National Cohesive Wildland Fire Management Strategy Addendum Update

Wildland Fire Leadership Council

January 2023

National Cohesive Wildland Fire Management Strategy Addendum Update

EXECUTIVE SUMMARY

The Wildland Fire Leadership Council (WFLC) presents this Addendum Update, to spotlight wildland fire critical emphasis areas and challenges that were not identified or addressed in depth in the 2014 National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) framework. It includes enhanced strategic direction and approved modifications to address the identified areas and challenges to Cohesive Strategy implementation over the decades to come.

Over the course of this review and update, four key critical emphasis areas surfaced as either not identified or addressed in depth in the 2014 Cohesive Strategy framework:

1. Climate change
2. Workforce capacity, health and well-being
3. Community resilience (preparation, response and recovery)
4. Diversity, equity, inclusion, and environmental justice

Five key implementation challenges were also identified:

1. The existing wildland fire management system has not kept pace with demands.
2. There is still a need for the significant increase in the use of proactive fire (prescribed and managed wildfire for resource objectives) across the country.
3. Science, data, and technology has not kept pace with the extent of wildland fire and postfire impacts, or been fully integrated into decision-making for fire, land and community managers.
4. Markets, infrastructure, and skilled human resource capacity are inadequate to utilize biomass and other wood products from ecosystem management or hazardous fuel treatments.
5. Education, communications and marketing are insufficient to inform stakeholders and decision-makers about Cohesive Strategy implementation.

These critical emphasis areas and key challenges to implementing the Cohesive Strategy were identified and examined for this report and led to the following enhancements to the vision and goal statements in the original 2014 strategy.

An updated Vision statement: To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and collectively, learn to live with wildland fire.

Updated Goals:

> **Resilient Landscapes** – Landscapes, regardless of jurisdictional boundaries are resilient to fire, insect, disease, invasive species and climate change disturbances, in accordance with management objectives.
>
> **Fire Adapted Communities** – Human populations and infrastructure are as prepared as possible to receive, respond to, and recover from wildland fire.
>
> **Safe, Effective, Risk-based Wildfire Response** – All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

The Wildland Fire Leadership Council also identified additional Management Options and a broad *Call to Action* that applies to stakeholders at all levels, looking to implement the Cohesive Strategy, through a lens of diversity, equity and inclusion.

The members of WFLC, on January 31, 2023, approved this document, including the enhancements to the vision and goals. This addendum, taken in concert with the 2014 National Cohesive Wildland Fire Management Strategy, are considered merged as the Cohesive Strategy going forward.

INTRODUCTION

Purpose of Report

In the decade since the Cohesive Strategy framework was completed, significant progress has been made. The collective understanding of wildland fire issues, by both the public and wildland fire managers, has increased with meaningful gains toward Cohesive Strategy implementation. Along with this progress, several implementation challenges have surfaced that have impeded more substantial progress toward the three goals: Resilient Landscapes, Fire Adapted Communities and a Safe, Effective, Risk-based Wildfire Response.

The purpose of this report is to look back across almost ten years of Cohesive Strategy implementation and illuminate additional and lingering challenges, and opportunities where federal, state, tribal and local agencies as well as non-governmental organizations and other partners can increase implementation efforts.

This Addendum Update is considered a supplement to the original 2014 document. It presents new Management Options, enhanced strategic direction and key areas for greater focus in implementing the Cohesive Strategy through the next decades. The Call to Action includes an increased focus on tracking successful implementation of the Cohesive Strategy and how stakeholders are making progress towards the three goals. For the purpose of this Addendum Update, we use the term stakeholders to mean those with a vested interest in wildland fire outcomes at a variety of different levels.

Background

As directed by the FLAME Act of 2009, the National Cohesive Wildland Fire Management Strategy was developed and still serves as the key strategic framework for addressing wildland fire challenges across the nation. The Wildland Fire Leadership Council (WFLC), established in 2002, is the steward of the Cohesive Strategy and has been at the center of adaptive change in wildland fire management for nearly two decades. WFLC continues to provide the key leadership to adapt and implement policies that address these wildland fire challenges. It is important to review the framework against today's challenging wildland fire environment and to adjust where appropriate for increased implementation while also anticipating and adapting to future challenges.

The National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) was completed in 2014, and framed around the following vision and elevated three national goals:

To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.

