Managing Flames and Costs in a Complex Environment


OPERATIONS


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Managing Flames and Costs in a Complex Environment

Wildland fire recognizes no ownership or jurisdictional boundaries on the landscape; nor do the complex issues of fire management. As a result, perhaps nowhere is the practice of interagency and interdepartmental cooperation so prevalent and effective as in the nation's wildland fire community.

Five federal agencies, including the Department of the Interior's Bureau of Land Management, Bureau of Indian Affairs, National Park Service, and U.S. Fish and Wildlife Service, along the Department of Agriculture's Forest Service, manage and have primary fire program responsibilities on more than 676 million acres. The U.S. Fire Administration works with county and local fire departments; while the states are represented by the National Association of State Foresters. The state, county and local jurisdictions provide primary fire protection on public and private lands covering additional hundreds of millions of acres across all 50 states.

As partners, we work together on fire management issues covering the spectrum from safety and planning, to science, preparedness, operations, strategy development, logistics, intelligence, emergency response, and more. We also collaborate on interagency strategies to manage the costs of wildland fires, not only for single incidents but as a matter of business.

While the increased cost of wildland fires has drawn much attention in recent years, fire leaders have long been managing programs for efficiency and effectiveness in less high-profile ways such as those highlighted in this document. Challenges continue to arise, but strategies have been and continue to be developed and implemented through evolving knowledge and technology.

Bureau of Indian Affairs | Bureau of Land Management | Fish & Wildlife Service | National Park Service | Forest Service | National Association of State Foresters | U.S. Fire Administration

Guiding Principles

The Fire Executive Council, an interagency group of fire leaders, base strategic decisions regarding cost management on the following guiding principles:

- **Public and firefighter safety is the highest priority.**
- **Wildland fire management is implemented as part of natural resource programs in accordance with Federal Wildland Fire Policy.**
- **Cost management strategies are implemented in concert with overarching program policies and objectives.**
- **Where appropriate, cost management priorities, strategies, and actions are jointly developed, shared, and implemented among all federal agencies; and, where practicable, in collaboration with non-federal partners.**
- **Wildland fire resources are mobile, shared, and interoperable.**
- **Wildland fire is managed in a manner that maximizes effectiveness of effort, has highest regard for firefighter and public safety, and controls costs.**

A Complex Operations Environment

The nation's wildland fire community is an intricate, integrated and coordinated network of federal, state and local fire organizations. It takes all levels – from the rural volunteer fire departments across the land, to the resources of the Forest Service and Department of the Interior agencies – to effectively respond to and manage the nation's wildland fires.

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From an individual rural fire engine crew to smokejumpers and large air tankers, these resources are mobilized through a tiered network that includes innumerable single-department dispatch offices to more than 300 interagency dispatch centers, 11 Geographic Area centers and the National Interagency Coordination Center. At an incident, whether it is 100 acres staffed by 20 firefighters or tens of thousands of acres with multiple crews, equipment and aircraft, these resources are trained to work together to meet land management plan objectives and achieve operational and cost efficiencies.

The magnitude of this operational structure is perhaps matched only by the diversity of fuels, topography and resource values across the landscape where wildland fires occur. Each year, firefighters and fire managers face extreme conditions and fire behavior in areas ranging from high timbered mountains to flat and rolling deserts and prairies; from Alaska's tundra to Florida's wetlands; and from wilderness areas to highly populated wildland urban interface areas. Each of these fuel types and landscapes present unique and often difficult challenges.

A Rapid Increase in Annual Acres Burned

While the nation's wildfire response structure has continued to be effective in maintaining a high success rate of catching new fire starts during initial attack, the current decade has seen a marked increase in the acres burned by those that escape initial attack. A number of factors contribute to this increase, but climate, drought and hazardous fuels accumulations are the leading contributors.

During the 1970s, 1980s and 1990s, acres burned by wildfire in the United States averaged approximately three million acres per year. Although 2008 was a relatively light year, the average acres burned per year so far this decade, from 2000 through 2008, more than doubled the annual average of the previous 30 years to more than seven million acres.

The size and severity of fires this decade has translated into higher costs, among other things. In light of this, however, the federal agencies continue long-held practices and continue learning and searching for new ones to manage more efficiently and effectively.

