A National Cohesive Wildland Fire Management Strategy:

Western Regional Assessment and Strategy

Table of Contents

Executive Summary 3
Background 8
Context – The Western Region 11
Phase II Development Process 14
Values 18
Trends and Uncertainties 19
Regional Objectives, Sub-Objectives, and Actions 20
Proposed Actions in the West Common across the Three National Goals 21
Goal 1: Restoring and Maintaining Resilient Landscapes. 22
Goal 2: Creating Fire-adapted Communities 26
Goal 3: Responding to Wildfires 30
Management Scenarios 34
Monitoring, Research, and Development 41
Measures of Success 42
Conclusions 43
Appendix 1: Acronym List 46
Appendix 2: List of CRAFT Questions 48
Appendix 3: Western Regional Strategy Committee and Western Working Group Members 50
Appendix 4: Maps 52
Appendix 5: Expanded Management Scenarios Table 53
Appendix 6. Research and Monitoring Actions (Example Priorities) 58
Appendix 7. Phase II Outreach and Content Analysis (includes Western Region Phase II Outreach and Communication Plan – Appendix A) 60
Appendix 8. Immediate Opportunities (Ideas Submitted to the WRSC from METI) 61

Executive Summary

The National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) is being developed by representatives of Federal, State, Local, and Tribal governments, and non-governmental organizations to address the growing wildland fire challenges in the U.S. across all lands and jurisdictions. To accomplish this, the input of concerned stakeholders – wildland fire management and response organizations, land managers, policy makers from potentially affected governmental and non-governmental organizations, businesses and industries, watershed councils, environmental and conservation groups, scientists and academic institutions, local collaborative groups, forest and rangeland users, rural economic development organizations, wildland-urban interface residents, landowners, and many others – is being considered. This holistic, inclusive approach to wildland fire management is at the core of the Cohesive Strategy and will continue to guide it through implementation, monitoring, and adaptation as necessary to address unique regional conditions and capacities now and in the future. The following sections summarize the outcomes of the western Phase II effort – development of regional objectives, actions, and management scenarios that outline their implementation. Continued communication and engagement with stakeholders is emphasized to build on the ideas developed in Phase I, explored regionally during Phase II, and analyzed in analytical models in Phase III.

Restoring and Maintaining Resilient Landscapes

Large areas of western grasslands and fire-adapted forests are in need of restoration. A century of fire suppression has led to dramatic increases in forest stand densities and understory growth. These overstocked stands, further stressed by vast areas of insect- and disease-caused tree mortality, are now experiencing uncharacteristically large and severe wildland fires. Additionally, both forests and grasslands are suffering the effects of a changing climate and the rapid spread of invasive species. These deteriorating landscape conditions place human lives and communities, wildlife habitat, water quality, and long-term soil productivity at great risk of further decline. Restoring them to a healthy, resilient state could generate great environmental and social benefits, create much-needed jobs and revenue for rural economies, and lead to tremendous cost savings in wildfire suppression efforts.

Goal: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.

National Outcome-based Performance Measure:

- Risk to landscapes is diminished

Basic premise: Sustaining landscape resiliency and the role of wildland fire as a critical ecological process requires a mix of actions that are consistent with management objectives; use all available methods and

tools; consider and conserve a diversity of ecological, social, and economic values; include sincere coordination and integration with all partners; and support market-based, flexible, proactive solutions that take advantage of economies of scale. All aspects of wildland fire will be used to restore and maintain resilient landscapes.

Creating Fire-adapted Communities

The population of the West is increasing and communities and unincorporated neighborhoods have expanded to the boundaries of public land. As one would also suspect, the number of people that use and recreate on public lands has and continues to increase. Additionally, during the western outreach, we heard loud and clear that the residents of these communities are just as concerned about their view shed, water sources, and local industries (dependent on healthy range and forest lands) as they are about protecting their homes.

Goal: Human populations and infrastructure can withstand a wildfire without loss of life and property

National Outcome-based Performance Measures:

- Risk of wildfire impacts to communities is diminished
- Individuals and communities accept and act upon their responsibility to prepare their properties for wildfire.

Basic premise: Preventing or minimizing the loss of life and property due to wildfire requires a combination of thorough pre-fire planning and action, followed by prudent and immediate response during an event. Post-fire activities can also speed community recovery efforts and help limit the long-term effects and costs of wildfire. Community Wildfire Protection Plans (CWPPs) or their equivalents should identify high-risk areas and community-specific requirements. Collaboration, self-sufficiency, individuals' and/or communities' acceptance of the risks and consequences of their actions (or non-action), treating homes and property equally regardless of appraised value (social justice), and facilitating culture and behavior changes are important concepts

Responding to Wildfires

The West has seen a rapid escalation of severe fire behavior over the past two decades resulting in increased fire suppression costs, significant home and property losses, and increased threats to communities. Western forests are experiencing catastrophic mortality due to insect and disease infestations, creating millions of acres of dead vegetation that supply fuel for wildfires. Additionally, millions of rangeland acres have been invaded by herbaceous and

woody plants that have significantly increased the complexities of wildland fire management. The challenges are formidable and growing more complex due to the West's diverse landscapes, growing population and WUI, water quantity and quality issues, and competing social values. The majority of federal lands are in the West and current fire suppression policies have in part, resulted in more acres burned and increased risks to firefighters and the public. Additionally, wildland fires in the West result in the most complex and costly efforts for restoration for post-fire events due to steep topography and highly erosive soils and flooding.

Goal: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

National Outcome-based Performance Measures:

- Injuries and loss of life to the public and firefighters are diminished
- Response to shared-jurisdiction wildfire is efficient and effective.
- Pre-fire multi-jurisdictional planning occurs

Basic premise: A balanced wildfire response requires integrated pre-fire planning with effective, efficient, and coordinated emergency response. Pre-fire planning helps tailor responses to wildfires across jurisdictions and landscape units that have different uses and management objectives. Improved prediction and understanding of weather, burning conditions, and various contingencies during wildfire events can improve firefighting effectiveness, thereby reducing losses and minimizing risks to firefighter and public health and safety. Wildfire response capability will consider the responsibilities identified in the National Response Framework.

As identified in the 2009 Quadrennial Fire Review, a foundational document of the Cohesive Strategy, all jurisdictions should participate in making and implementing safe, effective, efficient risk-based wildland fire management decisions. During the development of the Western Regional Assessment, concerns were voiced by stakeholders that the current governance structure does not truly represent the totality of jurisdictions with wildland fire responsibilities. Local fire districts and municipalities with statutory responsibility for wildland fire response are not fully represented throughout the existing wildland fire governance structure, particularly at the NWCG, NMAC, and GACC levels. We recommend that the WFLC take immediate steps to review and make necessary adjustments to be inclusive of all jurisdictions.

Proposed Actions in the West Common across the Three National Goals

Western stakeholders agreed that the three goals of the Cohesive Strategy are interdependent. Investment in these actions can and should lead to success in all three national goals.

- Invest in efforts that have a track record of success in meeting community and landscape objectives through effective collaboration, including leveraging investment

capability and overcoming typical barriers to success. Provide collaboration training and assistance where needed to facilitate effective planning.

- Emphasize the design and use of vegetation treatments that reduce hazardous fuels and contribute to resilient landscapes while meeting social and economic needs.

- Collaboratively identify post-fire hazards in advance of fire seasons to clarify roles and responsibilities, position for the best response to post-fire natural hazard impacts on landscapes and communities, and take advantage of the local workforce.

- Where sustainable and economically feasible, use traditional (e.g., forest products, grazing, fishing, hunting, tourism, recreation, energy and minerals development) and encourage new (e.g. biomass) uses to achieve land management objectives through achievement of positive impacts on the land and/or increased economic investment in restoration/management activities.

- Combine the best elements of existing education programs to create west-wide education campaign analogous to the Smokey Bear campaign (strong, visible, memorable message).

Fire is a natural process across the West. In alignment with the Guiding Principles, this must be considered and accounted for in all land management actions (pre and post fire). Planning for and responding to fire requires a collaborative partnership between all levels of government, private industry, homeowners, public land users, conservation groups, etc. We know there is not and will not be adequate government investment to resolve the issues, so we need to create a climate that encourages industry investment and job creation to move us toward resilient landscapes and fire adapted communities. Success depends on simplifying government processes to provide a stable and timely supply of natural resources and to invest the time to ensure an inclusive partnership and support to minimize litigation. The following report lays out objectives and actions that promotes this partnership and recognizes the limitations of government.

Immediate Opportunities

Stakeholders also identified a number of immediate opportunities that can be acted upon without any additional investment.

- **Enhancing collaboration:** Many who are familiar with the community processes active throughout the west believe that increased collaborative efforts will improve on-the-ground results.

- **Thinking beyond the wildland-urban interface:** American Indian Tribes and other stakeholders expressed concern that current management emphasis on the WUI creates

an artificial distinction between "home" and "homeland" that often results in a lower priority for active management of the larger landscape.

- **Fully utilizing existing authorities:** The implementation of laws, authorities, and policies – rather than the laws themselves – has delayed or stopped projects important to western stakeholders.

- **Community protection:** Many comments focused on encouraging and assisting communities to accept and take responsibility for being prepared for wildfires as a way to reduce or eliminate devastating losses.

- **Using economic/market principles:** Many stakeholders expressed the need to maximize return on investment and use economic principles to achieve environmental objectives. Both ideas are central to achieving the restoration and fuels treatments needed to support resilient landscapes, fire-adapted communities, and effective wildfire response.

Management Scenarios

Throughout the Cohesive Strategy effort there has been a desire to offer alternative means of accomplishing the three national goals. Phase I identified the need to formulate regional alternatives during Phase II. However, as Phase II progressed it became apparent that a more effective way to move forward was through an interactive process during the trade-off analysis scheduled in Phase III. To that end, the WRSC has developed management scenarios that reflect the insights of the western region and facilitate transition into Phase III. These scenarios are not meant to be a complete picture of the future, but to characterize a range of possible and realistic futures in a way that highlights the interrelatedness of the national goals and the potential impacts of various prioritization and investment strategies across those goals and the related western objectives and actions. The scenarios are budget neutral – based on the reallocation of existing resources rather than an increase or decrease from current investment levels – but lend themselves to being combined with various investment support alternatives during Phase III of the Cohesive Strategy.

Communication and Implementation

Following the approval and inclusion of this assessment and strategy into the National Cohesive Wildland Fire Management Strategy is when the hard work will begin. For the Cohesive Strategy to be successful both in the West and nationally, a comprehensive communication and implementation strategy must be developed that institutionalizes the Cohesive Strategy and uses an adaptive management philosophy that enables revision and course correction as we learn from our collective actions. Continued forward momentum towards addressing the West's wildland fire challenges is an opportunity we cannot miss.

Background

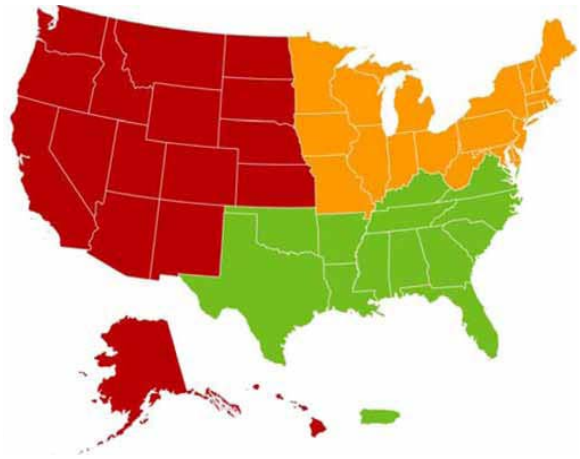


Figure 1. Cohesive Strategy Regions (Northeast, Southeast, West)

The National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) builds on the success of the National Fire Plan, including the 10-Year Comprehensive Strategy and Implementation Plan, and other foundational documents: *Quadrennial Fire Review 2009*; *A Call to Action*; *Wildland Fire Protection and Response in the United States*; the *Responsibilities, Authorities and Roles of Federal, State, Local and Tribal Government* (Missions Report); and *Mutual Expectations for Preparedness and Suppression in the Interface*. It has developed in three phases, allowing stakeholders to systematically engage in a dynamic approach to planning for, responding to, and recovering from wildland fire. The three phases include:

Phase I: National Cohesive Wildland Fire Management Strategy (completed)
Phase II: Development of Regional Strategies and Assessments (in progress)
Phase III: National Trade-Off Analysis and Execution (2012)

The Cohesive Strategy seeks to provide clear guidance on roles and responsibilities for all wildland fire management entities and emphasizes how effective public-private partnerships and the sharing of responsibility among stakeholders are essential to achieving the identified three national goals. The goals of the Cohesive Strategy are:

1. **Restoring and maintaining resilient landscapes** – Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
2. **Creating fire-adapted communities** – Human populations and infrastructure can withstand a wildfire without loss of life and property.
3. **Responding to wildfires** – All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

Organization and Governance

The Wildland Fire Leadership Council (WFLC) oversees the entire Cohesive Strategy effort. In Phase I the WFLC designated the Wildland Fire Executive Council (WFEC) to support Phases II and III. The WFEC has membership reflecting that of the WFLC, and is chartered under the Federal Advisory Committee Act (FACA).

The WFEC is further supported by the Cohesive Strategy Steering Committee (CSSC). Regional Strategy Committees (RSCs) are sub-chartered groups of the WFEC responsible for completing the Regional Strategies and Assessments in Phase II. The three regions are the Northeast,

Southeast, and West (Figure 1). A National Science and Analysis Team (NSAT) which reports to the CSSC will support the RSCs during the trade-off and science analyses that comprise Phase III.

The Western Regional Strategy Committee (WRSC) and Working Group (WG) – formally chartered by WFEC – comprise representatives from federal, tribal, state and local governments and non-government organizations, local natural resource and fire service agencies, industry groups, and landowner groups in the Western United States.

A core principle of the Cohesive Strategy is to draw on local and regional knowledge throughout the process. Local and regional assessments, plans, policies, expertise, and insights have been essential for completing Phase II and this Western Regional Assessment and Strategy.

Next Steps

The Western Regional Assessment and Strategy will be submitted to the CSSC, which will combine all three regional assessments into one document without changing content or intent, highlighting significant similarities and differences relevant to the continued development of a national strategy.

The national and three regional assessments will be presented to WFEC by CSSC and RSC representatives for review. If modifications are necessary, the CSSC, RSCs, and WGs will respond to WFEC concerns. WFEC will share the final draft with the WFLC for review. WFLC will request modifications (if needed) and forward the document onto the Secretaries of Agriculture and Interior for endorsement.

