land-management agencies in recent years.[72]

The state and local role would include not only fighting fires that have already broken out but also taking preventative measures. The states might thus fund certain prescribed burns on National Forest lands, where the primary purpose was to curb the future hazard of fire. The states might work with the Forest Service to design timber sales for which fire prevention was one of the main goals. If the timber was not worth enough to obtain any bids from private timber companies, the state government might offer to pay part (or sometimes all) of the cost of excess timber removal. In undertaking these tasks, the states would have to become a partner with the Forest Service in developing land management plans for National Forests.

A state assumption of fire prevention responsibilities might in the end prove to be an incremental step towards the full assumption of management responsibilities for the National Forests by state and local governments.

Indeed, given the close interconnections between actions taken on the National Forests for fire purposes, and actions taken for other land-management purposes, the assumption of fire prevention responsibilities by state governments would inevitably lead to a direct involvement in the full planning process for National Forest lands in many other matters besides fire control and management. As suggested below, a state assumption of fire prevention responsibilities might in the end prove to be an incremental step towards the full assumption of management responsibilities for the National Forests by state and local governments, perhaps eventually including the outright transfer of National Forest lands to state and local ownership. Much research suggests that such a policy could significantly improve the management of these lands.[73] In the interim, state governments and the Forest Service would simply have to work in close consultation to coordinate their joint actions affecting the national forests.

It would be unrealistic, after years of the federal government spending hundreds of million of dollars per year for fire suppression in the West, to simply cut this money off. Rather, accompanying a transfer of forest fire responsibility from the federal government to the states, the federal government should, for the time being, give most of the existing federal fire funding to the Western states in a block grant for firefighting use. The federal

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[72] See Jon A Souder and Sally K. Fairfax, *State Trust Lands: History, Management and Use* (Lawrence, Kan.: University of Kansas Press, 1996); Douglas S. Kenney, *Resource Management at the Watershed Level: An Assessment of the Changing Federal Role in the Emerging Era of Community-Based Watershed Management*, Report to the Western Water Review Advisory Commission, October 1997; and Mark Sagoff, *The View from Quincy Library: Civic Engagement in Environmental Problem-Solving*, National Commission on Civic Renewal Working Paper No. 16 (College Park, Md.: Institute for Philosophy and Public Policy, University of Maryland, 1998).

[73] See, for example, Donald Leal, "Turning a Profit on Public Forests," *PERC Policy Series* PS-4 (Bozeman, Mt.: Political Economy Research Center, 1995)

government would retain only the annual funding it needs for prescribed burning and other direct uses of fire for well defined federal management purposes. The fire protection block grant to the states thus might, for example, provide 80 percent of the average federal fire budget of the past five years. The states would then be responsible for arranging for emergency forest fire control and suppression within all their boundaries, including the federal lands.

The federal firefighting apparatus, to be sure, may have the greatest existing technical skills of any current firefighting body. The federal firefighting capacity could therefore be reconstituted as a public (or private) corporation that could contract out its services to the states, as the states saw fit to hire them with their new block grant money.[74] State contracts might be signed on an individual fire by individual fire basis, leaving the state to decide in each forest fire case whether special outside assistance is needed.

Firefighting is logically a state and local function in the American federalism scheme.

Alternatively, a state might sign a longer term contract with the new firefighting corporation to provide any firefighting services as needed in the state – like a contract to receive future medical services from an HMO. This would have the character of an insurance policy, in that the amount of money spent by the firefighting corporation could be highly variable from year to year. Yet another alternative would be for the state to purchase a forest fire insurance policy from a private insurance carrier, with sufficient coverage to reimburse the state for large and unexpected forest firefighting expenditures in any given year.

In the long run, the block grants to the states for forest fire protection should be phased out. They might decline in a straight line over 20 years or so (less if O'Toole's prediction is correct). After that, the states would be on their own. Firefighting – including forest fires as well as urban structures – is logically a state and local function in the American federalism scheme.[75] The existing federal firefighting apparatus should in the long run either be turned over to the states or privatized. As a private organization, it could compete in the market with other private entities to provide firefighting services. Rather than one large private corporation, the former federal firefighting apparatus might find that it is more efficient to break up into various units, perhaps dividing along geographic or functional lines. It would be like a private corporation deciding to spin off various of its operating divisions. The insurance function that the federal government performs at

[74] Proposals for public corporations in the area of federal land management have been made in Dennis E. Teeguarden and Davis Thomas, "A Public Corporation Model for Federal Forest Land Management," *Natural Resources Journal* (April 1985); and John H. Beuter, *Federal Timber Sales* (Washington, D.C.: Congressional Research Service, Report 85-96, Feb. 9, 1985), pp. 125-28.