Managing Efficiently and Effectively

Consistency and Standardization

Wildland fires occur and spread without regard to ownership or jurisdictional boundaries. This means any one or multiple departments, organizations, or agencies may respond to any given incident. Decades ago, fire managers recognized a need for consistent preparedness and operational standards among local, state and federal fire community partners, along with consistent interagency incident business practices. Such standards, increase safety for all, as well as promote greater efficiencies in operations and cost management.

Training and Terminology

Achieving a cost-efficient interoperability among departments and agencies began with the development of the Incident Command System and a common incident management structure. Standardized wildland fire training enables firefighters from Alaska to Florida to communicate using the same terminology, understand the same tactics and strategies, and it facilitates the effectiveness of overall response operations.

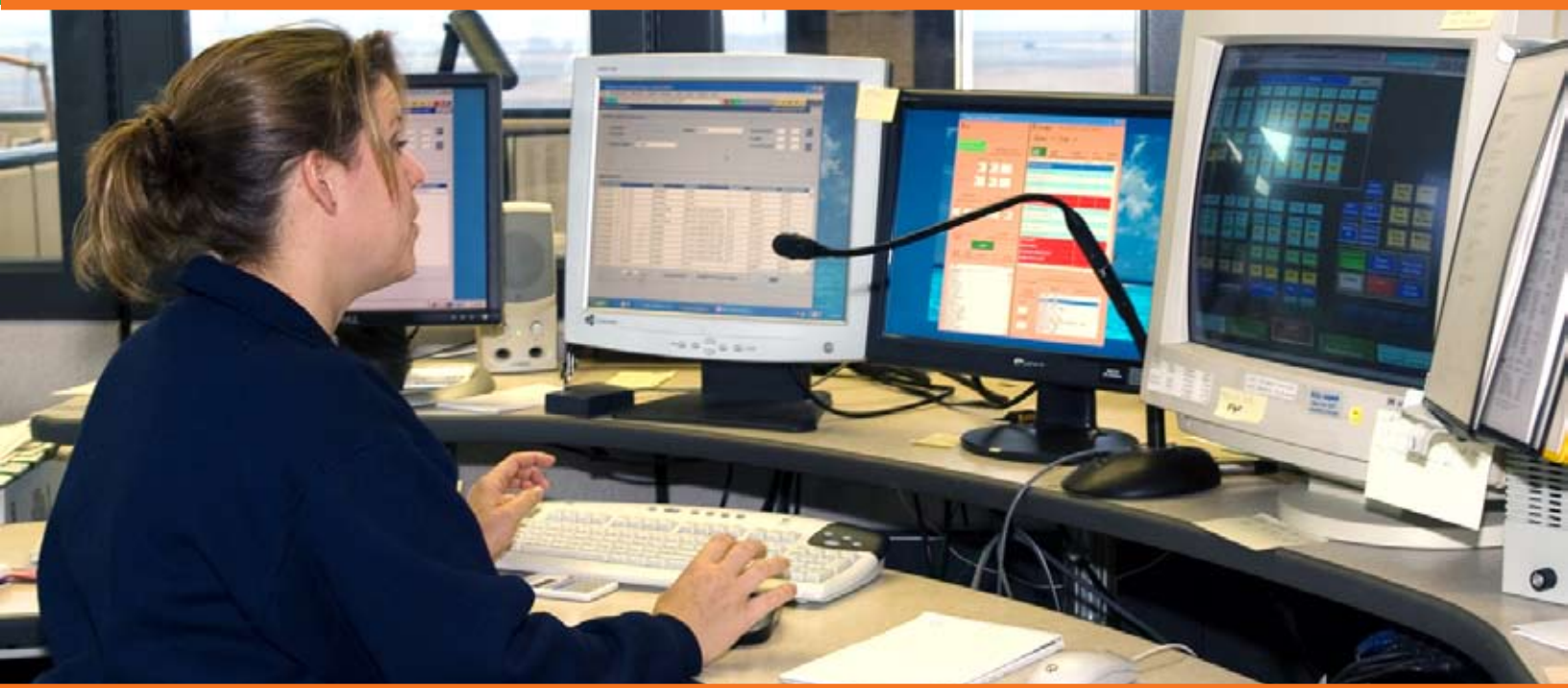
Standardized training also allows individuals trained for specific roles in the incident command structure, whether as a fire behavior analyst or aviation branch chief, to gain the same knowledge at training sites across the nation. In turn, this facilitates rapid, consistent and effective response that ultimately achieves safe, efficient, and cost-saving objectives.

