



# United States Department of the Interior

OFFICE OF THE SECRETARY  
Washington, DC 20240

## Memorandum

To: John Phipps, U.S. Forest Service

From: Jim Douglas, Director, Office of Wildland Fire 

Subject: Review of Department of the Interior Risk Based Wildland Fire Management Methodology

This memorandum outlines our request for your review of the Department of the Interior (DOI) Risk Based Wildland Fire Management (RBWFM) methodology.

### Background

The DOI RBWFM approach is designed to address three fundamental questions:

1. How to best describe or characterize the nature of the “problem” (fuels/preparedness)?
2. How to set priorities?
3. How to measure and assess success?

Since the late 1990s and early 2000s, the DOI’s common effective analytical approach for formulation and allocation of the fuels and preparedness budgets has had limitations. As such, we have not been well equipped to identify fuels and preparedness requirements, defend our budget requests, or to demonstrate that funding allocations are efficient and effective apart from historic allocations. Our success in future funding challenges is dependent on our ability to clearly demonstrate the value of investing in fuels and preparedness and the expected return.

The challenge for the DOI’s fuels and preparedness budget formulation and allocation process is to provide a product to clearly demonstrate the value and return on the requested investments. The DOI’s fuels and preparedness budget formulation and allocation process must clearly demonstrate our capability to formulate fuels and preparedness requirements and distribute funding to maximize program efficiency and cost effectiveness. The development process for a risk based approach will use the following principles, goals and approaches:

#### Principles:

- Simple, cost effective
- Off the shelf to extent possible
- “good enough” not perfect
- Covers all fuels and preparedness costs
- Doesn’t need to be one single system or tool; consider a suite of tools, business rules, etc.
- Setting priorities is important
- Include ability to consider and adjust capacity to recognize workload and complexity – not all ignitions are equal
- Phased in rather than doing all at once

Goals/Outcomes:

- Capability to formulate/justify fuels and preparedness budget requests based on outcomes/results of changes in investment levels
- Capability to allocate fuels and preparedness budgets among DOI bureaus, and within DOI bureaus, to maximize return on investment, be cost-effective, and reduce risks
- Capability to make comparisons between investments in fuels and preparedness and other program areas (e.g., prevention or burned area rehabilitation)
- Include all components/aspects of the fuels and preparedness budgets

Approach and Methodology:

- Base capabilities on risks
- Look at both workload and complexity
- Rely on existing tools and methodologies as a point of departure (FPA data and analytical capability, bureau allocation methodologies)
- Phased in over 1-3 years
- Formulation and allocation methodologies will consist of a combination of quantitative analysis and business rules
- Utilize features and capabilities of post-FPA (“FIPS”) as it becomes available
- Coordinate with similar work in other areas of program management; utilize common approaches where appropriate

The RBWFM approach consists of three basic components or elements:

1. *Common Methodology for Risk* - Use a common methodology to allocate fuels management and preparedness funds to each bureau in proportion to the amount of risk “owned” by each bureau. The risk will be defined in terms of “expected value acres burned.” Each bureau further allocates funding to field units.
2. *Strategic Business Plan (SBP)* - Each bureau will prepare a multi-year “Strategic Business Plan” that will guide how the bureau applies their share of fuels and preparedness funding to “buy down” and maintain reduced risk to values from wildfire across the landscape. This multi-year plan will allow bureaus to organize and implement wildland fire management programs consistent with the context of the bureau’s overall organization, mission, and programs while providing for safety and addressing cost effectiveness and efficiencies (Return on Investment). The OWF will review and endorse each plan to ensure consistency with the goals of the Cohesive Strategy and Departmental policies and priorities. The plans will be further integrated to produce a DOI-wide Strategic Business Plan for Wildland Fire Management.
3. *Performance and Effectiveness Monitoring* – Performance and effectiveness will be measured in terms of reducing risk over time and holding it at reduced, acceptable levels. Each bureau, along with the OWF, will undertake appropriate review and oversight activities to assess progress. Results will improve the fuels and preparedness programs efficiencies and effectiveness.