During Phase III of the Cohesive Strategy, The NSAT will continue interaction with the CSSC and RSCs to ensure the modeling exercises in the National Trade-Off Analysis align with the intentions of the CSSC and the regions. Concurrently, the CSSC will work with RSCs to develop an implementation plan for the National Cohesive Wildland Fire Management Strategy.

Guiding Principles from Phase I

In developing the Western Regional Strategy and Assessment, these guiding principles and core values developed during Phase I have been considered. They reflect an overarching set of principles that apply to all wildland fire management stakeholders and span the three national goals of the Cohesive Strategy.

- Reducing risk to firefighters and the public is the first priority in every fire management activity.
- Sound risk management is the foundation for all management activities.
- Actively manage the land to make it more resilient to disturbance, in accordance with management objectives.
- Improve and sustain both community and individual responsibilities to prepare for, respond to and recover from wildfire through capacity-building activities.
- Rigorous wildfire prevention programs are supported across all jurisdictions.
- Wildland fire, as an essential ecological process and natural change agent, may be incorporated into the planning process and wildfire response.
- Fire management decisions are based on the best available science, knowledge and experience, and used to evaluate risk versus gain.
- Federal agencies, local, state, tribal governments support one another with wildfire response, including engagement in collaborative planning and the decision-making processes that take into account all lands and recognize the interdependence and statutory responsibilities among jurisdictions.
- Where land and resource management objectives differ, prudent and safe actions must be taken through collaborative fire planning and suppression response to keep unwanted wildfires from spreading to adjacent jurisdictions.
- Safe aggressive initial attack is often the best suppression strategy to keep unwanted wildfires small and costs down.
- Fire management programs and activities are economically viable and commensurate with values to be protected, land and resource management objectives, and social and environmental quality considerations.

Context – The Western Region

The West is a vast and diverse assemblage of ecosystems, economies, and cultures spanning nearly half of the continental U.S., Alaska, Hawaii, and affiliated Pacific Islands (Figure 2). The nature of wildland fire in the West is unique, and the development patterns of the West are equally unique due to the large proportion of public land (Table 1, Figure 3). Across the West, the proportion of federally-owned land ranges from less than one percent in Kansas to nearly 90 percent in Alaska.

Figure 2. Map of the West

Table 1. Public Lands in the West[1]

State	Total Area of State (1000's of Acres)	Total Area Owned by State and Fed (1000's of Acres)	% of State's Total Area (nearest whole number)
AK	365,039	325,700	89
AZ	72,731	38,979	53
CA	99,823	42,288	42
CO	66,387	26,459	40
HI	4,111	549	13
ID	52,961	35,245	66
KS	52,367	480	1
MT	93,156	32,473	35
ND	44,156	2,187	5
NE	49,202	786	2
NM	77,674	31,555	41
NV	70,276	56,972	81
OR	61,442	19,404	32
SD	48,575	3,660	8
UT	52,588	37,020	70
WA	42,613	15,514	36
WY	62,147	33,964	55
Total	1,315,245	703,234	54

Wildland fire risk across western ecosystems and in western communities is increasing, particularly in the case of large, highly destructive fires that burn with uncharacteristic intensity. The increasing risks are due in part to an expanding population and building within

[1] Source: http://www.nrcm.org/documents/publiclandownership.pdf

the wildland-urban interface (WUI). Challenges are exacerbated by regional impacts of changing global climate conditions. Future climatic projections indicate that the mean annual temperature across most of the western U.S. will increase by 2050, causing loss of moisture from soils and vegetation. Other impacts may include shifts in species ranges, changes in snowpack duration and extent that affect water supplies, changes in the frequency and intensity of wildland fire and pest disturbances, and changes in timing and amount of precipitation.[2]

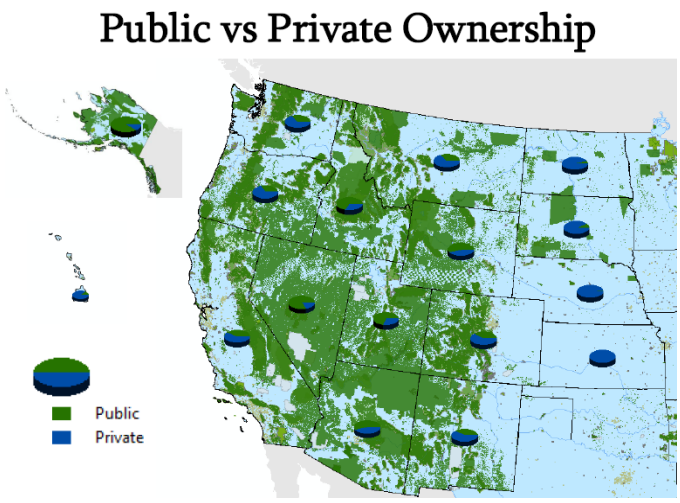


Figure 3. Public and Private Lands in the West

Wildland Fire Management

Wildland fire management varies significantly based on jurisdictional mission, proximity to communities and values to be protected, and the potential for fire to spread onto jurisdictions with different missions and management responsibilities. There are vast expanses of public lands and wilderness areas where access is extremely limited and distances to communities and community values to be protected are great. In these areas, wildland fire management focuses on achieving ecological objectives rather than a suppression response; limited access, travel times, communication difficulties, and other factors simply place firefighters at too much risk. On these lands, fire is included intentionally as a natural landscape component and change agent to achieve multiple management objectives.

There are also large expanses of land that are sparsely populated and have limited wildland fire response capability, frequently resulting in slower response times and escaped initial attack fires. Rugged topography can create natural access difficulties, further impacting response times and options, and in many cases contributing to larger and longer duration wildland fires threatening communities and community values to be protected. These challenges are compounded due to much of the West being arid or semi-arid, with long natural disturbance recovery times that, in some cases, exceed one hundred years. The non-full-suppression objectives described above routinely pose challenges in mixed ownership areas and require pre-planning and collaboration to reduce objective- and value-based conflicts.

The public involvement process used to plan fire management activities varies greatly among federal, state, and tribal lands affecting each agency's ability to implement on-the-ground treatments in a timely manner. Having more partners at the table, each with a different process to follow, results in different timelines for completion. Critically important to this process are

[2] Data from National Fire Protection Association (NFPA) Third Needs Assessment of the U.S. Fire Service; Conducted in 2010 and Including Comparisons to the 2001 and 2005 Needs Assessment Surveys.

county commissioners. Their influence over land use for most of the private land in the West affects the extent and growth of the WUI, adoption of fire-adapted communities and building codes, development and concurrence of CWPPs, local volunteer and professional response to fire and all-risk incidents, support of collaborative efforts, and the viability of fuel reduction and larger landscape restoration projects.

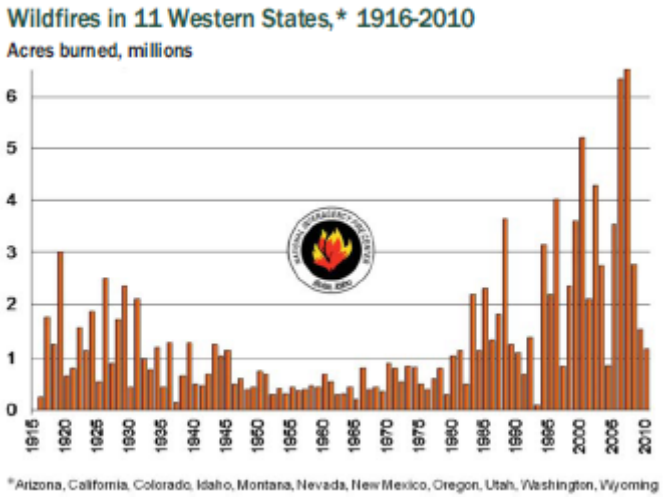


Figure 4. Western acres burned by wildfires have increased dramatically over the past 20 years

Fighting wildland fires in the West is becoming increasingly complex and consumes the majority of suppression dollars spent nationally (Figures 4 and 5). The influence of human development and, particularly, the more recent expansion of wildland-urban interface (WUI) areas contribute to the challenges of wildland fire management and suppression. While significant interagency and interstate efforts have been made over the past decades to facilitate cross-boundary work, important issues regarding risk to communities, fire protection services, the ability to use wildland fire as a management tool, and smoke management and air quality continue to be raised, posing prevention and mitigation problems for the foreseeable future. Engaging county commissioners and other elected officials at multiple levels is critical to success.

Community Wildfire Protection Plans (CWPPs) and related plans have provided social support and local prioritization for forest restoration and fuels reduction activities in the West both in the WUI and on the adjacent "middle lands" between the community and backcountry. "Middle lands" are those nearby areas that contribute to the identity, structure, culture, organization, and wellbeing of the community and are often thought to provide its economic, social, and ecological viability. These ideas have also been expressed by tribal members and partners as the "homeland". The all lands, all agencies approach used in CWPPs has been invaluable in fostering collaboration by engaging and coordinating multiple jurisdictions, publics, and stakeholders in the planning process.

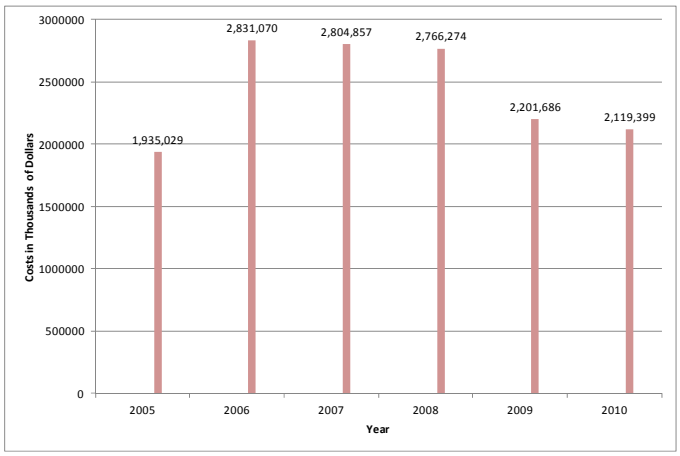


Figure 5. Forest Service and Department of the Interior Wildland Fire Suppression Costs Including Fire Preparedness 2005-2010

Phase II Development Process

Stakeholder involvement was a critical component of developing this Western Regional Assessment and Strategy. The WRSC and WG employed the services of Management and Engineering Technologies International, Inc. (METI) to assist with the outreach effort. Members of the METI team provided assistance in communication planning, preparing and conducting field and virtual discussion forums, completing a content analysis of input received, and preparing this report (Appendix 7).

Equally important was consistent communication throughout Phase II. The WRSC and METI developed a communication plan (Appendix 7) to structure interactions and the flow of information. A long-term goal of this plan is to continue and strengthen the dialogue with western stakeholders to implement the Cohesive Strategy and achieve western objectives and national goals.

The WRSC and WG used a combination of stakeholder input, their own professional observations, and a wealth of related information to develop this document. The WRSC and WG drew upon a diversity of existing plans, assessments, and wildland fire issue documents to ensure earlier expressed views were considered. Examples include the West-Wide Wildfire Risk Assessment (WWA), western State Forest Action Plans, and wildland fire issue documents from the Western Governors' Association (WGA), National Fire Protection Association (NFPA), Society of American Foresters (SAF), The Nature Conservancy (TNC), and others. Each resource was saved to a team web portal, which also housed the Comparative Risk Assessment Framework Tool (CRAFT), which was used to explore and document values, issues, and barriers. The documents were used as reference to create the western assessment and to ensure that objectives and actions proposed were not in conflict with existing plans. Additionally, they will be used in Phase III as reference materials during the trade-off analysis. They also turned to the over 1,300 comments received during Phase I of the Cohesive Strategy. Comments pertinent to the west were evaluated and documented in CRAFT.

Stakeholder Outreach

Phase II outreach efforts began in late June, 2011 and concluded on July 29, 2011. Two desired outcomes were identified by the WRSC for the outreach effort.

1. Comments and suggestions provided by stakeholders assist in identifying and/or validating the important and unique objectives, values, barriers and opportunities related to wildland fire management in the West.
2. Stakeholder input helps identify and refine wildland fire management objectives, actions needed and barriers which must be overcome to achieve those objectives, and the appropriate allocation of responsibility among all stakeholders for achieving the agreed-upon objectives.

The outreach strategy was three pronged and encouraged participation of all interested parties. The outreach relied on WRSC and WG members using their existing professional networks to distribute information about the Cohesive Strategy and request comments and suggestions through: 1) face-to-face or virtual forum discussions, 2) a comment collection form online, and/or 3) email or phone discussions with a working group member. Six forums were held to discuss the existing strategy with stakeholders and let them ask questions and provide comments directly to a WG member. Further communication with the WG member(s) via phone call, email, or the web comment form was invited and welcomed.

Throughout the outreach process, the WRSC and WG sought to provide people and communities in the West an access point through which to contribute and stay actively involved in shaping the western components of the national Cohesive Strategy.

To maximize opportunities for participation, a variety of methods were used to provide flexibility in scheduling as well as multiple input/feedback channels. These included:

- RSC Webpage
- Western Region updates
- Individual contacts and invitations to participate
- Use of organization networks to communicate purpose, status, and opportunities to contribute

Common themes that emerged from stakeholder input

At the conclusion of the stakeholder outreach effort, METI conducted a content analysis of all stakeholder input (Appendix 7) to facilitate the WRSC's and WG's development of the western regional portion of the Cohesive Strategy. Some of the common themes that emerged include:

Encourage and reward collaborative multi-jurisdictional planning
Promote real and effective collaboration among all concerned stakeholders; learn from long-standing successful efforts (e.g., Northeast Washington Forestry Coalition, Four Forests Restoration Initiative (4FRI) in Arizona, and Project Wildfire in Central Oregon); and create incentives for collaboration (e.g., some preference in budget allocations for projects and activities developed through a collaborative process).

Improve on-the -ground results by updating and streamlining internal agency processes
While in some cases legislation may be needed to authorize projects or activities identified as necessary for improving wildland fire management, in many instances all that is required is the revision of an existing rule, regulation, policy, or operating practice. Outdated, ineffective, or unnecessary processes need to be identified, reinterpreted, and revised or eliminated in order to streamline processes and facilitate better partnerships among agencies and stakeholders.

Use the full range of authorities available
There is inconsistency among federal agencies regarding the use of some valuable existing authorities. Examples include: the Healthy Forests Restoration Act (HFRA), which enables realistic, locally- determined WUI boundaries to be set and minimizes the time and cost of wildland fire mitigation planning; the Wyden Amendment, which permits federal funds to be used for projects on private land that also benefit nearby public lands; and Stewardship End Result Contracting which permits the value of saleable products removed during restoration activities to be exchanged for the provision of services needed to perform related on-the-ground work. While some agencies and units use these authorities aggressively, others have resisted or unduly restricted their use.