Resilient Landscapes

Fire Adapted Communities

Safe, Effective, Risk-Based Wildfire Response

The Cohesive Strategy is an "All Hands, All Lands" approach to reducing long-standing and widespread wildfire risks through restoring and maintaining landscapes, assisting communities to become more fire adapted, and ensuring a safe, effective, risk-based wildfire response.

Embracing the guiding principles and employing a range of management options from the Cohesive Strategy is the pathway for a more prepared and resilient nation with respect to wildland fire. This is no easy task. Visionaries of the Cohesive Strategy knew from the start that this approach will require social and cultural change and unprecedented collaboration. Federal, state, tribal and local entities, and communities, must work together, outside institutional silos and across jurisdictional boundaries to determine shared values and risks, prioritize those risks and make collective investments at scale in high priority areas that result in progress toward the three goals.

Nineteen Management Options were presented in 2014 that stakeholders at the local level can employ to make progress towards the three goals.

Resilient Landscapes
Expand or maintain prescribed fire in areas of current use.
Expand prescribed fire in areas of limited current use.
Utilize prescribed fire on a limited basis.
Manage wildfires for resource objectives in forested areas.
Manage wildfires for resource objectives in non-forested systems.
Manage wildfires for resource objectives in areas where increased awareness of community risk is necessary.
Use non-fire fuels treatments supported by forest products industry.
Use non-fire fuels treatments in non-forested areas.
Use non-fire fuels treatments in areas with limited economic markets.
Use fuels treatments as precursors to prescribed fire or managed fire.

Fire Adapted Communities
Focus on home defensive actions.
Focus on combination of home and community actions.
Adjust building and construction codes in municipal areas.
Adjust building and construction codes in non-municipal areas.
Reduce accidental human-caused ignitions.
Reduce human-caused incendiary ignitions.

Safe, Effective, Risk-based Wildfire Response
Prepare for large, long-duration wildfires.
Protect structures and target landscape fuels.
Protect structures and target prevention of ignitions.

The 2014 Cohesive Strategy also set components and assumptions that are necessary to reduce risks in the above categories and see progress toward the Vision and Goals. They are:

1. Strategic alignment, where all parties agree to the same goals, principles, and strategic course of action.
2. Collaborative engagement, which includes governance, shared information and resources, communications, and monitoring and accountability.
3. Programmatic alignment, where individual agency or organization objectives are explicitly supportive of the Cohesive Strategy goals.
4. Prioritization of investment and use of resources.
5. Acceptance of increased short-term risk to achieve the longer-term gain, e.g., smoke, prescribed fire.
6. Greater collective investment and co-management of risk.

The successful implementation of the Cohesive Strategy to date is a product of its inclusive structure and the broad, ongoing, cross-boundary and cross-agency and organizational collaboration facilitated by the WFLC Regions and overseen by the WFLC. There are numerous examples of successful and impactful implementation of the Cohesive Strategy over the past eight plus years.

ENHANCEMENTS TO THE COHESIVE STRATEGY

The Cohesive Strategy Refresh Task Force identified areas and issues of opportunity that were not fully discussed in the 2014 strategy. This enhanced strategic direction will assist the wildland fire community and future stakeholders to collaboratively address the full suite of challenges over the decades to come.

As part of the review of the framework, WFLC evaluated the 2014 Cohesive Strategy against today's challenging wildland fire environment and considered the following questions:

1. What are critical emphasis areas that should be considered during implementation of the Cohesive Strategy over the next ten (plus) years?
2. What implementation challenges have surfaced since the original development of the Cohesive Strategy?
3. What are any new strategic approaches to consider?

4. What are any new management options that should be considered by stakeholders?
5. How can stakeholders further infuse science, technology, and data into the framework to address these critical emphasis areas and implementation issues?

The three WFLC Regions are at the center of implementation, facilitating understanding of the Cohesive Strategy, assisting agencies and organizations in breaking through barriers, co-managing risk, collectively investing in outcome-based approaches and implementing the management options. In addition to the information provided by the Refresh Task Force, this has provided a valuable feedback loop from stakeholders in the field. WFLC presents the following adjustments to the Vision Statement and National Goals.

Vision Statement

In 2014, the Cohesive Strategy identified a long-term vision - to safely and effectively extinguish fire when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.