Closest Forces and Efficient Response

Common training also has enhanced the long-held practice of dispatching the closest response forces, regardless of jurisdiction or land ownership. Often, the closest forces are local fire departments which, in turn, frequently contain fires during initial attack and before state or federal resources arrive.

Maintaining this network of trained wildland firefighters has multiple benefits:

- Local partners trained in wildland fire.
- Operations contribute to an overall high rate of success in suppressing fire starts before they can become large and costly incidents.
- When state or federal resources arrive as needed, common training, terminology and tactics enhance the operational and cost efficiency of managing the incident.
- Partnerships with local and state fire organizations reduce costly duplication of resources and allows federal agencies to more efficiently locate and configure crews, equipment and aircraft.



Catching Flames, Cutting Costs: Ongoing Challenges

Managing wildland fires has become a costly venture. Even the relatively mild 2008 fire season saw costs reach nearly $2 billion. By comparison, in 1997, a similarly mild year in which about the same acres burned, the total federal fire costs were approximately one-sixth of the 2008 cost.

Clearly, things have changed. While a number of factors contribute to the rising costs, the fire community continues to face persistent challenges in a few primary areas.

Expansion of the Wildland-Urban Interface

The wildland-urban interface (WUI) – fire-prone areas where wildland fuels meet and mix with homes and other urban fuels – has expanded at a staggering rate. One study concluded that 60 percent of all homes built between 1990 and 2000 were in a WUI. Fires in these areas pose multiple challenges. The mix of threats to life, homes, infrastructure, critical watersheds and other very high-value resources all make WUI fires more complex. Yet response and management options available to fire managers are limited in areas of such multiple threats and complexity. These fires are top priorities and require immediate and aggressive action with a full complement of crews, equipment and aircraft. The multiple resources needed to quickly and effectively suppress WUI fires drive costs upward, relative to similar sized fires burning in non-WUI areas.

Climate Change

Climate change means longer and more severe fire seasons. A study examining fire in the Northern Rockies found the average fire season in the region had increased annually by 78 days in the past 20 years. That trend seems to hold in other geographic areas as well. The logic is straightforward: Longer fire seasons mean more fires, and more fires mean higher costs. This trend is expected to continue. Although opinions vary, many researchers agree North America may see many years of drought in the coming decades. The 2009 Quadrennial Fire Review predicts a new "plateau" of 8 to 10 million acres burning annually, with activity occasionally spiking to the 12-million mark, based on climate, fuels, and invasive species issues.

Fuels Condition and Accumulation

Since the beginning of this decade, federal agencies have treated more than 26 million acres to reduce hazardous fuels accumulations through prescribed fire or by mechanical means. More than half this acreage has been in wildland-urban interface areas where treatments serve to alter an approaching fire's behavior and to better protect lives, property and high resource values.

Although this work is effective, fire managers face continuing challenges regarding the condition of wildland fuels. Among these challenges is the ongoing spread of invasive species, particularly across lower elevation rangeland areas; and widespread timber mortality across many forests due to insect infestations impacting drought-stressed trees. Additionally, fuels continue to accumulate and treatments require maintenance after a period of years.

Finally, fixed costs are anything but static. As they rise, so do overall suppression costs. While fire managers remain responsible and accountable to suppress fires without compromising safety, they continually face cost-management challenges.

Land Use and Fire Management Plans

Every acre of land under management by one of the federal agencies has both land use and fire management plans in place. Development of land-use plans includes public input through the National Environmental Policy Act (NEPA) process, and both fire and land use management plans consider cost alternatives of various actions taken in response to wildfire. These plans, which are typically coordinated and augment each other, provide guidance to land and fire managers designed to achieve the most viable, cost-efficient, protection of natural resources.

Community Assistance, WUI Education and Homeowner Responsibility

Each of the federal agencies having fire programs have been heavily invested, through a variety of programs, in local partnerships. These partnerships and programs are focused on increasing the training and capability of local fire departments to manage wildland fires; and on educating the public and homeowners about fire, Firewise concepts, and how individuals can reduce their exposure to and threat from wildfire. These efforts to increase both local capability and public involvement are designed to reduce the cost and operational burden on federal fire programs.

