**United States Government Accountability Office** 

GAO

**Testimony** 

Before the Subcommittee on National Parks, Forests and Public Lands, Committee on Natural Resources, House of Representatives

For Release on Delivery Expected at 10:00 a.m. EDT Tuesday, June 19, 2007

# WILDLAND FIRE MANAGEMENT

A Cohesive Strategy and Clear Cost-Containment Goals Are Needed for Federal Agencies to Manage Wildland Fire Activities Effectively

Statement of Robin M. Nazzaro, Director Natural Resources and Environment





Highlights of GAO-07-1017T, a testimony before the Subcommittee on National Parks, Forests and Public Lands, Committee on Natural Resources, House of Representatives

#### Why GAO Did This Study

Increasing wildland fire threats to communities and ecosystems, combined with rising costs of addressing those threats—trends that GAO and others have reported on for many years—have not abated. On average, the acreage burned annually by wildland fires from 2000 to 2005 was 70 percent greater than the acreage burned annually during the 1990s. Annual appropriations to prepare for and respond to wildland fires have also increased substantially over the past decade, totaling about \$3 billion in recent years. The Forest Service within the Department of Agriculture and four agencies within the Department of the Interior (Interior) are responsible for responding to wildland fires on federal lands.

This testimony summarizes several key actions that federal agencies need to complete or take to strengthen their management of the wildland fire program, including the need to (1) develop a long-term, cohesive strategy to reduce fuels and address wildland fire problems and (2) improve the management of their efforts to contain the costs of preparing for and responding to wildland fires. The testimony is based on several previous GAO reports and testimonies addressing wildland fire issues.

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To view the full product, including the scope and methodology, click on the link above. For more information, contact Robin M. Nazzaro at (202) 512-3841 or nazzaror@gao.gov.

# WILDLAND FIRE MANAGEMENT

## A Cohesive Strategy and Clear Cost-Containment Goals Are Needed for Federal Agencies to Manage Wildland Fire Activities Effectively

#### What GAO Found

The Forest Service and Interior agencies need to complete several actions to strengthen their overall management of the wildland fire program. First, because a substantial investment and decades of work will be required to address wildland fire problems that have been decades in the making, the agencies need a cohesive strategy that addresses the full range of wildland fire management activities. Such a strategy should identify the available long-term options and associated funding for reducing excess vegetation and responding to wildland fires if the agencies and the Congress are to make informed decisions about an effective and affordable long-term approach for addressing wildland fire problems. GAO first recommended in 1999 that such a strategy be developed to address the problem of excess fuels and their potential to increase the severity of wildland fires and cost of suppression efforts. By 2005, the agencies had yet to develop such a strategy, and GAO reiterated the need for a cohesive strategy and broadened the recommendation's focus to better address the interrelated nature of fuel reduction efforts and wildland fire response. Further, because the agencies said they would be unable to develop a cohesive strategy until they have completed certain key tasks, GAO recommended that the agencies develop a tactical plan outlining these tasks and the time frames needed for completing each task and a cohesive strategy. Although the agencies concurred with GAO's recommendations, as of April 2007, they had yet to develop a tactical plan.

Second, as GAO testified before the Senate Committee on Energy and Natural Resources in January 2007, the steps the Forest Service and Interior agencies have taken to date to contain wildland fire costs lack several key elements fundamental to sound program management, such as clearly defining cost-containment goals, developing a strategy for achieving those goals, and measuring progress toward achieving them. For cost-containment efforts to be effective, the agencies need to integrate cost-containment goals with the other goals of the wildland fire program—such as protecting life, resources, and property—and to recognize that trade-offs will be needed to meet desired goals within the context of fiscal constraints. Further, because cost-containment goals need to be considered in relation to other wildland fire program goals, it is important that the agencies integrate costcontainment goals within an overall cohesive strategy. GAO's forthcoming report on federal agencies' efforts to contain wildland fire costs includes more-detailed findings and recommendations to the agencies to improve the management of their cost-containment efforts; this report is expected to be released at a Senate Committee on Energy and Natural Resources hearing scheduled for June 26, 2007.

#### Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the key steps that we believe federal wildland fire agencies—the Forest Service within the Department of Agriculture and four agencies<sup>1</sup> within the Department of the Interior (Interior)—need to complete to manage their efforts to prepare for and respond to wildland fires effectively. Increasing wildland fire threats to communities and ecosystems, combined with rising costs of addressing those threats—trends that we and others have reported on for many years—have not abated. On average, the acreage burned annually by wildland fires from 2000 to 2005 was 70 percent greater than the acreage burned annually during the 1990s. Appropriations to federal agencies to prepare for and respond to wildland fires, including appropriations for reducing fuels, have also increased substantially, from an average of \$1.1 billion annually from fiscal years 1996 through 2000 to an average of more than \$2.9 billion annually from fiscal years 2001 through 2005 (adjusted for inflation, these appropriations increased from \$1.3 billion to \$3.1 billion). A number of factors have contributed to more-severe fires and corresponding increases in expenditures for wildland fire management activities. These factors include an accumulation of fuels due to past fire suppression policies; severe weather and drought in some areas of the country; and growing numbers of homes built in or near wildlands, an area known as the wildland-urban interface. In light of the federal deficit and the long-term fiscal challenges facing the nation, attention has increasingly focused on ways to contain these growing expenditures and to ensure that federal agencies' wildland fire activities are appropriate and carried out in a cost-effective and efficient manner.

My testimony today is based on several of our previous reports and testimonies, which together discuss key issues we have identified over the last 7 years in federal agencies' management of wildland fire and critical actions the agencies need to complete if they are to effectively manage their efforts to prepare for and respond to wildland fires. Specifically, my

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<sup>&</sup>lt;sup>1</sup>The four agencies are the Bureau of Indian Affairs, Bureau of Land Management, Fish and Wildlife Service, and National Park Service.

<sup>&</sup>lt;sup>2</sup>GAO, Wildland Fire Management: Lack of a Cohesive Strategy Hinders Agencies' Cost-Containment Efforts, GAO-07-427T (Washington, D.C.: Jan. 30 2007); Wildland Fire Management: Update on Federal Agency Efforts to Develop a Cohesive Strategy to Address Wildland Fire Threats, GAO-06-671R (Washington, D.C.: May 1, 2006); and Wildland Fire Management Important Progress Has Been Made, but Challenges Remain to Completing a Cohesive Strategy, GAO-05-147 (Washington, D.C.: Jan. 14, 2005).

testimony focuses on the Forest Service and Interior agencies' (1) efforts to develop a long-term, cohesive strategy to reduce fuels and address wildland fire problems and (2) management of their efforts to contain the costs of preparing for and responding to wildland fires.

## Summary

In summary, the Forest Service and Interior agencies need to complete several actions to strengthen their overall management of the wildland fire program. Because a substantial investment and decades of work will be required to address wildland fire problems that have been decades in the making, the agencies need to develop a cohesive strategy that addresses the full range of wildland fire management activities. Such a strategy should identify the available long-term options and associated funding for reducing excess vegetation and responding to wildland fires if the agencies and the Congress are to make informed decisions about an effective and affordable long-term approach for addressing problems that have been decades in the making. We first recommended in 1999 that such a strategy be developed to address the problem of excess fuels and their potential to increase the severity of wildland fires and cost of suppression efforts.<sup>3</sup> By 2005, the agencies had yet to develop such a strategy, and we reiterated the need for a cohesive strategy and broadened our recommendation's focus to better address the interrelated nature of fuel reduction efforts and wildland fire response. Further, because the agencies said they would be unable to develop a cohesive strategy until they have completed certain key tasks, we recommended that the agencies develop a tactical plan outlining these tasks and the time frames needed for completing each task and a cohesive strategy. Although the agencies concurred with our recommendations, as of April 2007, a tactical plan had vet to be developed.

Second, as we testified before the Senate Committee on Energy and Natural Resources in January 2007, the steps the Forest Service and Interior agencies have taken to date to contain wildland fire costs lack several key elements fundamental to sound program management, such as clearly defining cost-containment goals, developing a strategy for achieving those goals, and measuring progress toward achieving them. For cost-containment efforts to be effective, the agencies need to integrate

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<sup>&</sup>lt;sup>3</sup>GAO, Western National Forests: A Cohesive Strategy Is Needed to Address Catastrophic Wildfire Threats, GAO/RCED-99-65 (Washington, D.C.: Apr. 2, 1999).

<sup>&</sup>lt;sup>4</sup>GAO-05-147.

cost-containment goals with the other goals of the wildland fire program—such as protecting life, resources, and property—and to recognize that trade-offs will be needed to meet desired goals within the context of fiscal constraints. Further, because cost-containment goals need to be considered in relation to other wildland fire program goals, it is important that the agencies integrate cost-containment goals within an overall cohesive strategy. Our forthcoming report on federal agencies' efforts to contain wildland fire costs includes more-detailed findings and recommendations to the agencies to improve the management of their cost-containment efforts; this report is expected to be released at a hearing before the Senate Committee on Energy and Natural Resources scheduled for June 26, 2007.