In working closely with all levels of stakeholders, WFLC members and the three WFLC Regions have recognized that implementation of the Cohesive Strategy is a process, a long-term journey no matter what organization or agency is involved in implementation. That journey involves a high level of ongoing learning and adjustment in attitudes, culture, and behavior about what it takes to live with wildland fire. As a result, the WFLC has adopted an updated vision for the Cohesive Strategy.

To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and collectively, learn to live with wildland fire.

National Goals

The 2014 Cohesive Strategy framework elevated the three goals:

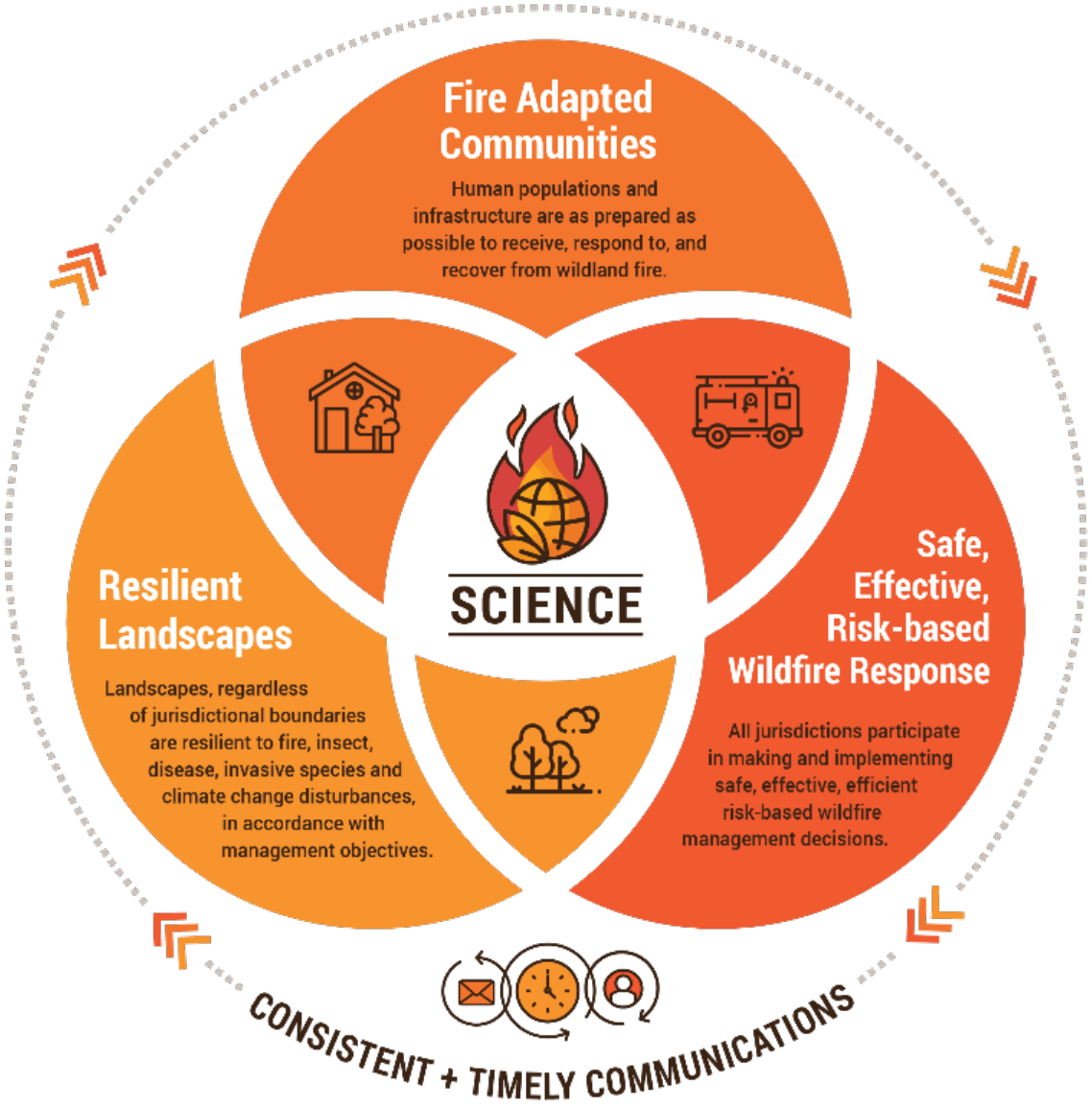
> **Resilient Landscapes** – Landscapes across all jurisdictions are resilient to related disturbances in accordance with management objectives.
>
> **Fire Adapted Communities** – Human populations and infrastructure can withstand a wildfire without loss of life or property.
>
> **Safe, Effective, Risk-Based Wildfire Response –** All jurisdictions participate in making and implementing safe, effective, risk-based wildfire management decisions.