Use economic principles to achieve objectives
As one stakeholder put it, "There is not enough money in the Treasury to do the work that is needed, but there is enough money in the economy." Barriers and disincentives to responsible market-based solutions should be identified and eliminated.

Maximize return on investments
Generate revenue streams from the byproducts of hazardous fuels treatment and restoration work, including new markets for biomass; keep existing industrial capacity and create new jobs; focus on priorities to invest and reinvest resources more effectively.

Develop and share fire-resistant development guidelines and model building codes
Making model ordinances and building codes (e.g., Fire Safe and FireWise) readily available to local governments, homeowners, and landowners would help get things rolling in places that need work and lack capacity; it could also help positively engage the insurance industry.

Barriers to Success

Managing wildland fire is an interdisciplinary and interagency task. Actions are guided and influenced by laws and regulations, jurisdictional issues, and resources available. Review of stakeholder input and the other resources outlined above, helped paint a picture of the regulatory, jurisdictional, and investment climate within which wildland fire management is currently taking place.

Regulatory Environment
Wildland fire management actions are guided by a suite of laws, implemented through regulations and adopted as agency policy after public review and comment. Regulations and policies, however, are often more limiting than the authorizing legislation itself, and sometimes may impede the accomplishment of management objectives and timelines. While legislation such as the Healthy Forest Restoration Act (HFRA) has been beneficial to active management of public lands, other legislation has been used to promote agendas and philosophies that are not necessarily in harmony with the legislation's original intent. This is especially true of the Equal Access to Justice Act (EAJA), which was meant to provide a means for underprivileged people to bring legal action against the federal government. Similarly, the Endangered Species Act (ESA)

and the National Environmental Policy Act (NEPA) are sometimes utilized by special interest groups to achieve objectives not considered by Congress when the bills were enacted. In addition to barriers presented by existing regulations and policies, the articulation of new or revised policies and changes in agency terminology and/or goals create challenges related to communication and implementation. It is important to seek out opportunities to streamline and coordinate procedures and to pursue broader use of authorities across jurisdictions to achieve common goals. Legislative barriers that are impeding project implementation must be examined and reformed to create incentives for resolving conflict through collaboration rather than litigation.

Jurisdictional Environment
Complex landownership and jurisdictional patterns across the West create a need for coordinated and collaborative planning, treatment, response, community protection, communication, and training across all jurisdictions. Differences in policies, missions, decision making processes and definitions of key wildland fire management concepts pose challenges to this coordination. Solutions that include shifting responsibility and decision making to the most local level, agreements that clearly spell out roles and responsibilities, and explicit recognition of the need for 'all lands' and 'all jurisdictions' work are important. To accomplish this, a new national governance structure for wildland fire management inclusive of all jurisdictions must be developed.

Investment Environment
The scale of the wildland fire management issue and the lack of resources to achieve shared objectives in the West are of great concern across stakeholder groups. Federal, state, and local budgets are expected to decline, and it is becoming increasingly important to look to responsible, sustainable market-based solutions. The current focus of federal funding to work within the WUI is insufficient to address the true scale of treatments needed across the landscape. Until economic principles are restored, sufficient acreage will not be treated.

Immediate Opportunities

Stakeholder outreach also identified a number of immediate opportunities that can be acted upon without additional investment or completion of the national strategy. Continued support from and engagement of stakeholders is critical to the success of these actions, which include:

- **Enhancing collaboration:** Many who are familiar with the community processes active throughout the west believe that increased collaborative efforts will improve on-the-ground results.

- **Thinking beyond the wildland-urban interface:** American Indian Tribes and other stakeholders expressed concern that current management emphasis on the WUI creates an artificial distinction between "home" and "homeland" that often results in a lower priority for active management of the larger landscape.

- **Fully utilizing existing authorities:** The implementation of laws, authorities, and policies – rather than the laws themselves – has delayed or stopped projects important to western stakeholders.

- **Community protection:** Many comments focused on encouraging and assisting communities to accept and take responsibility for being prepared for wildfires as a way to reduce or eliminate devastating losses.

- **Using economic/market principles:** Many stakeholders expressed the need to maximize return on investment and use economic principles to achieve environmental objectives. Both ideas are central to achieving the restoration and fuels treatments needed to support resilient landscapes, fire-adapted communities, and effective wildfire response.

These opportunities are explored further in Appendix 8.

Values

A variety of values relevant to wildland fire management have been identified through both Phase I and Phase II of the Cohesive Strategy. Some values are widely or even universally held, particularly the value of life and safety for firefighters and the public. Other values are more uniquely western, including:

Honoring tribal heritages and land uses. Preserving and respecting traditional uses and practices is of vital importance. Wildland fire management policies and practices need to take into account cultural values and beliefs, related historic and spiritual sites and resources, and the relevant lessons to be gleaned from traditional ecological knowledge.

Valuing people for who they are, not what they have in the bank. Western communities and their individual residents differ widely in their technical, infrastructural, social, and economic capacity to address wildland fire management issues locally. Management strategies need to be cognizant of those differences so that future responsibilities and resources can be allocated appropriately.

Living and respecting the western/frontier culture. Among the key (and sometimes contradictory) elements of the culture of the West are a spirit of adventure and curiosity, concern for the preservation of individual liberties and private property rights, admiration of self-reliance (but quick response to neighbors needing help), and a strong sense of connection with the land. Management strategies seen as directive or imposed from afar are almost certain to be less well-received (and often prove less effective) than ones developed locally and collaboratively.

Enjoying vast, wild, open landscapes. People in the West count on the land to provide numerous ecological services, support a variety of land uses (hunting, fishing, recreation, farming, ranching, timber, mining, etc.), offer a desirable backdrop and physical setting for homes and communities, and support a plethora of historic, spiritual, and cultural resources. The aesthetic appearance of the landscape is important, and management activities that are perceived as having a negative impact on that appearance are usually resisted.

Drinking good water and breathing clean air. There is near-universal agreement on the value of the clean, generally abundant water supplies that sustain human and animal life in the West, support healthy fisheries, generate electric power for homes and industries, and irrigate crops. Similarly, high air quality, good visibility, and low levels of smoke, smog, or other pollutants or respiratory health hazards also rank at or near the top of amenity values in the West. Actions taken to maintain or restore the health of watersheds and to reduce the likelihood of diminished air quality are likely to be well-received West-wide.

Using and stewarding public lands. Public lands comprise more than half the total land area of the West, and maintenance of public access to them for recreation and a variety of other purposes has long been a treasured – and zealously guarded – western value. Access, however, is not the only public lands-related value demanding Westerners' attention today. A large forested western landscape is likely to be a patchwork of ownerships, including lands under federal and state management as well as tribal lands, private "industrial" forestlands, and ever-increasing numbers of smaller private family forests and forested residential tracts. Events over the last two decades have clearly shown the need for better communication and cooperation among all landowners, managers, and other concerned stakeholders in restoring and maintaining the on-the-ground conditions and practices necessary to preserve the watersheds, critical habitats, and other western values at risk from uncharacteristic wildland fire. The growing numbers of large landscape scale CWPPs, multiple-ownership hazardous fuels reduction projects, and landscape restoration efforts will be important elements of future wildland fire management strategies.

The goals, objectives, actions, and alternative future scenarios that follow have been crafted to align both with national needs and the unique regional values that shape the challenge of wildland fire management in the West.

Trends and Uncertainties

A variety of social and environmental issues affecting wildland fire management in the West have been identified through the Phase II process as well as through previous efforts such as the *2009 Quadrennial Fire Review (QFR)* and other foundational documents. These include population growth and urban sprawl, changing climate conditions, invasive species spread, changing public expectations with regard to fire response, fluctuations in the economy, tightened federal, state, and local government budgets, the increasing role of traditional

wildland fire capability (equipment and personnel) in all-risk disaster support, and a myriad of other challenges. These issues are explored in more detail in the context, process, and values sections of this document. One issue that warrants additional attention is the distribution of WUI across the West and the U.S.

WUI Distribution[3]

In 19 of the 48 contiguous United States, more than 50 percent of all homes are located in the WUI. Western States have the highest proportions of their homes in the WUI. State by State, distribution varies with physical and biological settings and the infrastructure an area provides for home building. The key to future trends in the size, extent, and location of the WUI lies in housing growth, a function of many local and state policy decisions and economic conditions. Analysis of WUI change indicates that growth in WUI housing was rapid during the 1990s. The counter-urbanization trend of the 1970s that brought retirees and many others to rural high amenity areas as well as the growth of suburban and exurban areas have increased the WUI, particularly the number of houses it encompasses. An estimated 60 percent of the homes constructed from 1990 - 2000 were built in existing WUI areas. Further analysis of change over time will provide useful insights about WUI dynamics, an essential foundation for projections of future WUI growth.

In defining the objectives, actions, and scenarios, the WRSC and WG have tried to take into account these issues and their potential impact on achieving the three goals of the Cohesive Strategy.

Regional Objectives, Sub-Objectives, and Actions

Listed below are the three national goals and associated national outcome-based performance measures developed during Phase I of the Cohesive Strategy. Under each goal is a basic premise, which outlines the context for achieving that goal, and a series of guiding questions that address the policy context within which the objectives and actions have been developed. These guiding questions provide a transition to the discussion of management scenarios, which appear later in the document. Below the basic premise are regional objectives, sub-objectives, and actions that contribute toward meeting the national goal. Each sub-objective and action applies within a unique spatial, temporal, political, and regulatory context (i.e., where and when appropriate).

The regional objectives, sub-objectives, and actions were developed through an iterative process by the WRSC and WG, informed by stakeholder outreach. Their organization into no more than four levels was done to support the conceptual and analytical modeling to be carried

[3] Data from National Fire Protection Association (NFPA) Third Needs Assessment of the U.S. Fire Service; Conducted in 2010 and Including Comparisons to the 2001 and 2005 Needs Assessment Surveys.

out in the Phase III national trade-off analysis, outlining in as much detail as possible, the relationship among specific actions up through objectives, to the attainment of national goals.

Implementation of actions will occur within an adaptive management framework – a cyclical process where the best available knowledge informs actions and, to the extent practical, actions are monitored to enhance future actions. In this framework, evaluation, monitoring, and creation of new information guides future planning, implementing, and learning cycles. The process occurs at scales appropriate to decision-making and planning efforts – some local, some regional, and some national.

Proposed Actions in the West Common across the Three National Goals

In the western region, all stakeholders agreed that the three goals of the Cohesive Strategy are interdependent and that actions implemented towards one goal can and should support achieving the other goals. Following are actions that are common across two or more goals and are recommended for implementation as part of the western region strategy.

- Invest in efforts that have a track record of success in meeting community and landscape objectives through effective collaboration, including leveraging investment capability and overcoming typical barriers to success. Use the lessons learned from these efforts to inform and encourage the development of similar capacity in other communities. Provide collaboration training and assistance where needed to facilitate planning.
- Use a variety of active vegetation management tools and techniques, including planned and unplanned wildland fire, to achieve local and large landscape objectives. Emphasize the design and use of treatments that reduce hazardous fuels and contribute to resilient landscapes while meeting social and economic needs.
- Collaboratively identify post-fire hazards in advance of fire seasons to clarify roles and responsibilities, position for the best response to post-fire natural hazard impacts on landscapes and communities, and use the local workforce to perform work whenever possible.
- Support existing industries (e.g., forest products, grazing, fishing, hunting, tourism, recreation, energy and minerals development) and encourage new markets (e.g., biomass) that facilitate implementation of landscape treatments where sustainable and economically feasible. Support employment conditions consistent with existing hiring practices and processes that lead to fair competition and the creation of family-wage jobs.
- Combine the best elements of existing education programs to create a West-wide wildland fire management education campaign with a strong, visible, and memorable message.

Goal 1: Restoring and Maintaining Resilient Landscapes – Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.

National Outcome-based Performance Measure:

- Risk to landscapes is diminished

Basic premise: Sustaining landscape resiliency and the role of wildland fire as a critical ecological process requires a mix of actions that are consistent with management objectives; use all available methods and tools; consider and conserve a diversity of ecological, social, and economic values; include sincere coordination and integration with all partners; and support market-based, flexible, proactive solutions that take advantage of economies of scale. All aspects of wildland fire will be used to restore and maintain resilient landscapes.

Guiding questions: Where, how, and under what circumstances…

- Can wildland fire be used immediately as a tool to achieve resilient landscapes?
- Will aggressive actions to prevent and contain wildland fire be essential in the near-term and long-term?
- Is it likely that near-term investments in fuels treatments and vegetation management might result in greater opportunity to achieve resilient landscapes?
- Is it likely that the economy can drive treatments to achieve resilient landscapes?
- Do we have efforts with a track record of success in meeting community and landscape objectives through effective collaboration, including leveraging investment capability and overcoming typical barriers to success?
- Have we postponed previously identified landscape vegetation treatments due to prioritizing the WUI in the past 10 years?

1.1. Objective: Actively manage the land to achieve healthy forest and rangeland conditions.

1.1.1. Contribute to the restoration and maintenance of biodiversity, desired species (including threatened, endangered, and proposed listed species), and their habitat.

1.1.2. Protect and restore water resources and watersheds to sustain water quality and quantity for residential, agricultural, industrial (including energy), commercial (including fishing), and recreational use.

1.1.3. Manage to achieve resilient conditions at large landscape scales, considering natural fire regimes, seasonality, and traditional ecological management of the land.

1.1.3.1. Use wildland fire as a critical cultural and ecological process in areas where its use is specified in land, resource, and fire management plans.

1.1.3.2. Recognize and communicate priority natural landscapes as functioning ecological systems where wildland fire is an essential component and minimal suppression activities will occur.

1.1.4. Reduce the risk of uncharacteristic and damaging wildland fire.

1.1.4.1. Identify and prioritize high risk, high value areas (e.g., watersheds, riparian areas, plant and animal habitat, forest structure, high investment areas) for protection and restoration.

1.1.4.2. Emphasize restoration of forests and rangelands at large landscape scales with a priority focus on the "middle ground".

1.1.5. Use active timber management and the sale of forest products (e.g., biomass, small diameter, commercial timber) to create a revenue stream that supports reinvestment in fuels treatments and projects contributing to desired resilient landscape conditions.

1.1.6. Promote traditional and non-commercial tribal and non-tribal cultural, ceremonial, subsistence, and utilitarian practices, and enhance people's continued connection to the land.