[75] See Robert H. Nelson, *How and Why to Transfer the BLM Lands to the States* (Washington, D.C.: Competitive Enterprise Institute, January 1996); and Robert H. Nelson, "Public Land Federalism: Go Away and Give Us More Money," in Terry L. Anderson and Peter J. Hill, eds., *Environmental Federalism* (Lanham, Md.: Rowman and Littlefield, 1997).

present, for example, might become a private company specializing in forest fire insurance. States could buy this insurance, as well as local governments and private individuals. Another spinoff might be smoke jumping; existing smoke jumpers could form a new business organization to contract out their services as needed. And there could be still further spinoffs, each now required to compete to justify its further existence.

CONCLUSION

The longstanding policy of fire suppression has made the national forests less healthy, less productive, and less biologically diverse.

Forest fire is simply one graphic example of how federal management of the National Forests has failed, whether measured by the original progressive goal of economic efficiency, or by a more contemporary goal of environmental quality and ecological well–being.[76] Suppressing fire has failed even in terms of its own narrow objectives. Past suppression has merely created current National Forest conditions in which still larger, more dangerous and more destructive fires are likely to break out in the future. At the same time, the longstanding policy of fire suppression has made the national forests less healthy, less productive, and less biologically diverse – the three criteria by which the federal government today says that the success of ecological management should be judged.

In light of all this, it is time to look at radical changes.[77] The Forest Service over the past 20 years has stumbled from one proposed solution to another for its basic management problems, each attempt, in turn, failing. It has become ever clearer that the agency has become outmoded, grounded in a scientific management paradigm of the past, and now unable to adjust to a new world in which its basic operating assumptions and management principles no longer hold. The Forest Service is so confused that it no longer knows its reason for existence. Today, the only real mission of the agency is institutional survival – protect the attractive jobs at high pay in rural Western settings, jobs that many other Americans would covet.

Answers to forest fire and other problems of the National Forests will have to be found at the state and local levels. There is today too much diversity of values around the United States to expect common national answers to such value-laden issues as are posed by the deliberate setting of controlled fires or a new timber–cutting program in the National Forests. There is no reason why the management of each National Forest should reflect the same social values – have the same basic objectives and policies – as every other forest. The fierce controversies that today surround policymaking for the National

[76] See Robert H. Nelson, *Public Lands and Private Rights: The Failure of Scientific Management* (Lanham, Md: Rowman and Littlefield, 1995).

[77] See also Robert H. Nelson, *How to Dismantle the Interior Department* (Washington, D.C.: Competitive Enterprise Institute, June 1995).

Forests are partly the result of attempts to force the current value diversity of the American nation into a single forest management mold.

In the longer run, most national forest lands, should be transferred to the states.

The proposal above to transfer firefighting responsibility to state and local governments should be accompanied by other significant actions to decentralize federal land management responsibility.[78] In the short run, devolution of the management authority for the National Forests might take place within the existing federal system. A comprehensive system of management devolution might involve the creation of local self-governing forest units that are in large measure financially and managerially independent.[79] In the longer run, most national forest lands, along with Bureau of Land Management (BLM) lands, should be transferred to the states. State governments can then devise an appropriate new constitutional regime for the governance and management of the former federal lands. Much of these lands might eventually end up owned and managed by local governments or in private ownership. It would be a new structure of political authority for the current federal land area equal in total to almost one half of the total lands of the Western states.

[78] See *Options for the Forest Service 2nd Century*, The Draft Report of the Forest Options Group (Portland, Ore.: The Thoreau Institute, 1998).

[79] See Randal O'Toole, *Reforming the Forest Service* (Washington, D.C.: Island Press, 1988); see also "Reinventing the Forest Service," *Different Drummer* (Spring 1995, special issue).

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