WILDLAND FIRE

Management Improvements Could Enhance Federal Agencies’ Efforts to Contain the Costs of Fighting Fires

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Why GAO Did This Study

Annual appropriations to prepare for and respond to wildland fires have increased substantially over the past decade, in recent years totaling about $3 billion. 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. GAO determined what steps federal agencies have taken to (1) address key operational areas that could help contain the costs of preparing for and responding to wildland fires and (2) improve their management of their cost-containment efforts.

What GAO Found

The Forest Service and Interior agencies have initiated a number of steps to address key operational areas previously identified as needing improvement to help federal agencies contain wildland fire costs, but the effects on containing costs are unknown, in part because many of these steps are not yet complete. First, federal firefighting agencies are developing a system to help them better identify and set priorities for lands needing treatment to reduce fuels, but they have yet to decide how they will keep data in the system current. Second, federal agencies have taken some steps to improve how they acquire and use personnel, equipment, and other firefighting assets—such as implementing a computerized system to more efficiently dispatch and track available firefighting assets—but have not yet completed the more fundamental step of determining the appropriate type and quantity of firefighting assets needed for the fire season. Third, the agencies have clarified certain policies and are improving analytical tools that assist officials in identifying and implementing an appropriate response to a given fire, but several other policies limit the agencies’ use of less aggressive firefighting strategies, which typically cost less. Fourth, federal agencies, working with nonfederal entities, have recently taken steps to clarify guidance to better ensure that firefighting costs are shared consistently for fires that threaten both federal and nonfederal lands and resources, but it is unclear how the agencies will ensure that this guidance is followed.

The agencies have also taken steps to address previously identified weaknesses in their management of cost-containment efforts, but they have neither clearly defined their cost-containment goals and objectives nor developed a strategy for achieving them—steps that are fundamental to sound program management. Although the agencies have established a broad goal of suppressing wildland fires at minimum cost—considering firefighter and public safety and resources and structures to be protected—they have no defined criteria by which to weigh the relative importance of these often-competing priorities. As a result, according to agency officials and reports, officials in the field lack a clear understanding of the relative importance the agencies’ leadership places on containing costs and, therefore, are likely to select firefighting strategies without due consideration of the costs of suppression. The agencies have also yet to develop a vision of how the various cost-containment steps they are taking relate to one another or to determine the extent to which these steps will be effective. The agencies are working to develop a better cost-containment performance measure, but the measure may take a number of years to fully refine. Finally, the agencies have taken, or are beginning to take, steps to improve their oversight and increase accountability—such as requiring agency officials to evaluate firefighting teams according to how well they contained costs—although the extent to which these steps will assist the agencies in containing costs is unknown.

What GAO Recommends

In its report, GAO recommended that the Secretaries of Agriculture and the Interior take several steps to improve their management of cost-containment efforts in preparation for the 2008 fire season. The Forest Service and Interior generally disagreed with the report’s findings, stating that GAO did not accurately portray some of the agencies’ actions to contain wildland fire costs; they neither agreed nor disagreed with the report’s recommendations.
Mr. Chairman and Members of the Committee:

I am pleased to be here today to discuss federal firefighting agencies’ efforts to contain the costs of preparing for and responding to wildland fires—costs that have increased substantially over the past decade. Wildland fire appropriations to prepare for and respond to wildland fires, including appropriations for reducing fuels, have increased 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.\footnote{Accumulations of fuels, due in part to past suppression policies; severe drought and weather in some areas of the country; and continued development in or near wildlands—an area commonly known as the wildland-urban interface—have contributed to increased costs. Five federal land management agencies—the Forest Service within the Department of Agriculture (Agriculture) and the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, and Fish and Wildlife Service within the Department of the Interior (Interior)—are responsible for managing wildland fires on federal lands. Congress, the Office of Management and Budget, federal agency officials, and others have expressed concerns about the mounting federal wildland fire expenditures. These concerns have led federal agencies (including the Forest Service, Interior, the Agriculture Office of Inspector General, and GAO) and others to conduct numerous reviews of the federal wildland fire program. My testimony is based on our report, released today, that discusses steps the Forest Service and Interior agencies have taken to (1) address key operational areas that could help contain the costs of preparing for and responding to wildland fires and (2) improve their management of their}
cost-containment efforts. I presented the preliminary results of our work before this Committee in January 2007.