## Background

Over the past decade, the number of acres burned annually by wildland fires in the United States has substantially increased. Federal appropriations to prepare for and respond to wildland fires, including appropriations for fuel treatments, have almost tripled. Increases in the size and severity of wildland fires, and in the cost of preparing for and responding to them, have led federal agencies to fundamentally reexamine their approach to wildland fire management. For decades, federal agencies aggressively suppressed wildland fires and were generally successful in decreasing the number of acres burned. In some parts of the country, however, rather than eliminating severe wildland fires, decades of suppression contributed to the disruption of ecological cycles and began to change the structure and composition of forests and rangelands, thereby making lands more susceptible to fire.

Increasingly, federal agencies have recognized the role that fire plays in many ecosystems and the role that it could play in the agencies' management of forests and watersheds. The agencies worked together to develop a federal wildland fire management policy in 1995, which for the first time formally recognized the essential role of fire in sustaining natural systems; this policy was subsequently reaffirmed and updated in 2001. The agencies, in conjunction with Congress, also began developing the National Fire Plan in 2000. To align their policies and to ensure a

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<sup>&</sup>lt;sup>5</sup>The National Fire Plan is a joint interagency effort to respond to wildland fires. Its core comprises several strategic documents, including (1) a September 2000 report from the Secretaries of Agriculture and the Interior to the President in response to the wildland fires of 2000, (2) congressional direction accompanying substantial new appropriations in fiscal year 2001, and (3) several approved and draft strategies to implement all or parts of the plan.

consistent and coordinated effort to implement the federal wildland fire policy and National Fire Plan, Agriculture and Interior established the Wildland Fire Leadership Council in 2002. In addition to noting the negative effects of past successes in suppressing wildland fires, the policy and plan also recognized that continued development in the wildland-urban interface has placed more structures at risk from wildland fire at the same time that it has increased the complexity and cost of wildland fire suppression. Forest Service and university researchers estimated in 2005 that about 44 million homes in the lower 48 states are located in the wildland-urban interface.

To help address these trends, current federal policy directs agencies to consider land management objectives—identified in land and fire management plans developed by each local unit, such as a national forest or a Bureau of Land Management district—and the structures and resources at risk when determining whether or how to suppress a wildland fire. When a fire starts, the land manager at the affected local unit is responsible for determining the strategy that will be used to respond to the fire. A wide spectrum of strategies is available, some of which can be significantly more costly than others. For example, the agencies may fight fires ignited close to communities or other high-value areas more aggressively than fires on remote lands or at sites where fire may provide ecological or fuel-reduction benefits. In some cases, the agencies may simply monitor a fire, or take only limited suppression actions, to ensure that the fire continues to pose little threat to important resources, a practice known as "wildland fire use."

# Agencies Need a Cohesive Strategy to Address Wildland Fire Problems

Federal firefighting agencies need a cohesive strategy for reducing fuels and addressing wildland fire issues. Such a strategy should identify the available long-term options and associated funding for reducing excess vegetation and responding to wildland fires if the agencies and the Congress are to make informed decisions about an effective and affordable long-term approach for addressing problems that have been

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<sup>&</sup>lt;sup>6</sup>The Wildland Fire Leadership Council is composed of senior Agriculture and Interior officials, including the Agriculture Undersecretary for Natural Resources and Environment; the Interior Assistant Secretary for Policy, Management, and Budget; the Interior Deputy Assistant Secretary for Business Management and Wildland Fire; and the heads of the five federal firefighting agencies. Other members include representatives of the Intertribal Timber Council, the National Association of State Foresters, and the Western Governors' Association.

decades in the making. We first recommended in 1999 such a strategy be developed to address the problem of excess fuels and their potential to increase the severity of wildland fires and cost of suppression efforts. <sup>7</sup> By 2005, the agencies had yet to develop such a strategy, and we reiterated the need for a cohesive strategy and broadened our recommendation's focus to better address the interrelated nature of fuel reduction efforts and wildland fire response. The agencies said they would be unable to develop a cohesive strategy until they have completed certain key tasks. We therefore recommended that the agencies develop a tactical plan outlining these tasks and the time frames needed for completing each task and a cohesive strategy. These tasks include (1) finishing data systems that are needed to identify the extent, severity, and location of wildland fire threats in our national forests and rangelands; (2) updating local fire management plans to better specify the actions needed to effectively address these threats; and (3) assessing the cost-effectiveness and affordability of options for reducing fuels and responding to wildland fire problems.