Stakeholders continue to address national, regional, tribal, and local barriers to Cohesive Strategy implementation and note that the three goals are equally important and inextricably intertwined. Based on experience and feedback from implementation efforts, WFLC has adopted an updated version of the Resilient Landscapes and Fire Adapted Communities goals.

Resilient Landscapes – Landscapes, regardless of jurisdictional boundaries are resilient to fire, insect, disease, invasive species and climate change disturbances, in accordance with management objectives.

Fire Adapted Communities – Human populations and infrastructure are as prepared as possible to receive, respond to, and recover from wildland fire.

Safe, Effective, Risk-based Wildfire Response – All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.



WFLC also recognizes that using best available science, traditional ecological knowledge (TEK), data analysis, and technology supports integrated implementation planning and decision-making and is foundational to both short-term and long-term success in addressing the nation's wildfire crisis. Coordinated engagement including planning and preparedness actions on the part of all wildland fire partners, provides the best opportunity to achieve Resilient Landscapes, Fire Adapted Communities and a Safe, Effective, Risk-based Wildfire Response.

NEW WILDLAND FIRE CRITICAL EMPHASIS AREAS

The three WFLC Regions and the Cohesive Strategy Refresh Task Force identified new critical emphasis areas that, a decade ago, were not present to the level experienced today. These topics and their related new management options should be considered during implementation of the Cohesive Strategy over the next ten (plus) years.

1. **Climate change**

   Published scientific research shows that climate change, among several influences (e.g., fire exclusion), is intensifying the conditions that drive wildfire and has increased the area and severity burned by wildfire over natural levels. Climate change interacting with concurrent and cascading disasters – both human and naturally caused (e.g., extreme drought followed by catastrophic fire, and post-fire flooding) as well as other disturbance factors (e.g., invasive species, insects and disease) has lengthened local fire seasons by a month and has contributed to doubling the area burned by wildfire across the western U.S. since 1984. This in addition to increased drought and aridity in some areas across the U.S. may contribute to conditions which are less favorable for the use of prescribed fire or other fuels treatments. It will be imperative for managers to understand these impacts and take collective action (including increased use of prescribed fire and mechanical treatments) to bring fire back into balance.

   Nearly all ecosystems – shrublands, deserts, grasslands, forestlands, woodlands, tundra, and wetlands – are undergoing several cascading effects from climate change. The heat and aridity of climate change can impede post-fire natural regeneration, increasing the risks of vegetation type conversion (e.g., trees to shrubs, or shrubs to grass). These impacts threaten the function of these systems and the ecosystem services they provide including water, carbon sequestration, biodiversity, and more. Work to bring fire back into balance must account for climate change. New management options for climate change address how these altered conditions change the reference conditions - fire frequency by vegetation type - that are the goal of landscape management actions and change how different actions can store more ecosystem carbon in the long-term, reducing climate change. Traditional, place-based ecological knowledge and scientific research provide key information to increase resistance and resilience. Concurrent and cascading disasters require additional consideration in planning, preparation, and implementation, including across boundaries and overlapping territorial interests to address their increasing frequency, complexity, and cost.

New Management Option: Use science and traditional, place-based ecological knowledge to inform climate-smart land and fire management.

Under climate change, previously utilized land and fire management practices may no longer be effective in reducing fire risks or maintain ecological integrity. Scientific research and experimentation can improve understanding of how climate change is altering ecosystems, fire regimes, fire behavior, post-fire vegetation regeneration and water quality; and test the effectiveness of field solutions. Traditional, place-based ecological knowledge can provide indigenous fire and land management practices that have proven to successfully adapt to environmental change, including the use of prescribed fire. Fire managers clearly expressing information needs and research scientists listening and directly collaborating in the field with managers can together produce practical and scientifically robust solutions using an adaptive management framework.

New Management Option: Use predicted future conditions under climate change as potential reference conditions for the proactive use of wildland fire.