Summary

In summary, the Forest Service and Interior agencies have initiated a number of steps to address key operational areas that past studies identified as needing improvement to help federal agencies contain wildland fire costs, but the effects on containing costs are unknown, in part because many of these steps are not yet complete. For example,

- Federal firefighting agencies are developing a system to help them better identify and set priorities for lands needing treatment to reduce fuels. The agencies are developing, but have not yet finalized, a plan for keeping data in the system current.

- Federal agencies have also taken some steps to improve how they acquire and use personnel, equipment, and other firefighting assets, such as implementing a computerized system to more efficiently dispatch and track available firefighting assets. The agencies, however, have not completed the more fundamental step of determining the appropriate type and quantity of firefighting assets needed for the fire season. Over the past several years, the agencies have been developing a system for doing so, although we have concerns that recent modifications to the system may not allow the agencies to fully meet certain key goals.

- The agencies have clarified certain policies and are improving analytical tools that assist officials in identifying and implementing an appropriate response to a given fire. Other policies, however, limit the agencies’ use of less aggressive firefighting strategies, which typically cost less.

- Federal agencies, working with nonfederal entities, have recently taken steps to clarify guidance to better ensure that firefighting costs are shared consistently for fires that threaten both federal and nonfederal lands and resources, although it is unclear how the agencies will provide oversight to ensure that this guidance is followed in the field.


Despite steps taken to strengthen the management of their cost-containment efforts, the agencies have neither clearly defined their cost-containment goals and objectives nor developed a strategy for achieving them—steps that are fundamental to sound program management. Although the agencies have established a broad goal of suppressing wildland fires at minimum cost—considering firefighter and public safety, and resources and structures to be protected—they have no defined criteria by which to weigh the relative importance of these often-competing priorities. As a result, according to agency officials and reports, officials in the field lack a clear understanding of the relative importance the agencies’ leadership places on containing costs and, therefore, are likely to select firefighting strategies without due consideration of the costs of suppression. The agencies have also yet to develop a vision of how the various cost-containment steps they are taking relate to one another or to determine the extent to which these steps will be effective. The agencies are working to develop a better cost-containment performance measure, but the measure may take a number of years to fully refine. Finally, the agencies have taken, or are beginning to take, steps to improve their oversight and increase accountability—such as requiring agency officials to evaluate firefighting teams on how well they contain costs—although the extent to which these steps will assist the agencies in containing costs is unknown.

We recommended in our report that the Secretaries of Agriculture and the Interior take several steps to improve their management of their cost-containment efforts. The Forest Service and Interior generally disagreed with our findings, stating that we had not accurately portrayed some of the agencies’ actions to contain costs; they neither agreed nor disagreed with our recommendations. We continue to believe that our recommendations, if effectively implemented, would help the agencies better manage their cost-containment efforts and improve their ability to contain wildland fire costs.

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, the 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 2000.¹ To align their policies and to ensure a 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 2002.² 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

¹The 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.

²The 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.
responsible for determining the strategy that will be used to respond to the fire. A wide spectrum of strategies is available to choose from, 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.”

The Forest Service and Interior agencies have initiated a number of steps to address issues that we and others have identified as needing improvement to help federal agencies contain wildland fire costs, but the effects of these steps on containing costs are unknown, in part because many of the steps are not yet complete. Dozens of studies by federal agencies and other organizations examining federal agencies’ management of wildland fire have repeatedly identified a number of similar issues needing improvement to help contain wildland fire costs. These issues generally fall into one of three operational areas—reducing accumulated fuels, acquiring and using firefighting assets, and selecting firefighting strategies. Recent studies have also raised concerns about the framework used to share the cost of fighting fires between federal and nonfederal entities.

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.6 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. According to

6A 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.
Forest Service and Interior officials, the agencies completed mapping the western United States in April 2007; mapping of the eastern states is scheduled to be completed by 2008 and of Alaska and Hawaii by 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. Forest Service and Interior officials told us that they recognize the importance of ensuring that data are periodically updated and are developing a plan to operate and maintain the system, including determining how often data will be updated. The agencies expect to submit this plan to the Wildland Fire Leadership Council for approval in June 2007.

