

# **Implementation Plan**

**for the**  
**Joint Fire Science Plan**

**Completed by the Governing Board**  
**of the**  
**Joint Fire Science Program**  
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Note: This plan provides interim guidance for the Joint Fire Science Program. The plan will be revised as necessary and completed in final form following review by the Joint Fire Science Program Stakeholder Advisory Group.

## **Executive Summary**

This Implementation Plan is the second of three documents that describe the purposes, processes, and procedures of the Joint Fire Science Program (JFSP). The first document, the Joint Fire Science Plan, was requested by and submitted to the Congress on January 1, 1998. It provided an overview of the wildland fuels situation and broadly described how the JFSP would address the problems via four Principal Purposes. The third document, Operating Guidelines, describes in detail how the Program, including the Governing Board and Program office, operate. This Implementation Plan adds specificity to the broad statements provided in the Joint Fire Science Plan and provides information on how the Joint Fire Science Plan will be implemented.

This Implementation Plan summarizes the four Principal Purposes and extracts nineteen program priorities from them. It also describes the relationship between the six partner agencies and the JFSP as well as individual agency application of research. The Plan also provides JFSP Mission Statement and Vision Statements. It concludes by identifying a program evaluation process to determine program progress, usefulness, and appropriateness; these reviews include annual progress reviews by the Governing Board; a comprehensive, extramural five-year evaluation; and other means of obtaining constructive feedback from the partner agencies.

## **Introduction**

### Background

The development and maintenance of most North American terrestrial ecosystems included periodic exposure to disturbances such as fire. Fire was instrumental in preventing fuel accumulations. However, wildland fuels have been accumulating over the past several decades due to suppression-oriented Federal wildland fire policies, silvicultural and grazing practices, invasions of alien plants, increased density and/or range of flammable indigenous plants, landscape fragmentation, and related natural and anthropogenic causes. The additional fuels have contributed to increased flame lengths and fireline intensity (i.e., resistance of the fire to control measures). Results include ecosystems degraded by fuel accumulations and often unhealthy overstocked stands, wildland fires with behavior characteristics well beyond the historic range of variability, and imminent threats to life and property from uncontrollable fires. The problem is compounded by the advance of residential and recreational development in and adjacent to wildlands.

In the Federal Fiscal Year 1998 Appropriation for Interior and Related Agencies, the Congress provided funding and direction to initiate the Joint Fire Science Program to provide scientific support and tools for addressing wildland fuels issues. The Congress also directed the agencies to develop a plan (hereinafter referred to as the Joint Fire Science Plan) to address the four principal purposes identified in a Congressional report, H.R. 105-163. The Joint Fire Science Plan is attached to this Implementation Plan as Appendix A (and is available on the program website at [http://www.nifc.gov/joint\\_fire\\_sci/jointfiresci.html](http://www.nifc.gov/joint_fire_sci/jointfiresci.html)) The program focuses on wildlands administered by the partner agencies and other federally administered lands. To the extent possible, the program will ensure that information and tools that are developed will benefit all wildlands including those under State and local jurisdiction and those in private ownership.

### Agency Missions

Six diverse agencies are full partners in the Joint Fire Science Program including the USDA Forest Service and five bureaus from the Department of the Interior: Bureau of Indian Affairs, Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, and the U.S. Geological Survey. Agency missions are broad and varied. For example, the Bureau of Indian Affairs has an extremely broad mission to enhance the quality of life, promote economic opportunity, and protect and improve

trust assets of American Indians, Indian Tribes, and Alaska Natives. The USDA Forest Service responsibilities include broad (i.e., multiple use) land management for National Forests, assistance to private landowners, and natural resource research components for all lands. The Forest Service also has more designated Wilderness than any other agency. Within Interior, the Bureau of Land Management has a broad multiple use mission similar to that of the USDA Forest Service. The National Park Service and U.S. Fish and Wildlife Service are more focused on visitor use and resource protection, and management of habitat for migratory birds and Threatened and Endangered species respectively. The U.S. Fish and Wildlife Service also has certain wildlife enforcement responsibilities. The U.S. Geological Survey focuses on research on biological and water resources, mapping, and related issues. Although some issues such as smoke management are common across jurisdictions, the broad range and scope of agency missions requires the Joint Fire Science Program to take broad approaches to many issues. For example, four of the agencies have designated Wilderness Areas. Because the use of mechanized equipment is generally prohibited in Parks and Wilderness Areas, the Program must necessarily investigate multiple approaches and alternatives to fuels treatments rather than focus on selected approaches (such as mechanical treatments) in order to meet the needs of all agencies.