Current fire management practices in the U.S. primarily use estimates of pre-European settlement vegetation and fire frequency as reference conditions. Yet, scientific research shows that climate change is altering vegetation and fire regimes, possibly preventing the return to previous conditions. This will require managers to aim at predicted future vegetation and fire frequencies under climate change as reference conditions for prescribed burning, managed wildfire for resource objectives and post-fire recovery (including reforestation). Additionally, understanding pre-European settlement indigenous cultural burning regimes as natural background is important in furthering the use of traditional ecological knowledge. Scientific research and appropriate modeling tools, ideally specific to a site or region and in collaboration with fire managers, should consider climate change, drought, invasive species, insect pests, traditional ecological knowledge and other factors that allow estimation of potential future reference conditions under a range of scenarios. Furthermore, scientific research can provide estimates of long-term ecosystem carbon changes of different management options, to reduce the emissions that cause climate change.

New Management Option: Manage landscapes and fuels for fire regimes altered by climate change, fire and other concurrent and cascading factors.

Climate change, fuel buildup from fire suppression, increasing human ignitions, invasive species, insect and disease outbreaks, and other factors interact in complex ways to exacerbate fire risks. Fire and land managers need to better collaborate to reduce the impacts from what will become larger and longer-duration fires. Co-production of fire management solutions, where scientists and traditional, placed-based ecological knowledge resource people and cultural burners work with fire managers can reduce wildfire hazard across landscapes while supporting an array of ecosystem services.

2. Workforce capacity, health, and wellbeing

While the workforce issues described here are not exhaustive, the needs of the wildfire resilience sector are increasing (mitigation, preparedness, prevention, response and post-fire). The seasonal workforce, across all levels of government and private crews, cannot adequately and safely address the year-round work; and the year-round workforce is challenged to meet the extra demands on top of their regular responsibilities. Workforce attrition, because of health and wellbeing, and planned retirements, is creating a deficit in successional planning and institutional knowledge. It is also increasingly difficult to attract new people to this work.

> While the term "safe" has many definitions, it is used in this document to refer to creating and sustaining conditions that limit the harmful effects of wildland fire. When considering response actions, fire managers prioritize human life over landscapes and property and will make decisions accordingly. This includes consideration for the risk to firefighters in a firefighting scenario. This is referred to as making "risk-based decisions." It is important to note that all firefighting is risky and there are often situations that are never considered "safe."

Retaining, hiring and attracting historically underserved, marginalized, and excluded populations is also an issue. Stakeholders can work to ensure that these activities are consistent with diversity, equity and inclusion (DEI) principles. There is also a need to further utilize contributions from tribal, contractual, and non-governmental organization workforces to help meet the demands placed on the current wildland fire management system.

There is inadequate attention to, and resources for, workforce health and safety, including mental health issues. These issues apply to all aspects of wildland fire management and operations including, but not limited to wildfire suppression, preparedness, mitigation (including prescribed fire use), prevention, and wildfire recovery. Health and safety risks to firefighters from hazardous smoke and materials are also increasing as they work more in the wildland-urban interface (WUI) environment. Training and equipment are not widely available to local responders.

New Management Option: Increase the range of local roles, and access to training and equipment.

Local groups can provide training programs, including virtual and distance options, to build local workforce capacity to address the numerous mitigation, preparedness, prevention, response and post-fire needs at the appropriate levels. An increase is needed in not only training and equipment but also to diversify the kinds of roles needed to address all three Cohesive Strategy goals at the local level. The creation of place-based opportunities is also key to providing for this workforce.

New Management Option: Provide for the health and well-being of the local workforce.

Critical stress from emergency response incidents leads to the deterioration of mental, physical, social, and spiritual health in the wildland fire management workforce. Prevention, intervention, and post-intervention strategies should be strengthened to enhance overall health of the workforce. Expanding access, resources and support through local and regional medical and social services is essential to meet the health needs and well-being of the local multi-organizational workforce. This support may come in different ways from partner agencies and organizations (e.g., Centers for Disease Control and Prevention, American Medical Association, and U.S. Fire Administration) and requires service organizations to understand fire health and mental-health issues and appropriate actions. Support from the workforce supervisory chain is also necessary.

New Management Option: Utilize a comprehensive recruitment, development and retention strategy to keep pace with workforce needs.

It is increasingly difficult to attract new people to wildfire suppression, preparedness, mitigation, prevention, and wildfire recovery work. Attrition further adds to the reduction in overall workforce capacity and loss of institutional knowledge. The full implications of organizational capacity and shifting staffing patterns should be taken into consideration to assess the feasibility of meeting the goals of the Cohesive Strategy. Specific efforts in recruiting and training people from multiple backgrounds, perspectives and identities will maximize the diversity represented in fire management and strengthen the workforce.