Second, the agencies have also taken some steps to improve how they acquire and use firefighting personnel, aviation resources, and equipment—assets that constitute a major cost of responding to wildland fires—but much remains to be done. The agencies have improved their systems for dispatching and monitoring firefighting assets and for gathering and analyzing cost data. However, they have yet to complete the more fundamental step of determining the appropriate type and quantity of firefighting assets needed for the fire season. 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

- 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 these key 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 in April 2007 they believed the modifications will
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.

Third, the agencies have clarified certain policies and are improving analytical tools to assist agency officials in identifying and implementing an appropriate response to a given fire. Officials have a wide spectrum of strategies available to them when responding to wildland fires, some of which can be significantly more costly than others. For individual fires, past studies have found that officials may not always consider the full range of available strategies and may not select the most appropriate one, which would consider the cost of suppression; value of structures and other resources threatened by the fire; and, where appropriate, any benefits the fire may provide to natural resources. The agencies call a strategy that considers these factors the “appropriate management response.” The agencies updated their policies in 2004 to require officials to consider the full spectrum of available strategies when selecting one to use. Nevertheless, other policies limit the agencies’ use of less aggressive strategies, which typically cost less. The Forest Service and Interior agencies are working together to revise these policies—revisions that could, for example, allow different areas of the same fire to be managed for suppression and wildland fire use concurrently or allow a fire that was previously being suppressed to be managed instead for wildland fire use. The agencies are also continuing to refine existing tools, and to develop new ones, for analyzing both fuel and predicted weather conditions to model expected fire behavior, information that officials can use to identify appropriate suppression strategies; these tools are still being designed and tested. It is still too early to tell, however, to what extent the policy changes being considered or the new tools being developed will help to contain costs.

Finally, we and others have also reported that the existing framework for sharing firefighting costs between federal and nonfederal entities insulates state and local governments from the cost of protecting homes and
communities in or near wildlands, which may reduce those governments’ incentive to adopt building codes and land use requirements that could help reduce the cost of suppressing wildland fires.\(^7\) Federal agencies, working with nonfederal entities, have recently taken steps to clarify guidance and better ensure that firefighting costs are shared consistently for fires that threaten both federal and nonfederal lands and resources. In early 2007, the Forest Service and Interior agencies approved an updated template that land managers can use when developing master agreements—which establish the framework for sharing costs between federal and nonfederal entities—as well as agreements on how to share costs for a specific fire. Because master agreements are normally updated every 5 years, however, it may take several years to fully incorporate this new guidance. Although the new guidance states that managers must document their rationale for selecting a particular cost-sharing method, officials told us that the agencies have no clear plan for how they will provide oversight to ensure that appropriate cost-sharing methods are used.

Despite steps taken to strengthen their management of cost-containment efforts, the agencies have neither clearly defined their cost-containment goals and objectives nor developed a strategy for achieving them—steps that are fundamental to sound program management. To manage their cost-containment efforts effectively, the Forest Service and Interior agencies should, at a minimum, have (1) clearly defined goals and measurable objectives, (2) a strategy to achieve the goals and objectives, (3) performance measures to track their progress, and (4) a framework for holding appropriate agency officials accountable for achieving the goals.\(^8\)

First, although the agencies have established a broad goal of suppressing wildland fires at minimum cost considering firefighter and public safety and the resources and structures to be protected, they have established neither clear criteria by which to weigh the relative importance of these often-competing priorities nor measurable objectives by which to

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determine if they are meeting their goal. Without such criteria and objectives, according to agency officials we interviewed and reports we reviewed, officials in the field lack a clear understanding of the relative importance that the agencies’ leadership places on containing costs and, therefore, are likely to select firefighting strategies without due consideration of costs.

Second, the agencies have yet to establish an overall cost-containment strategy. Without a strategy designed to achieve clear cost-containment goals, the agencies (1) have no assurance that the variety of steps they are taking to help contain wildland fire costs are prioritized so that the most important steps are undertaken first and (2) are unable to determine to what extent these steps will help contain costs and if a different approach may therefore be needed.