First, federal firefighting agencies have made progress in developing a system to help them better identify and set priorities for lands needing treatment to reduce accumulated fuels. Many past studies have identified fuel reduction as important for containing wildland fire costs because accumulated fuels can contribute to more-severe and more costly fires. The agencies are developing a geospatial data and modeling system, called LANDFIRE, intended to produce consistent and comprehensive maps and data describing vegetation, wildland fuels, and fire regimes across the United States. The agencies will be able to use this information to help identify fuel accumulations and fire hazards across the nation, help set nationwide priorities for fuel-reduction projects, and assist in determining an appropriate response when wildland fires do occur. LANDFIRE data are nearly complete for most of the western United States, with data for the remainder of the country scheduled to be completed in 2009. The agencies, however, have not yet finalized their plan for ensuring that collected data are routinely updated to reflect changes to fuels, including those from landscape-altering events, such as hurricanes, disease, or wildland fires themselves. The agencies expect to submit a plan to the Wildland Fire Leadership Council for approval later this month.

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<sup>&</sup>lt;sup>7</sup>GAO/RCED-99-65.

<sup>&</sup>lt;sup>8</sup>A fire regime generally classifies the role that wildland fire plays in a particular ecosystem on the basis of certain characteristics, such as the average number of years between fires and the typical severity of fire under historic conditions.

Second, we reported in 2006 that 95 percent of the agencies' individual land management units had completed fire management plans in accordance with agency direction issued in 2001. As of January 2007, however, the agencies did not require regular updates to ensure that new data (from LANDFIRE, for example) were incorporated into the plans. In addition, in the wake of two court decisions—each holding that the Forest Service was required to prepare an environmental assessment or environmental impact statement under the National Environmental Policy Act (NEPA)<sup>10</sup> to accompany the relevant fire management plan—the Forest Service decided to withdraw the two plans instead of completing them. It is unclear whether the agency would withdraw other fire management plans successfully challenged under NEPA; nor is it clear whether or to what extent such agency decisions could undermine the interagency policy directing that every burnable acre have a fire management plan. Without such plans, however, current agency policy does not allow use of the entire range of wildland fire response strategies, including less aggressive, and potentially less costly, strategies. Moreover, in examining 17 fire management plans, a May 2007 review of large wildland fires managed by the Forest Service in 2006 identified several shortcomings, including that most of the plans examined did not contain current information on fuel conditions, many did not provide sufficient guidance on selecting firefighting strategies, and only 1 discussed issues related to suppression costs. 11

Third, over the past several years, the agencies have been developing a Fire Program Analysis (FPA) system, which was proposed and funded to help the agencies

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<sup>&</sup>lt;sup>9</sup>Fire management plans are local plans prepared by individual agency management units (such as national forests or wildlife refuges) to define each unit's program to prepare for and manage fires; such plans are important for identifying the fuel reduction, preparedness, suppression, and rehabilitation actions needed at the local level to effectively address wildland fire threats.

<sup>&</sup>lt;sup>10</sup>For major federal actions that significantly affect the quality of the human environment, the National Environmental Policy Act requires all federal agencies to analyze the environmental impact of the proposed action. 42 U.S.C. § 4332(2)(C).

<sup>&</sup>lt;sup>11</sup>Independent Large Wildfire Cost Panel, chartered by the U.S. Secretary of Agriculture, Towards a Collaborative Cost Management Strategy: 2006 U.S. Forest Service Large Wildfire Cost Review Recommendations (Washington, D.C., May 15, 2007).

- determine national budget needs by analyzing budget alternatives at the local level—using a common, interagency process for fire management planning and budgeting—and aggregating the results;
- determine the relative costs and benefits for the full scope of fire
  management activities, including potential trade-offs among investments
  in fuel reduction, fire preparedness, and fire suppression activities; and
- identify, for a given budget level, the most cost-effective mix of personnel and equipment to carry out these activities.

We have said for several years—and the agencies have concurred—that FPA is critical to helping the agencies contain wildland fire costs and plan and budget effectively. Recent design modifications to the system, however, raise questions about the agencies' ability to fully achieve key FPA goals. A midcourse review of the developing system resulted in the Wildland Fire Leadership Council's approving in December 2006 modifications to the system's design. FPA and senior Forest Service and Interior officials told us they believed the modifications would allow the agencies to meet the key goals. The officials said they expected to have a prototype developed for the council's review in June 2007 and to substantially complete the system by June 2008. We have yet to systematically review the modifications, but after reviewing agency reports on the modifications and interviewing knowledgeable officials, we have concerns that the modifications may not allow the agencies to meet FPA's key goals. For example, under the redesigned system, local land managers will use a different method to analyze and select various budget alternatives, and it is unclear whether this method will identify the most cost-effective allocation of resources. In addition, it is unclear how the budget alternatives for local units will be meaningfully aggregated on a nationwide basis, a key FPA goal.