### Program Mission Statement

In order to meet the needs of agency partners, the Joint Fire Science Program has a mission to identify and meet information and technological support needs for wildland fuels management programs across agencies. The JFSP will: (1) provide a scientific basis for planning, prioritizing, and evaluating effects of the implementation of fuels management treatments and programs, with a focus on activities that lead to development and application of tools for managers, (2) evaluate the effects of fuels treatments including the no treatment alternative, (3) increase access to available information, and (4) provide a knowledge base for managers.

### Summary of Four Principal Purposes

The program mission was developed from direction provided by the Congress (in Congressional Report no. H.R. 105-163) which directed that the Program focus on four well-defined Principal Purposes related to wildland fuels. The Principal Purposes are described in detail in the Joint Fire Science Plan. In brief, they are as follows:

1. Fuels Inventory and Mapping. There is a lack of consistent and credible information about the current fuels management situation, including information about fuel loads, conditions, risks, flammability and emission potential, fire regimes, locations, and priorities for fuel treatment. To correct these situations, the Program will develop and test comprehensive approaches for fuel mapping and inventory that involve the location and condition of fuels, the appropriate treatment frequency, potential effects on other resources, and priorities for treatments.
2. Evaluation of Fuels Treatments. In developing, prioritizing, and implementing treatments to

reduce fire hazard, manage fire regimes, and improve forest and rangeland health and productivity, it is important to understand the potential ecosystem responses, economic and social consequences, and air and water quality impacts of various treatment options. To address these issues the Program will evaluate various treatment techniques for cost effectiveness, ecological consequences, and air quality impacts.

3. Scheduling of Fuels Treatments. Strategies for addressing fuels management problems and ecosystem health issues vary greatly among management units. Typically, priorities among watersheds or across unit boundaries have not been established and past treatment levels have not required comprehensive scheduling efforts. To improve treatment scheduling the Program will assist in the development of procedures for long-range schedules that describe sequencing of treatments, as appropriate, such as commercial or pre-commercial thinning and prescribed fire. Such scheduling, however, will be based on priorities and be consistent with land management plan direction.
4. Monitoring and Evaluation. Agencies have been collecting fuels data and monitoring a limited number of fuels treatments. Most treatments, however, have been done to address site specific objectives and have not been coordinated across or among sites or ownerships at landscape, regional, or national scales. Further, methods vary within and among agencies, resulting in limited ability to determine overall effectiveness. To help remedy this situation, the Program will develop protocols for monitoring and evaluating fuels treatment methods and techniques in a manner that will measure performance over time and allow conclusions to be drawn about the effectiveness and consequences of fuels management activities.

### Implementation Plan is Dynamic

This Implementation Plan is a dynamic document. It will be reviewed annually, and amended as necessary, to adjust to emerging issues, changing priorities, legislative actions, etc.

### Relationship Between the Agencies and the Program

The six Federal land management and research organizations have joined forces to address wildland fuels issues via the Joint Fire Science Program. The Program's charge is to obtain information and tools to assist land managers who are working with wildland fuels issues. When developed, these products will be delivered to the agencies for further action, including implementation as appropriate. The JFSP operates in an interagency framework to foster development of appropriate and useful products and information, and the Governing Board members will work with their agencies to encourage and facilitate implementation. However, implementation is ultimately the responsibility of the agencies.

### Agency Application of Research

The five Federal land management partners have adopted and are committed to the application of the principles and concepts of sound science in all land management activities. With specific regard to wildland fuels issues, the five land management agencies and two affiliated research organizations (USDA Forest Service and the U.S. Geological Survey) have different missions but have joined efforts to develop comprehensive, science-based approaches to dealing with the fuels issues. Information and tools developed via the program will be made available to all interested parties, but implementation of the deliverables/products resides with the land management agencies. Partner agencies and other interested parties such as the Federal Environmental Protection Agency and State air regulators must help find ways of implementing information, tools, and processes in a consistent manner across multiple agencies with different missions and statutory mandates.