## RBWFM Status

The national common methodology for analyzing risk is complete.

The model evaluates three variables: wildfire likelihood, intensity, and susceptibility with an output of Expected Value Acres Burned (annually).

- **Wildfire Likelihood** is based on burn probability using results from the US Forest Service's Large Fire Simulator (FSim).
- **Wildfire Intensity** is the measure of fire's rate of spread, fuel consumption, and heat yield at a given point on a fire's perimeter, as derived from FSim. Note: The DOI national-scale model used all six wildfire intensity levels.
- **Value Susceptibility** is how a value responds to wildfire in terms of the degree of affect (negative, neutral, or positive). Note: The DOI national-scale model does not analyze the susceptibility of a value (negative, neutral, or positive). Value susceptibility will be addressed in the strategic business plan using strategies to manage wildfire effects on each value (negative, neutral, or positive).
- **Expected Value Acres Burned** is the area containing a priority value that is likely to burn in a given year from fires that originate on Tribal trust or DOI administered lands.



National values include:

Continental US, Hawaii, and Puerto Rico:

- Developed Areas
- Infrastructure
- Recreation Sites
- Riparian Areas
- Forest Type Areas
- Threatened and Endangered Species
- Surface Drinking Water
- Sagebrush Steppe Ecosystem

Alaska:

- Developed Areas
- Infrastructure
- Recreation Sites
- Native Allotments and Corporations
- Reindeer Herding Areas
- Threatened and Endangered Species
- Surface Drinking Water

The “expected value acres burned.” were compiled into a national risk profile for each DOI bureau. The RBWFM technical paper describes the methodology used to develop national risk profiles.

A draft strategic business plan template is in development and is based on preliminary fuels and preparedness goals are based on the Cohesive Strategy and DOI fire program policy. Currently the goals are:

- Resilient Landscapes

- Fire Adapted Communities
- Safe and Effective Wildfire Response
- Workforce Succession Planning, i.e., the right number of staff, with the right training, in the right place
- Science and Technology Development to Reduce Fire Risk
- Funding Actions Improve the National Risk Profile

The risk based performance monitoring plan is in development and will address all aspects of the DOI Wildland Fire Management Program with quantifiable wildland fire risk-reducing outcomes. Important metrics will include: methods of measurement, scale, goals, means of gathering information (and how frequently), program purview, communication of results, etc.

### **Review**

I am seeking an independent review of the overall approach as well as the technical methodology (Risk Triangle Concept) that has been developed, including findings and recommendations.

### **Management Questions:**

1. Does DOI's approach address the three fundamental questions?
2. Does the RBWFM approach align with the principles and goals?
3. Are there biases (e.g., ecological, social or economic) in the approach?
4. Does the approach inadvertently create barriers to success, i.e., the more successful you are the less risk there is and the less money you get?
5. Can the approach be used to demonstrate the value of investing in fuels and preparedness and the expected return?
6. Do the values reasonably represent DOI and bureau missions?

### **Technical Questions:**

1. Is the Risk Triangle Concept (intensity, susceptibility and likelihood) consistent with best available science?
2. Is the analytical handling of FSim consistent within its intended use?
3. Do values represented in the model statistically skew the modeled outputs, i.e., are they the right values?
4. Do the data sets used reasonably represent the values listed above?
5. Do modeled outputs (Expected Value Acres Burn) reasonably represent a national risk profile across the DOI lands?
6. The output risk profile represents a current image, with a certain amount of risk already mitigated. How might ongoing maintenance of mitigated risk be represented in the risk profile?
7. What strengths and weaknesses do you see in the analysis based on the RBWFM approach?
8. Are there any fatal flaws in the analysis?
9. What types of performance metrics should be considered when evaluating implementation of a risk based approach (e.g., treatment effectiveness, reducing the effects of wildland fire and avoided costs)?