Although the agencies have made progress on these three primary tasks, as of April 2007, they had yet to complete a joint tactical plan outlining the critical steps, together with related time frames, that the agencies would take to complete a cohesive strategy, as we recommended in our 2005 report. We continue to believe that, until a cohesive strategy can be developed, it is essential that the agencies create a tactical plan for developing this strategy, so Congress understands the steps and time frames involved in completing the strategy.

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Lack of Clear Goals or a Strategy Hinders Federal Agencies' Efforts to Contain Wildland Fire Costs

As we testified before the Senate Committee on Energy and Natural Resources in January 2007, the steps the Forest Service and Interior agencies have taken to date to contain wildland fire costs lack several key elements fundamental to sound program management, such as clearly defining cost-containment goals, developing a strategy for achieving those goals, and measuring progress toward achieving them. First, the agencies have not clearly articulated the goals of their cost-containment efforts. For cost-containment efforts to be effective, the agencies need to integrate cost-containment goals with the other goals of the wildland fire program such as protecting life, property, and resources. For example, the agencies have established the goal of suppressing wildland fires at minimum cost, considering firefighter and public safety and values being protected, but they have not defined criteria by which these often-competing objectives are to be weighed. Second, although the agencies are undertaking a variety of steps designed to help contain wildland fire costs, the agencies have not developed a clear plan for how these efforts fit together or the extent to which they will assist in containing costs. Finally, the agencies are developing a statistical model of fire suppression costs that they plan to use to identify when the cost for an individual fire may have been excessive. The model compares a fire's cost to the costs of suppressing previous fires with similar characteristics. However, such comparisons with previous fires' costs may not fully consider the potential for managers to select less aggressive—and potentially less costly—suppression strategies. In addition, the model is still under development and may take a number of years to fully refine. Without clear program goals and objectives, and corresponding performance measures to evaluate progress, the agencies lack the tools to be able to determine the effectiveness of their cost-containment efforts. Our forthcoming report on federal agencies' efforts to contain wildland fire costs includes moredetailed findings and recommendations to the agencies to improve the management of their cost-containment efforts; this report is expected to be released at a hearing before the Senate Committee on Energy and Natural Resources scheduled for June 26, 2007.

### Conclusions

Complex conditions have contributed to increasing wildland fire severity. These conditions have been decades in the making, and will take decades to resolve. The agencies must develop an effective and affordable strategy for addressing these conditions in light of the large federal deficit and the long-term fiscal challenges facing our nation. To make informed decisions about an effective and affordable long-term approach to addressing wildland fire problems, the agencies need to develop a cohesive strategy that identifies the available long-term options and associated funding for

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reducing excess vegetation and responding to wildland fires. Because the agencies cannot develop such a strategy until they complete certain key tasks, we continue to believe that in the interim the agencies must create a tactical plan for developing this strategy so that Congress can monitor the agencies' progress. While the agencies continue to work toward developing a cohesive strategy, they have initiated a number of efforts intended to contain wildland fire costs, but the agencies cannot demonstrate the effectiveness of these cost containment efforts, in part because the agencies have no clearly defined cost-containment goals and objectives. Without clear goals, the agencies cannot develop consistent standards by which to measure their performance. Further, without these goals and objectives, federal land and fire managers in the field are more likely to select strategies and tactics that favor suppressing fires quickly over those that seek to balance the benefits of protecting the resources at risk and the costs of protecting them. Perhaps most important, without a clear vision of what they are trying to achieve and a systematic approach for achieving it, the agencies—and Congress and the American people have little assurance that their cost-containment efforts will lead to substantial improvement. Moreover, because cost-containment goals should be considered in relation to other wildland fire program goals such as protecting life, resources, and property—the agencies must integrate cost-containment goals within the overall cohesive strategy for responding to wildland fires that we have consistently recommended.

Mr. Chairman, this concludes my prepared statement. I would be pleased to answer any questions that you or other Members of the Subcommittee may have at this time.

# GAO Contacts and Staff Acknowledgments

For further information about this testimony, please contact me at (202) 512-3841 or nazzaror@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. David P. Bixler, Assistant Director; Ellen W. Chu; Jonathan Dent; Janet Frisch; Chester Joy; and Richard Johnson made key contributions to this statement.

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