### Program Vision Statement

The Joint Fire Science Program will develop information and tools to help agency administrators, resource management specialists, and others make sound, science-based fuels management decisions and to ensure measurable results will be apparent in the future. Based in part on the work of the Joint Fire Science Program, future ecosystems will be healthier and less prone to destructive wildland fires, fire suppression costs will be lower, and communities and firefighters will be safer.

## **Purpose and Scope of Implementation Plan**

### Purpose

The Congress provided direction for the Program in Annual Appropriations Acts for Interior and Related Agencies (beginning with the Federal Fiscal Year 1998 budget) and Congressional Report no. H.R. 105-163. That direction led to the development of the **Joint Fire Science Plan** (Appendix A), which was requested by and delivered to the Congress. In turn, this **Implementation Plan** has been developed by the Governing Board to provide details for implementing the generic provisions of the Joint Fire Science Plan. A third document, **Operating Guidelines** (Appendix B), provides guidance on day-to-day operational details for the Governing Board and Program Manager.

The specific purpose of the Implementation Plan is to expand and update the broad guidance in the Joint Fire Science Plan into a working document that provides more specific direction and guidance for the Governing Board, Program Manager, and Stakeholder Advisory Group. The Implementation Plan includes specific direction at the problem level for the four Principal Purposes (see Program Approach below).

The Governing Board has operated under general principles of the Joint Fire Science Plan since the Plan was completed and delivered to the Congress in January 1998. Additional operating procedures were adopted at the inaugural meeting of the Board in February 1998, and during subsequent deliberations. These sets of guidance have now been consolidated into this Implementation Plan and the

Operating Guidelines.

## Scope

The Implementation Plan extends to September 30, 2005 and is subject to modification to address emerging issues, changing priorities, evolving scientific information, legislative mandates, and other unforeseen circumstances.

## **Program Approach**

The Joint Fire Science Program is guided by direction from the Congress, general provisions of the Joint Fire Science Plan, and specific problem level guidance in this Implementation Plan.

### Overall Program Approach

Specific operational details are provided in the Joint Fire Science Program Operating Guidelines (Appendix B). In general, the Program periodically issues Requests for Proposals (RFPs) to fund work that provides information and/or tools to help local managers resolve wildland fuels issues. Occasionally, specific projects are solicited directly by the Governing Board when critical needs or special opportunities arise. All funded projects address one or more of the four Principal Purposes described in the Joint Fire Science Plan.

### Program Priorities

While the four Principal Purposes establish general program priorities, the Governing Board felt it was necessary to document needs within those priority areas in more detail. These priorities have been extracted from the Principal Purposes and expanded to provide more specific Program direction. All priorities are considered by the Board to be equally important. The nineteen Program priorities are listed in approximately the chronological order in which the concepts appeared in the Joint Fire Science Plan, followed by the Principal Purpose(s) to which they apply in parenthesis. Many of these priorities address more than one of the Principal Purposes.

Develop methods for fuel characterization and classification (fuel load, structure, composition/vegetation type)(PP 1,3,4).

Develop and/or modify protocols for efficient monitoring of fuel characteristics on a local/project/site level, including methods and tools for local fuel inventory and mapping (PP 1,3,4).

Develop/improve methods for mapping burned areas and determining fuel consumption and fire

severity to link to emission/succession models and update fuel mapping (PP 1,2,3,4).

Develop methods for integration/aggregation of data across spatial scales and ownerships, including remote sensing applications (PP 1,3,4).

Develop methods for efficient monitoring of temporal and spatial trends in fuels and fuel condition (both structural and seasonal changes such as fuel moisture content), including remote sensing applications (PP 1,4).

Develop data standards and standardized sets of common data elements so that data can be analyzed and used across agency jurisdictions (PP 1,3,4).

Develop/improve linkages between fuels data and fire behavior models for landscape/project and geographic area modeling of fire behavior and emissions. Test and validate fire behavior models on landscape scale (PP 1,4).

Develop replicated studies to evaluate long- and short-term impacts of different fuels treatments, including effects of no treatment, timing, sequence, and combinations of treatments, ecosystem and environmental effects, and temporal development of fuels/vegetation (PP 2).

Design standard protocols for rigorous scientific evaluation of effects of fuels treatments (PP 2).

Evaluate/develop tools to evaluate social understanding/acceptability of fuel management treatments/programs, and communication or other tools for effecting social responses, attitudes, actions (PP 2).

Develop/improve a suite of compatible models that will enable development of local, national and geographic area data for fuel consumption, emissions and smoke production and dispersal (PP 2).