1.2. Objective: Protect landscapes and multiple values from the effects of unwanted fire.

1.2.1. Prevent human-caused wildland fires to minimize unwanted, negative effects.

1.2.1.1. Develop comprehensive fire prevention programs that include education and enforcement across multiple jurisdictions (local, state, tribal, federal).

1.2.2. Protect social, cultural, heritage, and other values on tribal, state, local, and private land; consider mutual benefits and interests.

1.2.3. Identify, prioritize, and protect economic and commodity values and high priority natural resources (e.g., timber and grazing) across all ownerships.

1.2.4. Manage historic properties considering the historic setting, natural features and critical elements of biodiversity, landscape uses, and other features; prioritize protection locally.

1.2.5. Identify potential post-fire hazards in advance of fire seasons to clarify roles and responsibilities, position for the best response to impacts on landscapes and communities, and take advantage of the local workforce.

1.2.5.1. Evaluate terrain for potential post-fire flooding and debris-flows.

1.2.5.2. Determine landscape vulnerability to post-fire invasive species invasions.

1.2.5.3. Develop appropriate mitigation/response strategies (including post-fire stabilization and rehabilitation) to reduce site degradation and long-term impacts from rain and wind events and invasive species infestations.

1.3. Objective: Improve interagency and stakeholder coordination and planning of actions that contribute to achieving landscape resiliency.

1.3.1. Collaboratively develop large landscape ecological restoration plans that incorporate and enable implementation of CWPPs and other local, state, and agency plans; include measurable desired future conditions that are shared across boundaries; and integrate science, local and traditional knowledge, and experience to inform and improve adaptive land management decisions.

1.3.2. Reward line officers/agency administrators for effective collaboration.

1.3.3. Design and commit to a focused multi-party monitoring component for treatment activities that is consistent across multiple landscapes and jurisdictions and drives investments based on effectiveness.

1.4. Objective: Develop and maintain professional and industrial capacity to implement cost-effective and sustainable landscape treatments and support local economies.

1.4.1. Pursue permanent authorization of Stewardship End Result Contracting, increase long-term contract and agreement options, and encourage continued emphasis of benefit to local economies as a best value selection criterion.

1.4.2. Support traditional (e.g., timber, grazing, fishing, hunting, tourism, recreation, energy and minerals development) uses and industries that contribute to land management objectives and support local economies.

1.4.3. Support development of new technologies and local infrastructure for biomass removal and utilization through multiple means including legislation such as Farm/Energy Bill incentives that address emerging industry needs.

1.4.4. Develop markets for woody biomass and other outputs associated with implementing landscape treatments.

1.4.5. Continue to take advantage of other tools (e.g., grants, cooperative agreements, compacts, Secure Rural Schools, Sykes Act, trespass collections, and offsite mitigation) to accomplish landscape treatments and support local economies.

1.5. Objective: Fully use existing policies and procedures to provide the management flexibility needed to implement a mix of landscape treatments.

1.5.1. Promote stewardship contracts and other administrative agreements that establish long-term commitments consistent with forest, rangeland, and wildland fire management objectives.

1.5.2. Encourage strategic investments in prescribed fire, unplanned ignitions, and other tools to achieve restoration objectives and avoid transferring risk to other jurisdictions and less resilient landscapes.

1.5.3. Encourage Federal Agencies to use authorities under HFRA and HFI to expedite the planning/collaboration process used to treat large landscapes.

1.5.4. Work with EPA and CEQ to maximize flexibility for implementing actions following uncharacteristic wildland fire events.

1.5.5. Use categorical exclusions (CE) more effectively, consistently, and with clear direction across the country.

1.5.6. Examine legislative barriers that are impeding project implementation and pursue reform of current legislation to create incentives for collaboration to resolve issues rather than litigation (e.g., Endangered Species Act, Equal Access to Justice Act).

1.5.7. Encourage and enlist local, state, tribal, and federal environmental regulatory agency representatives to participate actively in collaborative efforts to restore resilient landscapes.

1.6. Objective: Increase public awareness, acceptance, and active participation in achieving landscape objectives using all available tools.

1.6.1. Develop and deliver education programs and media campaigns describing the tradeoffs between short duration smoke from prescribed fire and long duration smoke from wildland fire and how prescribed fire allows for the management of smoke emissions.

1.6.2. Encourage State Implementation Plans that allow for limited smoke exceptions for high priority projects that are crucial to landscape restoration.

1.6.3. Communicate early and often with the public and stakeholders impacted by long-duration fire to address public health, recreation access, transportation network closures, and other issues.

1.6.3.1. Develop and maintain smoke management programs that ensure frequent, open communication among fire managers, air quality/smoke regulators, and other relevant parties.

1.6.4. Support traditional and emerging markets (forage banks, wood products, recreation, etc.) to sustain long-term private sector investments consistent with the needs to maintain resilient landscapes and support local economies.

1.6.4.1. Because the majority of material is available on public lands, federal government needs to engage in long-term commitments to supply raw materials for forest products markets.

1.6.5. Develop landowner incentives (e.g., tax breaks, free disposal of material, increased use of the Wyden Amendment and other finance or cost-share authorities) for fuels management on private lands.

1.7. Objective: Identify and prepare for non-fire threats and disturbances that may increase susceptibility to wildland fire and/or impair ecosystem function.

1.7.1. Work across all ownerships to proactively manage the landscape in ways that minimize destructive effects of insects and pathogens that contribute to fire hazard.

1.7.1.1. Invest in management actions with high probability of mitigating the threat.

1.7.1.2. Target infestation areas that are economically feasible to selectively manage or thin where that activity can improve stand condition and ecosystem health.

1.7.1.3. Prevent the spread of insects and pathogens through movement of fire equipment; implement mitigation measures and standard operating procedures.

1.7.2. Work across all ownerships to develop and implement action plans for removing or preventing introduction of invasive plants that contribute to fire hazard (e.g., red brome, cheat grass).

1.7.2.1. Use desired and fire resistant plant species to break up large scale infestation areas.

1.7.2.2. Prevent the spread of invasive species through movement of fire equipment; implement mitigation measures and standard operating procedures.

Goal 2: Creating Fire-adapted Communities – Human populations and infrastructure can withstand a wildfire without loss of life and property

National Outcome-based Performance Measures:

- Risk of wildfire impacts to communities is diminished
- Individuals and communities accept and act upon their responsibility to prepare their properties for wildfire.
- Jurisdictions assess level of risk and establish roles and responsibilities for mitigating both the threat and the consequences of wildfire.
- Effectiveness of mitigation activities is monitored, collected and shared.

Basic premise: Preventing or minimizing the loss of life and property due to wildfire requires a combination of thorough pre-fire planning and action, followed by prudent and immediate response during an event. Post-fire activities can also speed community recovery efforts and help limit the long-term effects and costs of wildfire. CWPPs or their equivalents should identify high-risk areas and community-specific requirements. Collaboration, self-sufficiency, individuals' and/or communities' acceptance of the risks and consequences of their actions (or non-action), treating homes and property equally regardless of appraised value (social justice), and facilitating culture and behavior changes are important concepts.

Guiding Questions: Where, how, and under what circumstances…

- Is it likely that citizens will be motivated to prepare for and protect their properties from wildfire?
- Have communities identified values to be protected through the CWPP process in addition to the WUI, such as critical infrastructure, watersheds, vegetation, critical habitat, significant recreation and scenic areas, and landscapes of historical, economic, or cultural value that would benefit from treatment to reduce wildfire risks?
- Are CWPPs that are built in a highly collaborative partnership, and demonstrate more than the minimum requirements for concurrence, (as defined in the as defined in the Healthy Forest Restoration Act and supporting community-developed handbooks[4]) and where success can be realized now and expanded?
- Have we postponed previously identified vegetation treatments in areas closely associated with the identity, structure, culture, organization, and wellbeing of the community due to prioritizing the WUI in the past 10 years?

[4] Communities Committee, et al, "Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities", Washington, D.C., March 2004, last viewed 9/21/11 at http://www.forestsandrangelands.gov/communities/documents/cwpphandbook.pdf
and Western Governors' Association, et al., "Community Guide to Preparing and Implementing a Community Wildfire Protection Plan", August 2008, last viewed 9/21/11 at http://www.forestsandrangelands.gov/communities/documents/CWPP_Report_Aug2008.pdf

2.1. **Objective: Prevent unwanted human-caused wildland fire ignitions within or in close proximity to communities.**

2.1.1. Develop a clear, concise, consistent education and awareness program using a full range of communication tools including social media.

2.1.2. Promote personal responsibility among those who elect to live within the WUI through education in preparation, prevention, evacuation, and what to do if trapped.

2.1.3. Establish and enforce state and/or local ordinances related to wildfire prevention.

2.1.4. Use fire trespass cost recovery and restitution in a consistent manner as an active fire prevention measure.

2.1.5. Engage elected officials at all levels – city, county, state, tribal, and federal to ensure new housing developments provide adequate water supply, wildland fire mitigation plans, and consultation with appropriate wildland fire jurisdictions.

2.2. **Objective: Reduce hazardous fuels within the wildland-urban interface and nearby areas containing community values to be protected.**

2.2.1. Encourage proactive vegetation management on public and private forests, woodlots, rangeland, fields, WUI home sites, and around infrastructure.

2.2.1.1. Encourage the use of incentives (e.g., tax breaks, free disposal of material, cost-share programs, the Wyden Amendment, and other authorities) for fuels management on private lands.

2.2.1.2. Encourage more active insurance industry participation in development of educational efforts and financial incentives (e.g., policy rate adjustments, rating improvements) to motivate landowners to treat hazardous fuels on their properties and take other necessary steps to create defensible, survivable spaces/conditions in high risk areas as defined in CWPPs.

2.2.1.3. Identify priority areas for fuels management using regional wildland fire risk assessments and state Forest Action Plans, and support future updates of these plans with new data and tools.

2.2.1.4. Develop a long-term coordinated program of planned and scheduled on the ground projects that would achieve fuels reduction and land management objectives, provide year round employment, and sustain a reliable flow of raw and value-added wood products.

2.2.2. Develop local productive use of materials removed during fuels treatments.

2.2.3. Expand FEMA pre-disaster mitigation and disaster assistance grant programs to maximize fuels reduction across the landscape, with emphasis on private lands.

2.2.4. Coordinate, promote, and leverage continued planning and fuel reduction programs that promote and sustain the creation of fire-adapted communities (e.g., FireWise).

2.2.5. Federal agencies will create and treat WUI management areas within existing Land and Resource Management Plans consistent with CWPP WUI boundaries.

2.2.6. Federal agencies will create specific standards, guidelines, and management direction for treating fuels on federal lands which enhance fire adapted communities.

2.3. **Objective: Continue to develop, support, and maintain CWPPs as one of the primary tools to achieve the goals of the Cohesive Strategy.**

2.3.1. Emphasize broad-based collaboration by engaging stakeholders and coordinating across multiple jurisdictions to develop and implement community-wide all lands, all agencies CWPPs. Fully use HFRA authorities.

2.3.2. Increase the number of communities with up to date CWPPs with an objective of 100% of high risk communities, as defined by states, covered with current plans.

2.3.3. Develop a prototype and/or share existing CWPPs that consider management across jurisdictions and the larger landscape.

2.3.4. Create and/or share existing web-based tools for creating CWPPs that include information on how to incorporate GIS.

2.3.5. Increase engagement of federal agency representatives in development and implementation of CWPPs. Integrate CWPP priorities into federal project and land management planning and implementation. Ensure agency line officers and staffs have the knowledge and training necessary to engage in collaborative processes to develop and implement CWPPs.

2.3.6. Develop a protocol for monitoring CWPP implementation and effectiveness.

2.3.7. Develop incentives for development, maintenance, and implementation of CWPPs.

2.3.8. Continue to fully inform and engage local and state elected officials on the importance of up to date CWPPs.

2.4. **Objective: Build a culture of self-sufficiency to prepare for and protect life and property from wildland fire.**

2.4.1. Define and communicate roles and responsibilities of all stakeholders for reducing the threat of wildfire to human life, property, and community infrastructure.

2.4.2. Develop new and share existing model WUI codes with states and county commissioners across the West.

2.4.3. Develop a common system to characterize and rate fire-adapted communities to track individual community progress, prioritize investment, and allow for identification of trends across communities.

2.4.4. Encourage and incentivize the use of fire-resistant construction materials and building designs through programs like FireWise; encourage involvement of the insurance industry.

2.4.5. Reduce the cost-recovery liability burden on individuals and communities that create defensible space or pursue related actions through local or state legislation (e.g., Oregon Forestland-Urban Interface Fire Protection Act).

2.4.6. Encourage development of state, county, or local ordinances requiring real estate disclosure of lack of protection and/or lack of FireWise design principles in an area slated to be developed or sold.

2.5. **Objective: Improve effectiveness and self-sufficiency of emergency response within each community.**

2.5.1. Ensure adequate staffing and training of first responders.

2.5.2. Improve coordination and communication among emergency personnel.

2.5.3. Improve public notification and evacuation procedures.
2.5.4. Upgrade or maintain equipment and infrastructure needed for effective response or emergency evacuation.
2.5.5. Plan and train for a wide range of events, including wildland fire, and response options.
2.5.6. Maintain and improve the intergovernmental understanding of the roles and responsibilities of each agency to inform land, resource, and fire management decisions.
2.5.7. Develop a means and process for rural communities that adjoin public lands to partner in wildland fire planning, preparedness, response and recovery capabilities.

2.6. **Objective: Improve post-fire recovery efforts that impact public health and safety, water sources, power transmission corridors, and other critical infrastructure.**
2.6.1. Vegetation management related to fire-adapted communities should include planning for prevention, suppression, post-fire treatments, and maintenance.
2.6.2. Develop and implement rapid assessment processes for quickly determining vulnerabilities of systems to secondary effects (e.g., flooding, debris-flows, sedimentation, ash build-up), recovery needs, and roles and responsibilities.
2.6.3. Educate and engage the public in recovery planning and implementation.
2.6.4. Build natural resilience through passive restoration using native species (e.g., seed bank regeneration).

Goal 3: Responding to Wildfires – All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

National Outcome-based Performance Measures:

- Injuries and loss of life to the public and firefighters are diminished
- Response to shared-jurisdiction wildfire is efficient and effective.
- Pre-fire multi-jurisdictional planning occurs

Basic premise: A balanced wildfire response requires integrated pre-fire planning with effective, efficient, and coordinated emergency response. Pre-fire planning helps tailor responses to wildfires across jurisdictions and landscape units that have different uses and management objectives. Improved prediction and understanding of weather, burning conditions, and various contingencies during wildfire events can improve firefighting effectiveness, thereby reducing losses and minimizing risks to firefighter and public health and safety. Wildfire response capability will consider the responsibilities identified in the Federal Response Framework. Local fire districts and municipalities with statutory responsibility for wildland fire response are not fully represented throughout the existing wildland fire governance structure, particularly at the NWCG, NMAC, and GACC levels.

