

Incentives and Wildfire Suppression Policy



Complete wildfire exclusion is neither desirable nor possible

A century of aggressive wildfire suppression has led to increased fuel loads on the nation's forests, and has made wildfires more difficult and expensive to suppress. For example, suppression expenditures on national forest land exceeded \$1 billion for the first time in 2000 and again in 2002 and 2003. Despite this increase in suppression spending, the frequency and intensity of wildfires in the western United States continues to rise. One solution is to conduct fuels treatments, such as prescribed fire or mechanical treatments, over an estimated 30 million hectares of national forest. But prescribed fire incurs unpredictable risks and can be used only when weather and fuel moisture conditions permit, and the cost of mechanical treatment makes it prohibitive in many cases.

Another option is to use fire to fight fire by relaxing the current aggressive approach to fire suppression and maximizing opportunities to allow wildfire to reduce fuel accumulations (thereby reducing future suppression costs). Not only is the current approach to wildfire suppression getting more expensive, but ironically, aggressive fire suppression puts certain ecosystems at greater risk for uncharacteristically severe fire in the future. Benefits of wildfire include reductions in fuel loads, encouragement of native fire-adapted trees and plants, recycling of nutrients, and creation of habitat mosaics that promote species diversity.

Current incentive structure for wildfire management

The Forest Service system for funding wildfire suppression has two related problems, both of which encourage fire managers to use inefficiently high levels of suppression expenditure. First, it ignores the benefits of wildfire. When determining appropriate suppression strategies, land managers are specifically directed in the vast majority of cases not to consider the potential beneficial effects of wildfire.

Second, fire managers incur no opportunity cost when they spend emergency suppression funds. In other words, if fire managers relinquish some portion of suppression spending, they cannot use this money for anything else. Therefore, they have little incentive to limit spending.



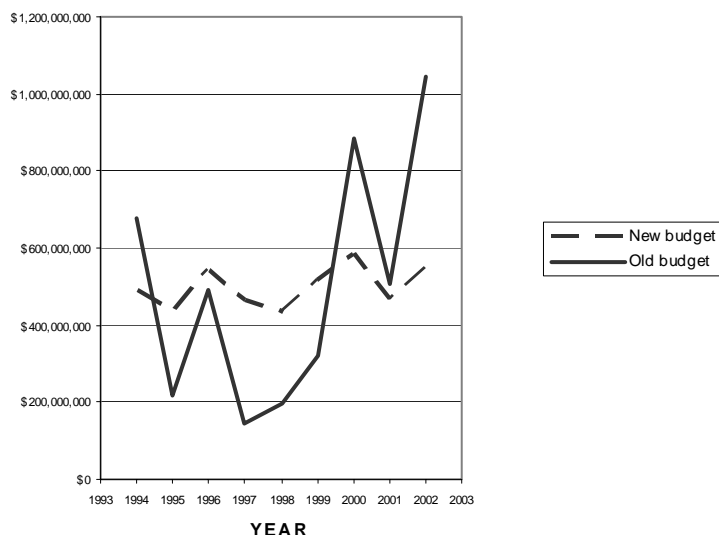
Considering alternatives: A new model

The goal of this study was to design an incentive structure for an uncertain fire season that would improve efficiency and stabilize annual suppression budgets. We have addressed the two shortcomings of the current system by developing a new method of funding wildfire suppression, which provides incentives for managers to consider the cost of suppression resources and the beneficial effects of wildfire.

Under the proposed system, base budgets are fixed, and managers are required to carry over budget surpluses and deficits from year to year. Savings from a moderate fire year could be used to supplement spending in a severe fire year. This provides fire managers with an incentive to consider the tradeoff between suppression costs and suppression benefits. In addition, a fire manager's base budget would be supplemented by a severity adjustment, which would be dependent on the number of burned acres in a year. Therefore, if a fire manager suppresses a wildfire, the number of burned acres declines, and so does the manager's budget. This would encourage fire managers to suppress some wildfires less aggressively, resulting in an increase in burned area.

To demonstrate its application, we contrast actual annual suppression expenditures over the 1994-2002 period with the budgets formulated under the proposed incentive structure. The following figure shows that the proposed incentive structure results in more stable annual suppression budgets.

The current system for funding wildfire management, which encourages aggressive suppression, is a reflection



A comparison of annual suppression budgets under the proposed incentive structure and actual suppression expenditures 1994-2002 (in 1994 dollars).

tion of long-standing political and social expectations of fire suppression on national forests. Therefore, any changes in policy that assure cost containment and recognition of the benefits of wildfire would likely face opposition.

Although most people are uneasy about potential risks to human life and property that occur with some wildfires, a century of aggressive wildfire suppression has demonstrated that there are also risks associated with *not* letting forests burn. Add to this the inefficiently high levels of suppression expenditure, and the current system starts to look unsustainable. The proposed incentive structure, by increasing efficiency and maximizing opportunities to allow wildfire to reduce fuel accumulations and restore a more natural fire regime, could be a place to start.

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