Evaluate/develop tools to model cumulative effects of wildland/prescribed fire on air quality and regional haze (PP 2).

Analyze wildland fire/prescribed fire/alternate fuel treatment tradeoffs, including wildland/urban interface, smoke, economics, and environmental considerations; and feasibility of developing markets for harvested fuels (e.g., small-diameter fuel utilization) (PP 2,4).

Develop/assess techniques for assessing economic effects for non-commodity values, including ecological values, such as clean water, as related to fuel management activities (PP 2).

Develop/use demonstration sites for testing, public education, validation, extension of results at intensive sites (PP 2).

Develop, synthesize information on historic fire regimes for “important” vegetation complexes/fuel types (PP 2).

Develop risk assessment and decision models to aid managers in making decisions (PP 3).

Develop/assess landscape scale modeling of treatment effects and costs (across ownerships, boundaries, fuel types) (PP 3).

Develop process for analysis and interpretation of monitoring results to determine if fuel management and other project objectives are met at project to national level scales. Integrate with other monitoring programs (PP 3,4).

### Development/Delivery of Products

The Program is responsible for the development of appropriate information and tools (collectively known as deliverables or products), based on Congressional direction, agency needs, and Stakeholder Advisory Group recommendations. The development of information and tools are completed via projects that are funded by the Program. The Program also requires all projects to include technology transfer as an integral part of each project. Although direct responsibility of the Principle Investigator normally ends at the termination of each project, Principle Investigators should be encouraged to continue to provide technology transfer, update data sets, debug/repair computer programs, etc. Although some projects stand alone, others are sequential or otherwise related. In these cases, the Governing Board, together with the respective Principle Investigators, should ensure adequate coordination so that the outputs or results are compatible and work well together. For example, if the output from one computer program provides input to a second program, then scales, resolution, programming language, and all other related factors must be compatible. The Program will make every reasonable effort to ensure that all deliverables, including appropriate technology transfer, have been made available to each Program partner. It is up to each individual agency to adopt and implement deliverables and to coordinate with other agencies as necessary and appropriate.

### Summary of Funded and Completed Projects

A graphic summary of funded projects is included in Appendix C. This summary will be updated periodically and will be based on information provided by Principle Investigators and in the Annual Progress Report to the Congress.

### Annual Operating Plan

An annual operating plan will be developed each year following issuance of the Annual Appropriation for Interior and Related Agencies. This normally occurs about October 1 each fall. This plan will identify Program operating costs, including costs associated with the Stakeholder Advisory Group.

## Program Evaluation

The Program will be periodically reviewed to measure progress and provide creative and constructive feedback from field units and other interested groups. Fiscal audits may occur at any time.

### Progress

A) The Governing Board (alone or accompanied by invited evaluators) will make a progress evaluation at the end of each Federal Fiscal Year. Criteria for evaluation will include provisions in the Joint Fire Science Plan, Implementation Plan, annual operating plan(s), and individual project proposals/study plans. Results will be included in the Annual Report to the Congress.

B) The first comprehensive extramural evaluation will occur during the fall 2002. Additional evaluations may be completed as determined by the Governing Board or as requested by partner agencies.

Participants for the 2002 evaluation will be solicited from the Stakeholder Advisory Group, from cooperating agencies, and from Governing Board members. In addition, the Stakeholder Advisory Group will review accomplishments and funded projects annually as part of its process for making recommendations on potential priorities to the Governing Board.

The Fall 2002 evaluation, and other evaluations as appropriate, will also solicit and include constructive input/feedback from field units (such as National Parks or Monuments and Forest Supervisor's Offices/Ranger Districts), geographic areas (such as FWS Regions, BIA Areas, or BLM States) and national units (such as agency headquarters). The primary role of land managers should be to focus on program priorities, adequacy of technology transfer and the utility of deliverables.

C) In addition to land management units, evaluators will include Federal and non-Federal research scientists. The scientists should focus on the scientific aspects of the Program and of individual projects.

## Conclusion

This Joint Fire Science Program **Implementation Plan** has been developed to provide specific direction to the Program Governing Board and Program Manager. It expands on the broad direction provided in the **Joint Fire Science Plan**. It includes 19 specific priorities to further the four Principal Purposes directed by the Congress. The Implementation Plan is accompanied by **Operating Guidelines** for day-to-day activities of the Governing Board and Program Manager.