Guiding Questions: Where, how, and under what circumstances…

- Can overall efficiency and effectiveness of the wildland fire management organization (i.e., federal, state, tribal, local, voluntary, and private fire fighters and their assets) be gained through significantly changing organizational structures, decision making, and resource alignment?
- Can opportunities for a more robust response organization be realized such that protection responsibilities can be fulfilled at a lower cost to the jurisdictional entity?

3.1. **Objective: Provide for safety of wildland fire responders and the public.**

3.1.1. Ensure that fire responders are equipped with appropriate firefighting equipment and possess a skill base that is well-suited to local conditions and expected fire behavior.

3.1.2. Target fuels treatments to reduce firefighter exposure to hazardous situations.

3.1.3. Minimize firefighter exposure to smoke and other toxic substances, both short-term and long-term (chronic).

3.1.4. Ensure effective communication among all responders.

3.1.4.1. Resolve the radio incompatibility issues between digital, analog, narrowband, and wideband systems.

3.1.4.2. Promote federal legislation to protect the responder frequency spectrum. Coordinate forecasting and notification of individuals and institutions (e.g., hospitals, schools) particularly sensitive to smoke and ash.

3.1.5. Collaboratively establish (with land management agencies, fire response organizations, law enforcement agencies, emergency management, Red Cross, and

Public Health departments) evacuation plans and places for people, pets, and livestock that include facilities that can accommodate people with special needs.

3.2. **Objective: Guide response using risk management principles and values to be protected, as determined by early and frequent involvement of all partners, before, during, and after a wildland fire event.**

3.2.1. Develop and act on a common vision of risk management among, community leaders, states and federal agency officials using shared decision support tools.

3.2.2. Develop a national health and safety reporting system for all wildland agencies and jurisdictions that gathers and tracks accidents, incidents, and "no fault" close calls and supports a safety culture that effectively assess risks and offers acceptable safe practices.

3.2.3. Clarify roles and responsibilities relative to all-risk assignments to address training, availability, and mobilization of resources.

3.2.4. Engage all partners in pre-season response planning to determine and map aggressive suppression areas.

3.2.5. Pursue aggressive initial response on priority landscapes to protect commercial and non-commercial values, reduce costs, and exposure to firefighters.

3.2.6. Avoid management decisions that transfer risk or increase threats to other ownerships without dialog and shared understanding.

3.3. **Objective: Improve effectiveness and efficiency of the wildland fire management organization.**

3.3.1. Create an intergovernmental wildland fire governance structure to serve the needs of all jurisdictions in both wildland fire and all-risk incidents (NWCG does not satisfy this need fully).

3.3.1.1. Recognize diversity (mission, authorities, perspective, seasonality of efforts, etc.) as an asset and coordinate efforts in a way that increases effectiveness and respects different missions.

3.3.1.2. Build on existing success (e.g., IQCS, Recognition of Prior Learning (RPL), Service First) to develop a national qualifications system to track federal, tribal, local, state, and private community responders.

3.3.1.3. Where appropriate, place all partner resources into a common central dispatch system.

3.3.1.4. Clarify and communicate roles and responsibilities to enhance partnerships, recipient resource sharing, and acceptance of cooperator standards for training and resources.

3.3.2. Create a new emergency hire system that replaces the existing administratively determined (AD) authority and reduces dependence on emergency hires to meet overhead needs.

3.3.3. Seek opportunities to make strategic investments that will improve organizational effectiveness.

3.3.3.1. Promote realignment of protection responsibilities to the organization that is best suited and prepared to provide wildfire protection cost-effectively,

while retaining jurisdictional authorities (e.g., block protection areas, offset protection agreements, protection contracts).

3.3.3.2. Eliminate unprotected areas by establishing or extending jurisdictional responsibilities.

3.3.3.3. Promote succession planning for all jurisdictions and private service providers (National Wildfire Suppression Association and others) to ensure qualified replacements and ongoing leadership development.

3.3.3.4. Develop incentives and reduce barriers to agency employees to encourage active individual participation in emergency response.

3.3.3.5. Expand FEMA fire mitigation and disaster assistance grant programs to maximize attention to wildfire response, prevention, and mitigation.

3.4. **Objective: Improve administration and maximize the coordination and effectiveness of wildland fire management resources.**

3.4.1. Strategically align resources (personnel and equipment) across jurisdictions by maximizing situational preparedness using predictive services capabilities and other tools.

3.4.1.1. Pattern staffing for wildfires more for asymmetrical fires (variable in time, space, and intensity) than the normal or average burned acres per year; utilize surge capacity mentality and total forces concept for complex ongoing incidents and planned events that require variable strategies and tactics.

3.4.1.2. Develop decision support systems that incorporate local and traditional knowledge of fire occurrence, extent, intensity, duration, seasonality, and return intervals.

3.4.1.3. Use a strategic management response that addresses preparedness, response, post-fire recovery, and landscape restoration.

3.4.2. Seek opportunities to maximize effectiveness of fire fighting resources.

3.4.2.1. Enhance and support capability of state and local governments, RFDs, through programs such as FEPP, VFA, RFA, and SFA.

3.4.2.2. Support Incident Management Team succession planning, leadership development, and recruitment from all jurisdictions.

3.4.2.3. Ensure that each Geographic Area has sufficient Type 3 interagency incident management teams to respond to wildfires that are managed either by the GACC or nationally during preparedness levels 4 and 5.

3.4.2.4. Encourage long-term availability and diverse community/agency participation in type 3 incident management teams and initial response capacity at the local level.

3.4.2.5. Encourage development of Local Area Operating Plans involving all available local resources based on identifiable areas of mutual interest regardless of jurisdictional responsibilities.

3.4.3. Ensure that private wildland fire service providers are an integral component of a national wildfire response system.

3.4.3.1. Reform contractual processes for private fire crews to improve the quality of work, equipment, and economic viability.

3.4.3.2. Reform contractual processes to support adequate staffing to allow for meeting of contract obligations (quality assurance on implementation, dispatch, etc.).

3.4.3.3. Better and more effectively provide infrared and aviation capabilities by using more private contracts and fewer agency-owned resources.

3.4.3.4. Identify and eliminate disincentives for expanding private wildland fire services beyond existing capacity.

3.4.3.5. Ensure that private wildland fire service providers have access to compete contractually or through agreement for fuels treatment/other forest management work in their locally based area.

3.4.3.6. Create a new opportunity for private wildland overhead that ease the strain on the AD hire system (emergency authority, short-term federal employees).

3.4.4. Protect fire managers from legal and criminal liability when performing their jobs within delegated authority and approved operating policies and procedures.

3.4.4.1. Seek state and federal legislation that provides protection and immunity to wildland fire professionals performing within approved operating principles and procedures and builds on existing successful examples (e.g., OR HB 2123).

3.4.5. Maximize the use of technology to evaluate the numbers of coordination and dispatch centers including locations.

3.4.6. Improve efficiency and effectiveness of aviation resources in alignment with the National Interagency Aviation Strategy.

3.4.6.1. Develop a comprehensive national retardant and other chemical delivery strategy that addresses short- and long-term needs, as well as roles and responsibilities of local, state, and federal aviation assets, and private contractor aircraft.

3.4.7. Maintain and enhance mobilization capacity for state to state and other geographic area sharing of resources using master cooperative agreements coordinated through a national system.

3.4.7.1. Develop a western compact between states and tribes that allows for incident business payments to take place.

3.4.7.2. Develop agreements, contracts, and compacts with western tribes that enable programmatic implementation and availability for regional and national dispatch.

3.4.7.3. Develop an appropriate cost apportionment and variable agreements administered through a national payments system that would include wildfire and all-risk response.

3.4.8. Develop site-specific community-based strategies to reduce emergency spending over time (interagency agreements, closest forces, training, etc.).

3.5. **Objective: Develop community-based strategies to deal with post-fire hazards on natural and cultural resources, responders, communities, and planned activities.**

3.5.1. Assist private property landowners in mitigating the effects of natural hazards resulting from wildland fire on public lands. (e.g. flash flooding, debris-flows, loss of rangeland productivity, loss of timber, etc.)

3.5.2. Develop a network of programs for communities, business, organizations and homeowners to deal with the aftermath effects of a wildland fire event with a delivery mechanism.

3.6. **Objective: Collect and use accurate and consistent fire information from all wildland fire protection jurisdictions to improve understanding of the wildland fire and response workload and provide feedback to decision support systems.**

3.6.1. Develop incentives/accountability measures for comprehensive reporting of all wildland fire information (cause of ignition, jurisdiction, extent, etc.).

3.6.2. Review existing data standards and develop new standards as needed for reporting; collaboratively develop minimum occurrence reporting standards.

3.6.3. Educate wildland fire reporters and managers about the need for accurate, complete, and timely reporting of fire occurrence data.

3.6.4. Develop a long-term solution to fire reporting – a single fire reporting system used by all agencies, states, and fire departments; a data warehouse approach; or some combination of the two.

Management Scenarios

Four management scenarios have been crafted to explore the potential outcomes and consequences of a minimal set of futures. Each potential future assumes implementation of the objectives and actions supporting the national goals with varying levels of emphasis. The scenarios are not meant to represent a desired future that would fully characterize a suite of actions for implementation. They do allow the WRSC and WG members to view how subsets of the objectives and actions are likely to influence wildland fire risk across the West. The insight gained from the analysis will be useful in defining specific actions and objectives to include in the recommendations during Phase III. Each scenario emphasizes a subset of the objectives and actions while assuming no increases in budgets. All objectives and actions identified under the goals are valued, resulting in implementation at least similar to current implementation levels. It is assumed that emphasis of specific objectives and actions within a scenario will result in synergies from the alignment of energy by those involved in implementation of the emphasized objectives. This synergy would lead to implementation levels that exceed the current level even in the absence of additional funding or reduction in implementation of other objectives.

Scenario Development

The following four management scenarios reflect different ways to approach the national goals. None is a real-world scenario but each emphasizes a different focus for implementation that is used to anticipate and analyze possible outcomes of the Cohesive Strategy. These are not the

only scenarios that were initially considered by the WRSC and WG or that may be explored during Phase III.

Scenario One – Emphasize Landscape Resiliency:
While continuing fuels treatments to protect communities and maintaining efforts to achieve greater effectiveness in response to wildfires, this scenario seeks to reduce the risk to landscapes from the effects of unwanted wildfire. Landscapes across the West are characterized geographically across three broad categories where: 1) wildland fire, including both prescribed fire and wildfire, can be used as a tool to achieve and maintain resilient landscapes, 2) mechanical fuels treatment is needed prior to using wildland fire as a tool, and 3) aggressive wildfire suppression is essential to protect values and mechanical treatment is the primary tool to achieve and maintain resilient landscapes. Management and restoration actions are prioritized geographically and are driven by the opportunity to stimulate economic activity to the largest extent possible. Progress towards creating fire-adapted communities and achieving more effective wildfire response is made through creating and maintaining resilient landscapes rather than through direct focus on those goals.

Scenario Two – Emphasize Fuels Treatments to Create Fire-adapted Communities:
While continuing efforts to restore and maintain resilient landscapes and to achieve greater effectiveness in response to wildfires, this scenario seeks to substantially increase fuels treatments. Investments in fuels treatments, including prescribed fire, are prioritized within the WUI and nearby areas identified in CWPPs and similar plans as having important values to be protected. Fuels treatments within the WUI and nearby areas that may threaten communities as known fire pathways prone to large fire growth, as well as areas closely associated with the identity, structure, culture, organization, and wellbeing of the community are the primary means by which all three national goals are achieved in the long-run.

Scenario Three – Emphasize the Creation of Fire-adapted Communities through Collaboration and Self-Sufficiency:
While continuing efforts to restore and maintain resilient landscapes, as well as achieving greater effectiveness in response to wildfires, this scenario seeks to remove barriers to and encourage actions that promote private citizens, landowners, and land managers to increase collaborative efforts and take action to protect their values at risk. Landowners and managers are motivated to undertake actions that result in resilient landscapes, fire-adapted communities, and more effective fire response in the long-term.

Scenario Four – Emphasize Effectiveness in Wildfire Response:
While continuing efforts to sustain resilient landscapes and fire-adapted communities, this scenario seeks to increase the effectiveness and efficiency of firefighting organizations across all jurisdictions. Resilient landscapes and fire-adapted communities result from the effective and efficient organization and mobilization of fire fighting resources.

Guiding Questions

The scenarios respond to the opportunities, challenges, and "guiding questions" presented earlier in this report. Posing the issues that have driven the development of actions, objectives, and scenarios as a series of questions helps guide how we choose to respond to situations in context and has created a framework for analysis here and in Phase III. Their relationship to the management scenarios described above is included in Table 2. The "X" indicates that a guiding question is emphasized in that scenario.

Implementing Actions under the Scenarios

We are using the scenarios as a tool to estimate the likelihood that actions will be implemented and contribute to achieving western objectives and national goals. As part of this analysis, we are estimating the likelihood of support for or resistance to actions and objectives from five perspectives:

- Political – Do we have the political will to do what is needed?
- Social – Is the public on board? Are interest groups on board – environmental, industry, etc.?
- Financial – Do we have enough money? Are we willing to channel investment from one area to another?
- Organizational – Are all entities with natural resource, wildland fire, and other management authority positively engaged and committed?
- Environmental – Are there potential negative environmental consequences? Are the activities leading to the desired landscape condition?

Considering the five perspectives across all actions, objectives, and scenarios yields the feasibility/ acceptability ratings in Appendix 5 and summarized in Table 3. The ratings (low, moderate, high) estimate the general level of feasibility and/or acceptability anticipated for the objectives within a given scenario. The ratings consider the overall emphasis of the scenario, the amount of energy likely to be devoted to achieve the actions underpinning each objective, and the influence of actions related to the other goals under the specific scenario. For example, a low rating would indicate that there would likely be a low level of support for implementing that objective from at least one perspective.

Additionally, the actions were assessed regarding the likelihood for implementation across ownership categories: private, state, tribal, and federal. The estimated likelihood of implementation for a given jurisdiction or for all jurisdictions was based on the perceptions offered during stakeholder outreach as well as the regional formulation of values, objectives, and actions. Based on perceived or expressed values and the

land tenure situation, different levels of support, commitment, or resistance to each action and objective were estimated. The likelihood rating for a specific objective summarizes the likelihood of implementation of the actions that support the objective. For example, a low likelihood rating would indicate that there would be a low level of implementation likely to occur across the western ownerships.