Third, the agencies recently adopted a new performance measure—known as the stratified cost index—that may improve the agencies’ ability to evaluate their progress in containing costs, but the measure may take a number of years to fully refine. Also, although the agencies have in recent years improved their data on suppression costs and fire characteristics, additional improvement is needed. In particular, cost data for “fire complexes”—that is, two or more fires burning in proximity that are managed as a single incident—are particularly difficult to identify. Thus, the costs of many of the largest fires are not included in the index, limiting its effectiveness. Further, to date, the index is based solely on fires managed by the Forest Service. Forest Service researchers are currently developing, at Interior’s request, a similar index for fires managed by the Interior agencies, but it will be several years, at the earliest, before enough data have been collected for the index to be useful. In addition, because the stratified cost index is based on costs from previous fires—and because the agencies have only recently begun to emphasize the importance of using less aggressive suppression strategies—we are concerned that the index does not include data from many fires where less costly firefighting strategies were used. As a result, the index may not accurately identify fires where more, or more-expensive, resources were used than needed. According to Forest Service officials, data from recent fires will be added annually; over time, the index should therefore include more fires where less aggressive firefighting strategies were used.

Finally, the agencies have also taken, or are beginning to take, steps to improve their oversight and accountability framework, although the extent to which these steps will assist the agencies in containing costs is unknown. For example, the agencies have issued guidance clarifying that
land managers, not fire managers, have primary responsibility for containing wildland fire costs, but they have not yet determined how the land managers are to be held accountable for doing so. Rather, the agencies have taken several incremental steps intended to assist land managers in carrying out this responsibility—such as assigning “incident business advisors” to observe firefighting operations and work with fire managers to identify ways those operations could be more cost-effective, and requiring land managers to evaluate fire managers for how well they achieve cost-containment goals. The utility of these steps, however, may be limited because the agencies have yet to establish a clear measure to evaluate the benefits and costs of alternative firefighting strategies. Some past studies have concluded that the absence of such a measure fundamentally weakens the agencies’ ability to provide effective oversight.

Continuing concerns about the cost of preparing for and responding to wildland fires have spurred numerous studies and actions by federal wildland fire agencies, but little in the way of a coordinated and focused effort to rein in these costs. Although the agencies have taken—and continue to take—steps intended to contain wildland fire costs, the effect of these steps on containing costs is unknown, in part because the agencies lack a clear vision for what they want to achieve. Without clearly defined cost-containment 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. Further, without clear goals, the agencies will be unable to develop consistent standards by which to measure their performance. 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 cost-containment efforts will lead to substantial improvement.

Thus, to help the agencies manage their ongoing efforts to contain wildland fire costs effectively and efficiently, and to assist Congress in its oversight role, we recommended in our report that the Secretaries of Agriculture and the Interior work together to direct their respective agencies to (1) establish clearly defined goals and measurable objectives for containing wildland fire costs, (2) develop a strategy to achieve these goals and objectives, (3) establish performance measures that are aligned with these goals and objectives, and (4) establish a framework to ensure that officials are held accountable for achieving the goals and objectives. Because of the importance of these actions and continuing concerns about
the agencies' response to the increasing cost of wildland fires—and so that
the agencies can use the results of these actions to prepare for the 2008
fire season—the agencies should provide Congress with this information
no later than November 2007.

In commenting on a draft of our report, the Forest Service and Interior
generally disagreed with the characterization of many of our findings; they
neither agreed nor disagreed with our recommendations. In particular, the
Forest Service and Interior stated that they did not believe we had
accurately portrayed some of the significant actions they had taken to
contain wildland fire costs, and they identified several agency documents
that they believe provide clearly defined goals and objectives that make up
their strategy to contain costs. Although documents cited by the agencies
provide overarching goals and objectives, we believe that they lack the
clarity and specificity needed by their land management and firefighting
officials in the field to help manage and contain wildland fire costs.
Therefore, we believe that our recommendations, if effectively
implemented, would help the agencies better manage their cost-
containment efforts and improve their ability to contain wildland fire
costs.

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

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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