Proactive Fuels Treatments

For longer than a decade, and particularly since 2001, fire managers have focused significant effort on reducing hazardous accumulations of fuels. Using both prescribed fire and mechanical reduction and thinning techniques, the federal agencies have treated nearly 26 million acres since 2001. More than half of this work has been accomplished in wildland-urban interface areas where reduced fuels lessen the complexity and cost of wildfire suppression. Proactive fuels treatments, along with post-fire rehabilitation efforts have helped improve the health of the land in many areas; and healthier lands translate to less severe and costly suppression challenges when fire occurs.

Predictive Services

Advances in knowledge of fire weather and fuels, along with improved technology have allowed the Predictive Services program to play a primary role in effective and cost-efficient fire management. Utilizing sophisticated meteorological data and tools, this group provides fire leaders with daily, monthly and seasonal fire weather forecasts of what can be expected and how it may affect fire starts and fire behavior. This meteorological information

is accompanied by fuels condition forecasts derived from monitoring data and fuel modeling. Together, the weather and fuels information allows fire managers at all levels to anticipate where fires are likely to occur and the severity with which they will burn.

Consistent forecast accuracy enables fire managers to preposition crews, equipment and aircraft ahead of fire starts and in areas where severe fire behavior is anticipated. Such mobilizations and crew movement are standard operating procedures that contribute to sustaining a high rate of success in initial attack and helps reduce short- and long-term suppression costs.

Employing Flexible Strategies

Except in situations threatening lives and property, fire managers increasingly draw upon a wider range of strategic and tactical options to manage wildland fires. These options include such tactics as point protection, where firefighters focus on individual points on the fireline such as homes, power lines or other infrastructure while monitoring or managing other parts of the fire with less intensity. This practice of implementing greater flexibility in strategies and tactics represents a clear recognition of and response to: a) the soaring costs of fire suppression; b) the understanding that some fires in today's climate defy traditional approaches; c) the premise that some fires, or portions of fires where no lives or property are threatened, are creating some natural benefits by restoring fire to the landscape and helping to improve ecosystem health; and d) that some fires can be effectively managed for more than one objective. This approach makes the best, most cost-efficient use of available resources and is expected to be reflected in a modification to the implementation of existing policy in 2009.

Decision Support Tools

A move toward managing wildfire for more than one objective has led to research to develop a new Wildland Fire Decision Support System (WFDSS). While decision support tools have been used for years to guide incident management, the new WFDSS builds on and incorporates the best of those previous tools in combination with advances in web-based technology, and includes economic principles in the decision process. The WFDSS is expected to be fully operational in 2009 and will enhance incident managers' ability to successfully achieve cost, suppression and resource benefit goals.

An Investment in Science

Partners in the nation's fire community, particularly at the federal level, continue to invest in scientific research and development to better understand all aspects of wildland fire and resource management. In turn, advances in science continue to aid fire managers in achieving greater operational and cost efficiencies.

Work conducted through the Joint Fire Science Program based at the National Interagency Fire Center in Boise, Idaho, and at Forest Service research stations and labs at various locations in the West, focuses on fire, fuels, rehabilitation, the human component, and more. Results of this work consistently provide fire managers new understanding and state-of-the-art tools to increase effectiveness and manage costs.

Other Factors

While some of the more prominent and enduring operating procedures resulting in cost efficiencies are highlighted here, these are not the only ongoing practices designed for cost management. Others include a program to provide oversight, review and audits of large fire operations and strategic decisions; developing common business practices to minimize duplications of service; and assigning business management teams to incidents expected to exceed $5 million in costs.

Summary

- The nation's wildland fire community is an intricate and integrated web of federal, state and local fire organizations, all working together to protect lives, property and natural resources.

- Federal agencies have been at the forefront in developing and implementing operations standards that provide consistency in terminology, training, equipment interoperability, and more. This operational consistency enhances efficiency and effectiveness.

- Cooperation and collaboration among federal, state, county and local fire programs enables a quick, efficient response to wildfire starts in which the closest forces respond first regardless of jurisdiction. This strategy helps maintain a high initial attack success rate and in turn, helps reduce costs.

- Fire managers use a variety of tools including prescribed fire and flexible response strategies to protect lives, property and critical infrastructure while also achieving land and resource management objectives and benefits. These efforts contribute to overall cost and operational efficiencies.

For more information, contact the National Interagency Fire Center.
208-387-5050 or 208-387-5895

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BLM-FA-AE-09-001-9210