As a final step in the assessment process, each action was rated on a relative scale to estimate the level of implementation likely to occur as compared with the level of implementation that has occurred over the last few years (current). The assessment assumed that the scenarios presented are budget neutral and that all actions will be implemented to at least the current level (i.e., no actions are assumed to decline). The scale identifies:

0	no change from current implementation levels
1	some increase in implementation compared to current levels
2	increase in implementation compared to current levels
3	substantial increase in implementation compared to current levels

The likelihood for implementation was assessed at the action level and then summarized to the sub-objective and objective level. The results for the four scenarios are summarized at the objective level in Table 3 and in Appendix 5.

Summary and Use of the Scenarios

The picture painted from the assessment of likely implementation of the objectives for each scenario helps validate the belief that the three goal areas are welded together so intimately that focus on one area alone will not solve all of the challenges. This picture appears to be consistent with stakeholder views expressed during the outreach process and points towards potential western priorities in implementation of actions across the three national goals. Some of the objectives are compelling enough to garner support across several of the scenarios – in fact some receive support in all scenarios. The outcome of a 2 or 3 rating comes partly as a product of “alignment” and collaborative commitment to a common objective – resulting in increased activity in the absence of new funding or funding increases at the expense of other objectives. Once those involved are fully committed as the scenario describes, this collective collaboration moves activities along because of alignment rather than increased funding. The analysis planned in Phase III will further understanding of the relationships among the actions and objectives in achieving desired outcomes. The process is intended to provide an interactive evaluation of modeled outcomes related to each scenario. The potential effectiveness of proposed actions when tempered by the likely support/acceptance and implementation will be valuable in the Phase III deliberations regarding final recommendations for the Western Region.

Table 2. Relationship between management scenarios and guiding questions

	Scenario			
Guiding Questions	**One**	**Two**	**Three**	**Four**
Goal 1 - Resilient Landscapes - Where, how, and under what circumstances…				
Can wildland fire be used immediately as a tool to achieve resilient landscapes?	X			
Will aggressive actions to prevent and contain wildland fire be essential in the near-term and long-term?	X			
Is it likely that near-term investments in fuels treatments and vegetation management might result in greater opportunity to achieve resilient landscapes?	X	X		
Is it likely that the economy can drive treatments to achieve resilient landscapes?	X			
Do we have efforts with a track record of success in meeting community and landscape objectives through effective collaboration, including leveraging investment capability and overcoming typical barriers to success?	X			
Have we postponed previously identified landscape vegetation treatments due to prioritizing the WUI in the past 10 years?		X		
Goal 2 - Fire-Adapted Communities - Where, how, and under what circumstances…				
Is it likely that citizens will be motivated to prepare for and protect their properties from wildfire?			X	
Have communities identified values to be protected through the CWPP process in addition to the WUI, such as critical infrastructure, watersheds, vegetation, critical habitat, significant recreation and scenic areas, and landscapes of historical, economic, or cultural value that would benefit from treatment to reduce wildfire risks?		X		
Are CWPPs that are built in a highly collaborative partnership, and demonstrate more than the minimum requirements for concurrence, (as defined in the as defined in the Healthy Forest Restoration Act and supporting community-developed handbooks) and where success can be realized now and expanded?		X	X	
Have we postponed previously identified vegetation treatments in areas closely associated with the identity, structure, culture, organization, and wellbeing of the community due to prioritizing the WUI in the past 10 years?			X	
Goal 3 - Response to Wildfires - Where, how, and under what circumstances…				
Can overall efficiency and effectiveness of the wildland fire management organization (i.e., federal, state, tribal, local, voluntary, and private fire fighters and their assets) be gained through significantly changing organizational structures, decision making, and resource alignment?				X
Can opportunities for a more robust response organization be realized such that protection responsibilities can be fulfilled at a lower cost to the jurisdictional entity?				X

Table 3. Change from current implementation of regional objectives under each of the four management scenarios

Management Scenarios	S1	S2	S3	S4
Actions that are common across all three national goals				
Invest in efforts that have a track record of success in meeting community and landscape objectives through effective collaboration, including leveraging investment capability and overcoming typical barriers to success. Provide collaboration training and assistance where needed to facilitate planning.	3	3	3	3
Use a variety of active vegetation management tools and techniques, including planned and unplanned wildland fire, to achieve local and large landscape objectives. Emphasize the design and use of treatments that reduce hazardous fuels and contribute to resilient landscapes while meeting social and economic needs.	2	2	2	1
Collaboratively identify post-fire hazards in advance of fire seasons to clarify roles and responsibilities, position for the best response to post-fire natural hazard impacts on landscapes and communities, and take advantage of the local workforce.	2	2	3	3
Support existing industries (e.g., forest products, grazing, fishing, hunting, tourism, recreation, energy and minerals development) and encourage new markets (e.g., biomass) that facilitate implementation of landscape treatments where sustainable and economically feasible. Support employment conditions consistent with existing hiring practices and processes that lead to fair competition and jobs creation.	3	3	2	1
Combine the best elements of existing education programs to create a west-wide wildland fire management education campaign with a strong, visible, and memorable message.	3	3	3	3
Restore and Maintain Resilient Landscapes				
Actively manage the land to achieve healthy forest and rangeland conditions.	3	2	1	0
Protect landscapes and multiple values from the effects of unwanted fire.	1	1	1	1
Improve interagency and stakeholder coordination and planning of actions that contribute to achieving landscape resiliency.	2	2	1	1
Develop and maintain professional and industrial capacity to implement cost-effective and sustainable landscape treatments and support local economies.	1	0	0	0
Fully use existing policies and procedures to provide the management flexibility needed to implement a mix of landscape treatments.	2	2	2	0
Increase public awareness, acceptance, and active participation in achieving landscape objectives using all available tools.	1	1	1	1
Identify and prepare for non-fire threats and disturbances that may increase susceptibility to wildland fire and/or impair ecosystem functions.	2	1	1	0
Create Fire-adapted Communities				
Prevent unwanted human-caused wildland fire ignitions within or in close proximity to communities.	1	2	3	1
Reduce hazardous fuels within the wildland-urban interface and nearby areas containing community values to be protected.	1	3	2	1

Management Scenarios	S1	S2	S3	S4
Continue to develop, support, and maintain CWPPs as one of the primary tools to achieve the goals of the Cohesive Strategy.	1	1	2	1
Build a culture of self-sufficiency to prepare for and protect life and property from wildland fire.	1	1	2	1
Improve effectiveness and self-sufficiency of emergency response within each community.	1	2	3	1
Improve post-fire recovery efforts that impact public health and safety, water sources, power transmission corridors, and other critical infrastructure.	1	1	1	1
Respond to Wildfires				
Provide for safety of wildland responders and the public.	1	1	1	2
Guide response using risk management principles and values to be protected, as determined by early and frequent involvement of all partners before, during, and after a wildland fire event.	0	0	1	1
Improve effectiveness and efficiency of the wildland fire management organization.	0	0	0	1
Improve administration and maximize the coordination and effectiveness of wildland fire management resources.	0	0	0	1
Develop community-based strategies to deal with post-fire hazards on natural and cultural resources, responders, communities, and planned activities.	1	1	1	1
Collect and use accurate and consistent fire information from all wildland fire protection jurisdictions to improve understanding of the wildland fire and response workload and provide feedback to decision support systems.	1	1	1	1

Legend:

no change from current implementation levels	0
some increase in implementation compared to current levels	1
increase in implementation compared to current levels	2
substantial increase in implementation compared to current levels	3

Monitoring, Research, and Development

Successful implementation of the Cohesive Strategy requires a high level of integration of monitoring to support adaptive management and research and development to reduce uncertainties and improve decisions. Effective monitoring of current vegetation and fuel conditions and trends is essential to identifying priority areas for treatment, developing treatment alternatives and specifications, and evaluating effectiveness. Strategic investment in research and development is essential to identifying and removing critical barriers to implementation and migrating new knowledge into practice.

Successful implementation of the Cohesive Strategy requires an adaptive management framework. Monitoring and learning are linked in the adaptive management framework so that new knowledge and existing knowledge are applied to actions through planning and evaluation. Research and development are vital to the ultimate success of the strategy.

Historically, research and development has been critical to improving the understanding of fire in natural resources as well as effective response to wildland fire. The specific research topics that contribute to successful implementation of the Cohesive Strategy cover the spectrum from human dimensions and communications to understanding relationships among vegetation, climate, ecosystem services, and fire. Analyses focused on tradeoffs, efficiencies, effectiveness, safety, changing climate conditions, and decision making will be needed.

Effort needs to be placed on determining critical near-term information needs and align Joint Fire Science and National Fire Plan priorities with the Cohesive Strategy. Effort needs to be placed on identifying, leveraging, and supporting existent departmental/agency and university research programs (e.g., USFS R&D SPAs, USGS, USDA, universities) that are relevant to achieving the Cohesive Strategy's goals. Given the importance of landscape/regional analysis, climate, and weather to achieving the Strategy's goals it is desirable to develop more integrated R&D linkages with relevant research programs at NASA and NOAA. Prioritizing research and development needs and action items for achieving the goals of the Cohesive Strategy will better align new knowledge with the goals of the Cohesive Strategy.

Specific research and monitoring objectives/actions include:

- Conduct regular integrated problem analyses involving land managers and scientists to clarify knowledge gaps. Use these problem analyses to help set priorities for research, development, and monitoring needs.
- Enhance capabilities to effectively monitor and model vegetation dynamics and fire potential resulting from management and natural processes.
- Build on existing forums and networks (e.g., Wildland Fire Lessons Learned Center, JFSP Consortium) to enhance knowledge exchange between scientists and managers.

- Build on existing knowledge to expand understanding of the collaborative process – interacting specifically with successful collaborations to understand why they are successful. Develop general principles for successful collaborations.
- Expand understanding of the interactions between fire and broad landscape processes – link resiliency objectives with treatments.
- Expand decision science capabilities to contribute to decision-making for resilient landscapes, fire adapted communities, and response to wildland fire. Focus on improvements in effectiveness and efficiency.
- Enhance understanding of risk and management options to mitigate smoke impacts while meeting hazardous fuels management objectives.
- Enhance understanding for decision-making during fire incidents – emphasize risk management and safety.

Measures of Success

Mindful that the Western Regional Assessment and Strategy must be combined with the Southeast and Northeast regional assessments and approved by agency leadership through WFEC and WFLC, OMB, the Secretaries of Agriculture and Interior, and ultimately by Congress as required by the FLAME Act, developing quantifiable measures during Phase II is premature. During Phase III, the use of analytical models to estimate trade-offs and compares objectives and actions will help define definitive measures of success and revised national and regional performance measures. These measures will need to broadly assess how wildland fire risks to landscapes, communities, responders, and the public change through time.

The intent of the western objectives and actions is to reduce risk around and produce measurable outcomes contributing to achievement of the three national goals simultaneously. We submit that if the following premises are followed and become common elements during Phase III, an effective National Cohesive Wildland Fire Management Strategy will result.

Develop a comprehensive communication and implementation strategy. For Phase III and throughout future iterations and updates of the Cohesive Strategy, the communication and implementation strategy should use an adaptive management philosophy that enables adjustments and improvements as we learn from stakeholder involvement and the implementation of actions. Universally, western stakeholders want, need, expect, and demand to be involved in the strategy; we must not miss this opportunity to build upon their support through Phase II and utilize this energy in Phase III.

Take an integrated and intergovernmental approach to achieving effective, efficient, and adaptive implementation of the Cohesive Strategy. In order to achieve any or all of the three national goals, it is imperative that we improve our ability to use the principles of adaptive management. We must be willing to prioritize our efforts to areas of “national and global significance” without compromising effective local action.

Invest in actions that support achievement of multiple objectives and goals. All western stakeholders agreed that the three goals of the Cohesive Strategy are interdependent and that actions implemented towards one goal can and should support achieving the other goals.

Promote an effective and inclusive governance structure for wildland fire management. All jurisdictions should participate in making and implementing safe, effective, efficient risk-based wildland fire management decisions.

Conclusions

To achieve true adaptive management effectiveness and efficiencies, this management model must be integrated as an intergovernmental approach. In order to achieve any or all of the three national goals, it is imperative that we improve our ability to use the principles of adaptive management, and we will likely need to prioritize our efforts. Therefore, it is crucial that we apply these principles to the western region.

Working through the Phase II process the Western Regional Strategy Committee recognizes that the Cohesive Strategy can be successful, but this success relies on the support, commitment, and allocation of assets and resources through a coordinated and collaborative approach by all stakeholders and at all levels throughout the nation. The Cohesive Strategy is not a one-time strategy but is a strategy that needs to be dynamic and that can change over time as conditions or other factors warrant such change. The FLAME Act requires a five-year update once Phase III is completed.

There are numerous actions and activities identified in this strategy that if acted upon and implemented could increase efficiencies and contribute to reduced threats to landscapes, communities, the pubic, and responders, with increased efficiencies. What specifically will be recommended for implementation is partially dependent upon on the Phase III Risk Trade-off Analysis scheduled to be completed in September 2012. There is an opportunity to proceed with some of these actions and activities prior to completion of Phase III. The RSC will begin a process to identify and implement those actions and activities that provide immediate benefits with little to no additional monies or resources. However, many of the proposed actions and activities will take time with potential regulation change to be effective. Many of the actions and activities defined in this strategy are cross-cutting. Meaning, by implementing actions and activities in a particular goal area benefits will be derived in the other goals.

Much work is required by all stakeholders to realize the benefits that can be gained in the West and in the three goals. In order to be successful the RSC has identified key concepts that must be embraced and practiced throughout the wildland fire community in the West. These concepts are broken out into the primary goals along with some primary over-arching concepts.

Restoring and Maintaining Resilient Landscapes: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives

If landscapes throughout the West are to be maintained and restored stakeholders will need to work with industry in establishing reliable sources of biomass or other markets. As one interested stakeholder articulated, there is not enough money in the treasury to address this issue. However, there is enough money in the economy. Capitalizing on the economy will have the added benefit of creating jobs through restoration and supporting local communities. Another key concept is to invest in proven collaborative successes. Throughout the West there are numerous local collaborative groups that have reached agreement on restoration principals, activities, and expected outcomes. These groups have been successful in leveraging human and financial resources to accomplish work on an accelerated time schedule, as compared to other areas of the West without these groups. They have been successful in accomplishing restoration work on federal lands that are identified as being difficult due to the remoteness and regulatory environment. There is a need to support these local collaborative efforts because they have the potential to accomplish the greatest good in this endeavor. A third concept is active management in whatever form. All stakeholders need to work together in actively managing landscapes across boundaries. Even with collaboration, development of economies and infrastructure, there is a realization to be successful there is a need for more investment from all sources or process relief (or both) to achieve public land management objectives.

