

Joint Fire Science Program Investment Strategy

Purpose and use

The Joint Fire Science Program (JFSP) Governing Board maintains a multi-year investment strategy to guide program investments. The strategy articulates how the program balances investments in short-term and long-term science, applied and fundamental science, science delivery and adoption, and program performance and outcome evaluation. The JFSP investment strategy was initially adopted (2009) as a strategic decision to focus substantial program resources on long-term focused inquiries and science exchange activities.

The Board uses the investment strategy to make decisions regarding the number and focus of proposal solicitations, and to develop a mix of proposals for funding. In addition, the investment strategy guides decisions regarding the topics selected for emphasis over multiple years.

The investment strategy is meant to be a flexible guide rather than imposing rigid controls. In all cases, the Board retains the flexibility to adapt to changing needs and opportunities. The Board reviews the investment strategy on an annual basis and makes adjustments, as needed.

The JFSP budget has ranged from \$12 million to \$14 million over the last six years. Although funds are received from both Forest Service and DOI accounts, the Board manages JFSP investments as one pool of funds. The investment strategy is designed for budgets within approximately this same range. If budgets change significantly from this level, then the investment strategy may need substantial review and adjustment.

Investment categories

The investment strategy consists of four major categories of expenditures: lines of work; short-term science; science delivery and adoption; and program management and evaluation. It is important to recognize that research and information needs of fire and fuels managers are woven into all four categories. The investment allocation is a mix of fixed amounts and proportions among these four categories.

I. Stable funding

Investment types considered in the stable funding category provide the foundation for the program and directly respond to the program mission. Investments in this category are planned for the long-term and are considered relatively 'fixed' within the approximate range of historical funding levels. Significant decreases in funding in these categories would erode long-term capacity. Categories of investment include lines of work, science delivery and adoption, and program management and evaluation.

Lines of work

Lines of work are long-term (5-10 years) commitments of program resources to achieve defined goals. Lines of work are developed to address complex management problems that require a sequence of coordinated investments over time to develop integrated solutions. Lines of work are the centerpiece of program investments, and deliver lasting benefits to management and science communities.

A line of work is developed through problem framing with managers and scientists to identify the

questions that need to be addressed and desired milestones and products. A variety of problem framing mechanisms are used, including roundtables, workshops, field trips, surveys, and informal discussions. The outcome is a problem statement, which is used to guide further science planning. A science plan is then developed to address the identified problem. JFSP science plans define thematic areas for focused investment and a sequence of research activities for each theme. Science plans outline yearly activities over a five to ten year period that build towards desired milestones and products. A mix of fundamental and applied studies may be employed as appropriate.

Communication plans are also written for lines of work. These plans identify when science results will be available for each theme, and identify science exchange activities and products needed to support line-of-work themes.

The Board uses the following criteria to select topics for lines of work:

- The topic is of high priority to the fire and fuels management community and is within JFSP's mission
- The issue is enduring so that results obtained over 5-10 years will be relevant
- Research questions have sufficient complexity that a focused, long-term approach involving a sequence of research is required
- Topic has the need and potential to build towards a significant deliverable to improve management effectiveness

JFSP is currently engaged in three lines of work:

- ***Software system integration*** – JFSP has funded development of a model and data integration framework for fuels treatment planning known as the Interagency Fuels Treatment Decision Support System (IFTDSS). IFTDSS is intended as an example architecture and potential stepping stone towards a larger inter-connected system-of-systems for wildland fire. System development is scheduled for completion by September 30, 2014. The Departments of Agriculture and Interior have approved IFTDSS for continued development with possible deployment in FY2017.
- ***Smoke and emissions*** – The JFSP Smoke Science Plan guides investments in four thematic areas: emissions inventory, smoke model validation, smoke and human populations, and climate change and smoke. Funded work includes new research, integration and synthesis, and knowledge exchange activities. Investments are scheduled through FY 2016.
- ***Fuel treatment effectiveness*** – JFSP has invested heavily in fuels treatment research since the beginning of the program and has developed a series of fuel treatment guides for managers. An initial science plan is now outdated, and science investments will be refocused through a new science plan scheduled for completion in FY 2014.