Creating Fire-adapted Communities: Human populations and infrastructure can withstand a wildfire without loss of life and property

The traditional definition of the WUI must expand to beyond the traditional donut approach. As one County Supervisor articulated, “we are grateful that our homes and businesses were saved from the fire. However, it is difficult to accept that once were there were trees, we now surrounded by brush, once where we had flowing water with fishing opportunities we now have dry stream beds. Though our homes were saved we lost much of our recreation dependent economies and our own personal use of these lands.” Another key concept is that citizens must engage and share the responsibility and decision making for protecting their communities with local, state, and federal governments, agencies, and municipalities. As in goal one, a key to success will be the development and support of a robust and distributed industry that relies on economic principals. A fourth concept is the need to continue with fire assistance grants. These grants are key in providing financial investments for communities to begin community fire planning and implementing FireWise principles and/or other defensible space and large scale hazardous fuels treatments.

Responding to Wildfires: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildland fire management decisions

There is a need to expand the current emergency response system to include suppression resources at all emergency response jurisdictions and agencies.. This will require revisiting the current qualification systems and designing and accepting a universal system that is agreeable to all. There is a need to develop strong agreements at all levels that provide for a mutual understanding of the varying policies, missions and priorities amongst varying agencies, governments, and jurisdictions. Such agreements should facilitate increased availability of resources, prioritization of landscapes for suppression response, suppression responsibility, and suppression related payments. All jurisdictions need to develop a common understanding of risk based decision making to enhance both public and responder health and safety. Additionally we must create an intergovernmental wildland fire governance to serve the needs of all jurisdictions in both wildland fire and all-risk incidents. A final need is the requirement for succession planning of all responder agencies and municipalities.

Overall Concepts

There is a strong need to educate the public on all aspects of the wildland fire issues, short and long term consequences of actions or in-action, and potential solutions. There is a need to be more efficient in how investments are allocated to the wildland fire issues. Work needs to be prioritized and resources allocated to strategies and plans that have a high potential for success. Post wildland fire planning for recovery and mitigation must be addressed in the strategy. Agencies and governments need to assess and utilize the existing authorities they have that allow for expedited planning and implementation of projects such as those provided under the Healthy Forest Restoration Act. The strategy cannot focus on one primary goal but needs to focus on all three goals to be successful. The three goals are interrelated and as such, failure to address the issues and opportunities in one goal area will have consequences on the other two goals.

Appendix 1: Acronym List

AD	Administratively Determined
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CE	Categorical Exclusion
CEQ	Council of Environmental Quality
CRAFT	Comparative Risk Assessment Framework Tool
CS	Cohesive Strategy
CSSC	Cohesive Strategy Steering Committee
CWPP	Community Wildfire Protection Plan
EAJA	Equal Access to Justice Act
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FACA	Federal Advisory Committee Act
FEMA	Federal Emergency Management Agency
FEPP	Federal Excess Property Program
FLAME Act	Federal Land Assistance, Management, and Enhancement Act
4FRI	Four Forest Restoration Initiative (in Arizona)
FWS	US Fish and Wildlife Service
GACC	Geographic Area Coordinating Center
HB	House Bill
HFRA	Healthy Forest Restoration Act
IAFC	International Association of Fire Chiefs
ID	Idaho
IQCS	Incident Qualification and Certification System
JFSP	Joint Fire Science Project
LMPs	Land Management Plans
LRMPs	Land and Resource Management Plans
METI	Management and Engineering Technologies International, Inc
MT	Montana
NACo	National Association of Counties
NASA	National Aeronautics and Space Administration
NASF	National Association of State Foresters
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NMAC	National Multi-Agency Coordinating Group
NOAA	National Oceanic and Atmospheric Administration
NPS	National Parks Service
NSAT	National Science and Analysis Team
NWCG	National Wildfire Coordinating Group
OR	Oregon
OMB	Office of Management and Budget

QFR	2009 Quadrennial Fire Review
RFA	Rural Fire Assistance
RFD	Rural Fire District
ROSS	Resource Ordering and Status System
RPL	Recognition of Prior Learning
RSC	Regional Strategy Committee
SAF	Society of American Foresters
SFA	State Fire Assistance
TNC	The Nature Conservancy
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
VFA	Volunteer Fire Assistance
WFEC	Wildland Fire Executive Council
WFLC	Wildland Fire Leadership Council
WG	Western Regional Working Group
WGA	Western Governors' Association
WRSC	Western Regional Strategy Committee
WUI	Wildland-urban Interface

Appendix 2: List of CRAFT Questions

Objectives

Situation and Context

1. What is the National Wildland Fire Management Cohesive Strategy (Cohesive Strategy)?
2. What are the primary overarching goals of the Cohesive Strategy?
3. What is the specific role of regional efforts in the Cohesive Strategy?
4. What do you hope to accomplish with this specific workshop?

Guidelines

5. What general policies, regulations or laws govern wildland fire management in your area, agency or organization?
6. Which of these, if any, have created conflicts among agencies and across lands?

Values

7. What broad societal and environmental values have been associated with fire in this region?
8. Briefly characterize how each broad value relates to or is affected by fire.
9. What are the dominant common values or perspectives among agencies?
10. Which of these conflicts are exceptionally difficult to address and why?

Uncertainties

11. What challenges in wildland fire management are created or compounded by lack of knowledge or understanding?
12. What societal or environmental changes or trends could affect wildland fire?
13. Briefly describe the uncertainties associated with these changes or trends that make them difficult to predict.

Goals and Objectives

14. What broad management goals or priorities exist for this area that relate to wildland fire?
15. Are there more specific goals which are not explicit to wildland fire but may be related?
16. How do your goals as stated above relate to the National goals of the Cohesive Strategy?
17. Which of the above are the highest priorities for completing this analysis? (for the scale of this decision)
18. For each priority goal, identify contributing objectives, and a range of actions and activities that could meet each objective.
19. Now Finalize into an objectives hierarchy.

Measures for Success

19.1 How do you or can you quantify management success in meeting the goals and objectives?

19.2 What is the level of acceptability of these endpoints given the range of perspectives and values?

Alternatives

20. List the possible broad actions and activities from the objectives section (Page #5).
21. Identify the combination of actions and activities that best reflects the continuation of current policies and practices.
22. Identify other reasonable combinations of actions and activities (alternatives) that collectively could contribute to long and short-term goals.
23. Are there technical or financial constraints that limit the range of actions and activities that might be pursued?
24. Consider how issues vary across the region and where some actions might be more successful than elsewhere.

Appendix 3: Western Regional Strategy Committee and Western Working Group Members

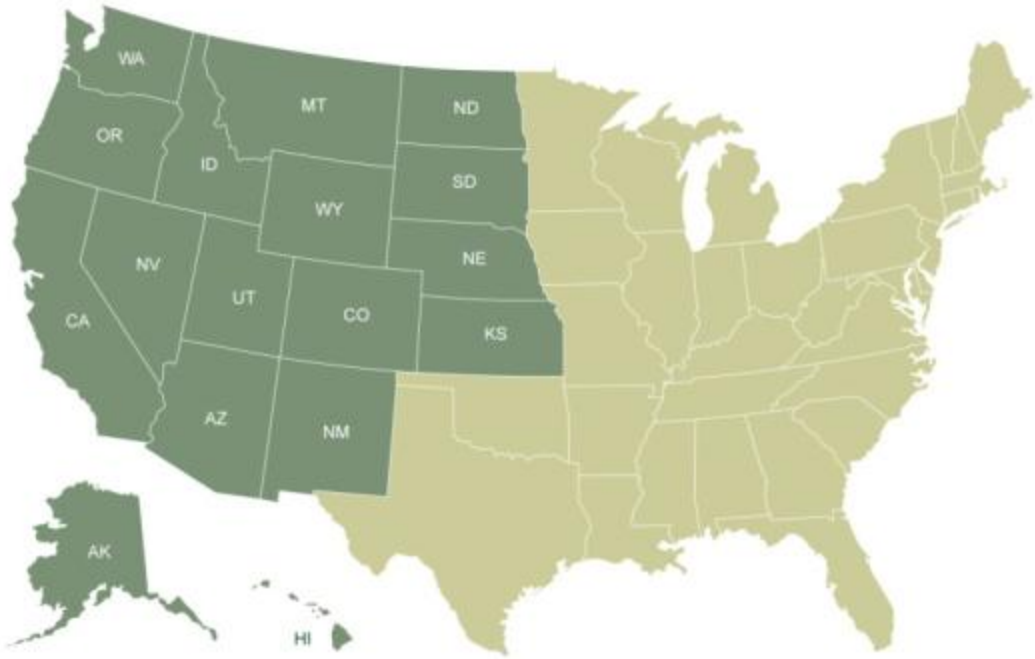
Western Regional Strategy Committee

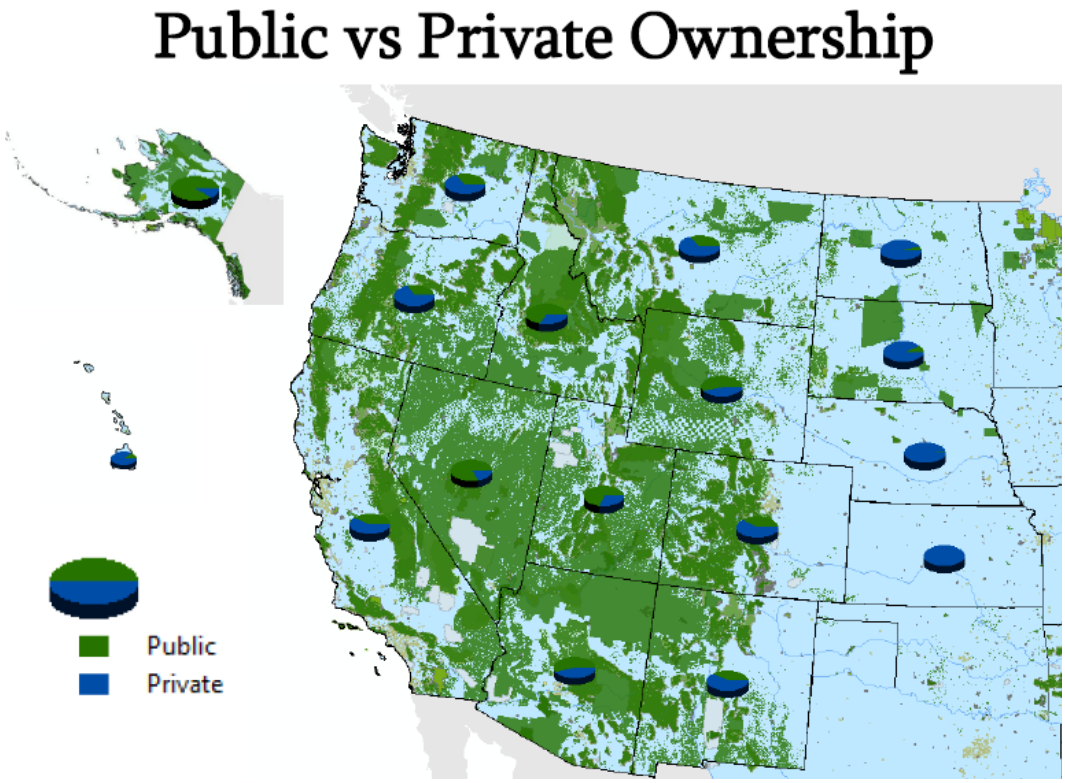
Name	Title/Organization	Email
Aden Seidlitz	BLM	aseidlitz@blm.gov
Alan Quan (CSSC liaison)	USFS	aquan@fs.fed.us
Ann Walker	WGA	awalker@westgov.org
Bob Harrington	MT State Forester, NASF	rharrington@mt.gov
Corbin Newman (co-chair)	Regional Forester, FS	cnewman02@fs.fed.us
Dana Coelho (writer/editor)	USFS/ WFLC	dcoelho@fs.fed.us
Doug MacDonald (WFEC liaison)	IAFC	macdonald.dr@gmail.com
Joe Stutler (co-chair; WWG liaison)	Deschutes County, OR - IAFC	joest@co.deschutes.or.us
John Philbin	BIA	john.philbin@bia.gov
Karen Taylor-Goodrich	NPS	karen_taylor-goodrich@nps.gov
Pam Ensley	FWS	pam_ensley@fws.gov
Robert Cope	Lemhi County, ID - NACo	cowdoc75@hotmail.com
Sam Foster	Station Director, FS	gfoster@fs.fed.us
Tom Quigley (Science Team Liaison)	METI	tkquigley@gmail.com
Tony Harwood	Confederated Salish and Kootenai Tribes	tonyh@cskt.org
Warren Day	USGS	wday@usgs.gov

Western Working Group

Name	Title/Organization	Email
Bill Avey	USFS	wavey@fs.fed.us
Bill Tripp	Karuk Tribe	btripp@karuk.us
Carol Daly	Flathead Economic Policy Center	cdaly1@centurytel.net
Craig Glazier	Idaho Department of Lands	cglazier@idl.idaho.gov
David Seesholtz	USFS	dseesholtz@fs.fed.us
Eric Knapp	USFS	eknapp@fs.fed.us
Gene Lonning	BIA	gene.lonning@bia.gov
Jesse Duhnkrack	NPS	jesse_duhnkrack@nps.gov
Joe Freeland (team lead)	BLM	jfreeland@blm.gov
Kevin Ryan	USFS	kryan@fs.fed.us
Laura McCarthy	TNC	lmccarthy@tnc.org
Sue Stewart	USFS	sastewart@fs.fed.us
Travis Medema	Oregon Department of Forestry	tmedema@odf.state.or.us

Appendix 4: Maps





Appendix 5: Expanded Management Scenarios Table

	Scenario 1			Scenario 2			Scenario 3			Scenario 4		
	financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal	
	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current
Common Objectives to goals												
• Invest in efforts that have a track record of success in meeting community and landscape objectives through effective collaboration, including leveraging investment capability and overcoming typical barriers to success. Use the lessons learned from these efforts to inform and encourage the development of similar capacity in other communities. Provide collaboration training and assistance where needed to facilitate planning.	high	high	3	high	high	3	high	High	3	High	High	3
• Use a variety of active vegetation management tools and techniques, including planned and unplanned wildland fire, to achieve local and large landscape objectives. Emphasize the design and use of treatments that reduce hazardous fuels and contribute to resilient landscapes while meeting social and economic needs.	high	moderate to high	2	high	moderate to high	2	high	moderate to high	2	High	moderate	1
• Collaboratively identify post-fire hazards in advance of fire seasons to clarify roles and responsibilities, position for the best response to post-fire natural hazard impacts on landscapes and communities, and use the local workforce to perform work whenever possible.	high	high to moderate	2	high	high to moderate	2	high	High	3	High	High	3
• Support existing industries (e.g., forest products, grazing, fishing, hunting, tourism, recreation, energy and minerals development) and encourage new markets (e.g., biomass) that facilitate implementation of landscape treatments where sustainable and economically feasible. Support employment conditions consistent with existing hiring practices and processes that lead to fair competition and the creation of family-wage jobs.	High	High	3	High	High	3	High	moderate to high	2	High	moderate	1
• Combine the best elements of existing education programs to create a West-wide wildland fire management education campaign with a strong, visible, and memorable message.	High	High	3	High	High	3	High	High	3	High	High	3
Goal 1: Restoring and Maintaining Resilient Landscapes – Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.												
1.1. Objective: Actively manage the land to achieve healthy forest and rangeland conditions.	Moderate	moderate to high	3	moderate	High	2	Moderate	High	1	Moderate	moderate	**0**
1.1.3. Manage to achieve resilient conditions at large landscape scales, considering natural fire regimes, seasonality, and traditional ecological management of the land.	moderate	moderate	1	moderate	moderate	1	moderate	moderate	1	moderate	moderate	0
1.1.4. Reduce the risk of uncharacteristic and damaging wildfire.	high to moderate	high to moderate	2	high to moderate	high to moderate	1	high to moderate	high to moderate	1	high to moderate	high to moderate	0
1.2. Objective: Protect landscapes and multiple values from the effects of unwanted fire.	high	moderate	1	high	moderate	1	high	moderate	1	moderate to high	moderate to low	**1**

		Scenario 1			Scenario 2			Scenario 3			Scenario 4		
		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal	
		Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current
1.2.1.	Prevent human-caused wildfires to minimize unwanted, negative effects.	high	moderate to high	1	high	moderate to high	2	high	moderate to high	2	high	moderate to high	1
1.2.5.	Identify potential post-fire hazards in advance of fire seasons to clarify roles and responsibilities, position for the best response to impacts on landscapes and communities, and take advantage of the local workforce.	high	high to moderate	1	high	high to moderate	1	high	high to moderate	1	high	high to moderate	1
1.3.	Objective: Improve interagency and stakeholder coordination and planning of actions that contribute to achieving landscape resiliency.	high to moderate	moderate	2	high to moderate	moderate	2	high to moderate	moderate	1	high to moderate	moderate	**1**
1.4.	Objective: Develop and maintain professional and industrial capacity to implement cost-effective and sustainable landscape treatments and support local economies.	moderate to high	moderate	1	moderate to high	moderate	0	moderate to high	moderate	0	moderate to high	moderate	**0**
1.5.	Objective: Fully use existing policies and procedures to provide the management flexibility needed to implement a mix of landscape treatments.	moderate to high	moderate to high	2	moderate to high	moderate	2	moderate to high	high	2	moderate to high	moderate to high	**0**
1.6.	Objective: Increase public awareness, acceptance, and active participation in achieving landscape objectives using all available tools.	moderate	moderate	1	moderate to hgh	moderate to high	1	moderate to high	moderate	1	moderate in high	moderate	**1**
1.6.3.	Communicate early and often with the public and stakeholders impacted by long-duration fire to address public health, recreation access, transportation network closures, and other issues.	high	high	1	high	high	1	high	high	1	high	high	1
1.6.4.	Support traditional and emerging markets (forage banks, wood products, recreation, etc.) to sustain long-term private sector investments consistent with the needs to maintain resilient landscapes and support local economies.	moderate to high	moderate	1	moderate to high	moderate	2	moderate to high	moderate	1	moderate to high	moderate	0
1.7.	Objective: Identify and prepare for non-fire threats and disturbances that may increase susceptibility to wildfire and/or impair ecosystem function.	low to moderate	moderate	2	low to moderate	low	1	low to moderate	moderate	1	low to moderate	moderate	**0**
1.7.1.	Work across all ownerships to proactively manage the landscape in ways that minimize destructive effects of insects and pathogens that contribute to fire hazard.	low to moderate	low	1	low to moderate	low	1	low to moderate	moderate	1	low to moderate	moderate	1
1.7.2.	Work across all ownerships to develop and implement action plans for removing or preventing introduction of invasive plants that contribute to fire hazard (e.g., red brome, cheat grass).	low to modeate	low to moderate	1	low to moderate	low to moderate	1	low to moderate	moderate	2	low to moderate	low to moderate	1
Goal 2: Creating Fire-adapted Communities – Human populations and infrastructure can withstand a wildfire without loss of life and property													
2.1.	Objective: Prevent unwanted human-caused wildfire fire ignitions within or in close proximity to communities.	Moderate to high	moderate to high	1	Moderate to high	moderate to high	2	Moderate to high	high	3	Moderate to high	moderate to high	**1**
2.2.	Objective: Reduce hazardous fuels within the wildland-urban interface and nearby areas containing community values to be protected.	Moderate	Low to moderate	1	Moderate	Moderate to high	3	Moderate	Moderate	2	Moderate	Low to moderate	**1**
2.2.1.	Encourage proactive vegetation management on public and private forests, woodlots, rangeland, fields, WUI home sites, and around infrastructure.	moderate	moderateq	1	moderate	moderate	1	moderate	moderate to high	2	moderate	moderate	1

		Scenario 1			Scenario 2			Scenario 3			Scenario 4		
		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal	
		Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current
2.3.	Objective: Continue to develop, support, and maintain CWPPs as one of the primary tools to achieve the goals of the Cohesive Strategy.	Moderate to high	Moderate to high	1	Moderate to high	Moderate to high	1	Moderate to high	high	2	Moderate to high	Moderate to high	**1**
2.4.	Objective: Build a culture of self-sufficiency to prepare for and protect life and property from wildfire.	Moderate to high	Moderate to high	1	Moderate to high	Moderate to high	1	Moderate to high	high	2	Moderate to high	Moderate to high	**1**
2.5.	Objective: Improve effectiveness and self-sufficiency of emergency response within each community.	Moderate	Moderate	1	High	High	2	Moderate	high	3	Moderate	Moderate	**1**
2.6.	Objective: Improve post-fire recovery efforts that impact public health and safety, water sources, power transmission corridors, and other critical infrastructure.	low to moderate	low to moderate	1	low to moderate	low to moderate	1	low to moderate	low to moderate	1	low to moderate	low to moderate	**1**
Goal 3: Responding to Wildfires – All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.													
3.1.	Objective: Provide for safety of wildfire responders and the public.	Moderate to high	Moderate	1	Moderate to high	Moderate	1	Moderate to high	Moderate	1	Moderate to high	Moderate	**2**
3.1.4.	Ensure effective communication among all responders.	moderate	low	0	moderate	low	0	moderate	moderate	1	moderate	low to moderate	1
3.2.	Objective: Guide response using risk management principles and values to be protected, as determined by early and frequent involvement of all partners, before, during, and after a wildfire event.	Low to moderae	Low	0	Low to moderae	Low	0	Moderate	Low	1	Moderate	Moderate	1
3.3.	Objective: Improve effectiveness and efficiency of the wildland fire management organization.	moderate	low	0	moderate	low	0	moderate	low	0	moderate	moderate	**1**
3.3.1.	Create an intergovernmental wildland fire governance structure to serve the needs of all jurisdictions in both wildfire and all-risk incidents (NWCG does not satisfy this need fully).	high	low	0	high	low	0	high	low	0	high	moderate	1
3.3.3.	Seek opportunities to make strategic investments that will improve organizational effectiveness.	high	low	0	high	low	0	high	low	0	high	moderate	1
3.4.	Objective: Improve administration and maximize the coordination and effectiveness of wildland fire management resources.	moderate	low	0	moderate	low	0	moderate	low	0	moderate-high	moderate	**1**
3.4.1.	Strategically align resources (personnel and equipment) across jurisdictions by maximizing situational preparedness using predictive services capabilities and other tools.	moderate to high	low to moderate	1	moderate to high	low to moderate	1	moderate to high	low to moderate	1	moderate	moderate to high	2
3.4.2.	Seek opportunities to maximize effectiveness of fire fighting resources.	high to moderate	low to moderate	1	high to moderate	low to moderate	1	high to moderate	low to moderate	1	high to moderate	moderate to high	2
3.4.3.	Ensure that private wildland fire service providers are an integral component of a national wildfire response system.	moderate to high	moderate	0	moderate to high	moderate	0	moderate to high	moderate	1	moderate to high	moderate	1
3.4.4.	Protect fire managers from legal and criminal liability when performing their jobs within delegated authority and approved operating policies and procedures.	high	low	0	high	low	0	high	low	0	high	low to moderate	1
3.4.6.	Improve efficiency and effectiveness of aviation resources.	high	low	0	high	low	0	high	low	0	high	modearte	1
3.4.7.	Maintain and enhance mobilization capacity for state to state and other geographic area sharing of resources using master cooperative agreements coordinated through a national system.	high	low	0	high	low	0	moderate to high	moderate	1	high	moderate	1

	Scenario 1			Scenario 2			Scenario 3			Scenario 4		
	financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal		financial - social - organizational - political - environmental	Federal - State - Private - Tribal	
	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current	Feasibility / Acceptability	Likelihood for implementation	Change from current
3.5. Objective: Develop community-based strategies to deal with post-fire hazards on natural and cultural resources, responders, communities, and planned activities.	high	moderate	1	high	moderate	1	high	moderate	1	high	moderate	**1**
3.6. Objective: Collect and use accurate and consistent fire information from all wildfire protection jurisdictions to improve understanding of the wildland fire and response workload and provide feedback to decision support systems.	high	moderate	1	high	moderate	1	high	moderate	1	high	modeate	**1**
Specific research and monitoring objectives/actions include:												
• Conduct regular integrated problem analyses involving land managers and scientists to clarify knowledge gaps. Use these problem analyses to help set priorities for research, development, and monitoring needs.	high	high	1	high	high	1	high	moderate	0	high	moderate	0
• Enhance capabilities to effectively monitor and model vegetation dynamics and fire potential resulting from management and natural processes.	high	moderate	0	high	moderate	0	high	moderate	0	high	moderate	0
• Build on existing forums and networks (e.g., Wildland Fire Lessons Learned Center, JFSP Consortium) to enhance knowledge exchange between scientists and managers.	high	high	1	high	high	1	high	moderate	0	high	moderate	0
• Build on existing knowledge to expand understanding of the collaborative process – interacting specifically with successful collaborations to understand why they are successful. Develop general principles for successful collaborations.	high	moderate	0	high	moderate	0	high	moderate	0	high	moderate	0
• Expand understanding of the interactions between fire and broad landscape processes – link resiliency objectives with treatments.	high	high	1	high	high	1	high	moderate	0	high	moderate	0
• Expand decision science capabilities to contribute to decision-making for resilient landscapes, fire adapted communities, and response to wildfire. Focus on improvements in effectiveness and efficiency.	high	moderate	1	high	high	1	high	high	1	high	high	1
• Enhance understanding of smoke risk and options to mitigate smoke while meeting fuel management objectives.	high	moderate	0	high	high	1	high	high	1	high	moderate	0
• Enhance understanding for decision-making during fire incidents – emphasize risk management and safety.	high	moderate	0	high	moderate	0	high	high	1	high	high	1

Appendix 6. Research and Monitoring Actions (Example Priorities)

Successful implementation of the Cohesive Strategy requires a sound scientific foundation in the social, physical, and biological sciences. This requires a continuum of fundamental and applied research and development into tools that effectively support management and policy decisions. Success also requires dedicated monitoring of conditions and trends in vegetation and fire potential, as well as development and monitoring of programmatic performance measures. Periodic problem analyses, i.e., systematic reviews of the state of knowledge in the context of the Cohesive Strategy's goals, are essential to identifying knowledge gaps and R&D priorities. Such problem analyses need to identify both long-term and short-term information needs, leverage on-going R&D, and influence priorities under JFSP and National Fire Plan. The following examples identify a potential suite of research and monitoring needs that could be used as a starting place for the initial problem analysis and identification of priorities:

Research objectives/actions focused on Goal 1 – Resilient Landscapes

- Enhance capabilities to identify, model, map, and monitor the environmental conditions associated with extreme fire behavior to support assessment of risk and resilience across landscapes.
- Community-based partnerships identify potential post-fire hazards in advance of fire seasons to identify roles and responsibilities to be best positioned to respond to post-fire natural hazard impacts on landscapes and communities and take advantage of local workforce.
- Evaluate terrain impacted by wildland fires for post-fire flooding and debris-flows (landslides) that result from denudation of forests and rangelands.
- Determine the vulnerability and mitigation strategies against the encroachment of invasive species on wildland fire-impacted landscapes.
- Determine the suitability of leveraging recent wildfires by altering planned treatment schedules to achieve landscape-level and/or community-level fuels treatment and restoration goals.

Research objectives/actions focused on Goal 2 – Fire Adapted Communities

- Improve the social and biophysical scientific foundations supporting planning and implementation of fuels treatment and restoration programs.
- Use human dimensions and communications research and development to better understand the collaborative process, build and maintain collaborative relationships, and engage in multi-party monitoring.
- Develop scientifically-based guidelines to support developers, planners, and policy makers in the design of fire safe communities.
- Seek new methods to reduce smoke impacts on communities and sensitive individuals.

Research objectives/actions focused on Goal 3 – Respond to Wildfires

- Improve the scientific foundation for making and implementing safe, effective, efficient risk-based wildland fire management decisions.

- Conduct research and development to better understand how decisions are made by people managing incidents in complex environments and integrate this knowledge into experiential training.
- Improve methods for integrating resource planning and management activities (LMPs, L&RMP, short- and long-term fire effects) into strategic and tactical suppression decisions.
- Develop a better understanding of how specific fire environments and work history affect stress-performance interactions.
- Develop improved real-time incident monitoring, communication, and information management technology to support current management and provide improved feedback to the R&D community for future model development.

Appendix 7. Phase II Outreach and Content Analysis (includes Western Region Phase II Outreach and Communication Plan – Appendix A)

Full text is available at: http://sites.nemac.org/westcohesivefire/files/2011/10/Appendix-7.pdf

Appendix 8. Immediate Opportunities (Ideas Submitted to the WRSC from METI)

Full text is available at: http://sites.nemac.org/westcohesivefire/files/2011/10/Appendix-8.pdf