Investment allocation: The Board intends to continue investments in the smoke and fuels treatment lines of work as currently planned. To maintain flexibility, the Board will not develop a third line of work to replace the software integration line of work at this time. The Board invests approximately \$1.5 million annually in a line of work; therefore the Board anticipates investing approximately \$3.0 million annually in the smoke and fuels treatment lines of work.

Science delivery and adoption

As an applied science program, science delivery and adoption is fundamental to meeting the program mission. JFSP invests in science delivery and adoption in three significant ways:

1. Research project level - Science delivery is expected as part of most research proposals, and is an integral part of the research proposal review and decision process.
2. Program level - The program develops and distributes science delivery products and conducts outreach activities at the national level, such as Fire Science Digests, Firescience.gov, science syntheses, social media and other activities.
3. Knowledge exchange consortia - The program provides leadership and support for a national network of fourteen regional knowledge exchange consortia designed to connect field managers and scientists to actively exchange science needs, results, and applications.

All three forms of science exchange are considered essential to maximize program effectiveness. JFSP investments in science are intended with the goal that research results will be exchanged with relevant audiences to maximize the value of science investments. Given the time lag between project funding and the availability of research results, the pipeline of JFSP funded science will continue producing relevant new science results for many years ahead. Program capacity has been increased through the knowledge exchange consortia in response to this need, and as a response to recommendations in the 2008 program review.

Investment allocation: The Board intends to continue funding the program-level science delivery activities at the current level and expanding the knowledge exchange consortia, for a total of approximately \$3.75 million annually. Small amounts of project funds will also be allocated to science exchange products and activities on a case-by-case basis through the proposal review and funding processes.

Program management and evaluation

This category includes a variety of costs including program office salary, peer review and program travel, various program evaluation projects, Graduate Research Innovation Awards (GRIN), data archival and other assorted projects. Total expenditures in this area average approximately \$1.25 million annually, approximately half of which is program staff salary and benefits.

Investment allocation: The Board intends to continue funding program management and evaluation activities at the current level, approximately \$1.25 million annually.

II. Variable funding short-term science

The short-term science category provides flexibility for JFSP to respond to changing needs and opportunities, and to pursue science investments without lengthy planning processes. The types of science activities in this category include emerging management needs, re-measurement opportunities, and new science initiatives. The majority of investments in this category are allocated to emerging management needs. Re-measurement opportunities and new science initiatives will generally be rotated on a bi-annual basis to ensure that at least \$1 million will be available for funding when these categories are offered.

Emerging management needs

JFSP will continue to solicit and fund proposals that are responsive to the emerging needs of fire and fuel managers. Management needs are identified from interactions with fire and fuels managers, the knowledge exchange consortia, NWCG, and Governing Board contacts. Results from individual projects are expected to be immediately useful when the project is complete in two to four years.

Investment allocation: The Board intends to fund emerging management needs with approximately 70% of the remaining funds.

New science initiatives

JFSP plans to issue a “New Science Initiative” on a bi-annual basis to fund innovative ideas addressing topics of current interest. The purpose is to stimulate new thinking and creative approaches that could lead to science breakthroughs needed to support future fire and fuels management.

Investment allocation: The Board intends to fund new science initiatives with approximately 15% of the remaining funds.

Remeasurement opportunities

JFSP funds remeasurement of previously established field experiments and remeasurement of plots and surveys in areas burned by recent fires. The intent is to extend the usefulness of previous investments and capture unique opportunities provided by unplanned events. JFSP plans to continue funding re-measurement studies on a bi-annual basis on topics of current interest.

Investment allocation: The Board intends to fund re-measurement opportunities with approximately 15% of the remaining funds.

JFSP Investment Strategy Summary Table

Investment Topics	Planned Investment
Stable funding	
Lines of work	\$ 3.00 million
Science delivery and adoption	\$ 3.75 million
Program management & evaluation	\$ 1.25 million
Total	\$ 8.00 million
Variable funding short-term science	
Emerging management needs	70%
New science initiatives	15%
Remeasurement opportunities	15%
Total	100% of remaining funds