3. Community resilience (preparation, response, and recovery)

The magnitude of wildfire impacts to communities has significantly increased, especially in historically underserved, impoverished, and marginalized communities. These impacts include evacuation, smoke-related health impacts, the loss of homes, businesses, infrastructure, and entire communities. Community capacity to address these issues is a challenge in of itself. Additionally, the impacts of fire, including smoke, on community members' mental and physical health are increasing. New construction and rebuilding in wildfire-prone areas is often occurring without employing codes and standards that address wildland fire, and development is further exacerbated by the housing crisis many areas are experiencing. Adopting strong WUI and interface building codes is important in addition to stronger codes for municipal and non-municipal areas, as appropriate for each community. Significant investments in community resilience, including local capacity building, community planning, post-fire recovery planning, and implementation planning, must be made. Continuing work on wildfire preparedness, prevention (including wildfire risks posed by utility lines), mitigation, response and post-fire recovery at the community level is necessary and should be calibrated to current and future realities including altered fire regimes, long-term economic issues, damage to infrastructure such as water systems, and the potential impacts of post-fire flooding and debris flows.

New Management Option: Prepare for and mitigate post-fire impacts, and focus on community mitigation, evacuation, and recovery planning.

Post-fire impacts to communities and landscapes can be significant, including increased flood risk and impacts to infrastructure. New data-based and artificial intelligence models along with remote-sensing and field-based warning systems offer opportunities to help build community resilience by predicting post-wildfire impacts on infrastructure (e.g., communities, transportation corridors, and water supplies). Communities can work to prepare by mitigating the extent or severity of post-fire impacts as well as planning for recovery in advance of wildfire; and by working inclusively with their whole community, including vulnerable populations most likely to be negatively impacted by wildfire. Impacts are often borne disproportionately by historically underserved, impoverished, marginalized, and excluded populations.

Updated Management Option: Reduce accidental human-caused ignitions, including those caused by electrical system infrastructure.

The vast majority of wildfires are caused by humans. Fire prevention programs, when applied, have reduced the incidence of wildfires. All agencies, tribes and organizations can adopt and implement robust, year-round, fire prevention programs across their jurisdictions. This is an ideal opportunity for the collaborative co-management of risk. In addition, electrical utilities can reduce ignitions by burying powerlines or other mitigation measures. Additional research may be needed to understand sources of human-caused ignitions and alternatives that can reduce wildfire starts.

New Management Option: Focus on community smoke readiness.

The health impacts of smoke on populations from both wildfire and prescribed fire can be reduced by ensuring notification of prescribed fires, awareness of smoke health effects and providing options for reducing or mitigating smoke exposure (e.g., reduction of outside activity when air quality index (AQI) is moderate or higher, use of HEPA air purifiers in homes of people who are at increased risk of experiencing health effects of exposure to smoke), and instituting communication systems about the causes and tradeoffs due to smoke, and on planned activities for both prescribed fire and wildfires. Ensure communities are provided with information about differences between prescribed/cultural burning and wildfire-related events, including mitigating smoke impacts so they can make informed decisions about reducing the impacts to vulnerable residents. This includes consideration for acute versus chronic exposure as tradeoffs.

New Management Option: Work with public health agencies, tribes, and partners, in addition to land and fire management stakeholders, for community resiliency.

Community resiliency requires collaborative efforts among all stakeholders, including public health agencies, tribes and other affected groups and organizations that have not always been a part of the management decision-making process. Inclusive and meaningful community

engagement, which makes space for community members with diverse backgrounds, perspectives, and lived experiences, is essential to community resiliency.

New Management Option: Incentivize communities to adopt codes, standards, and zoning ordinances and to implement stronger land-use planning activities.

Before and after a fire, codes, standards, and zoning regulations can play a major role in improving the ability of structures and communities to receive wildfire. Incentivizing best practices in rebuilding and new construction, and the implementation of stronger land-use planning can help reduce the vulnerability of communities. The social and environmental justice implications of land-use planning, codes, standards, and zoning ordinances should be explored and addressed during the planning process. These efforts are most effective when planning efforts include all those who are impacted.

New Management Option: Create local collaboratives, forums and/or governance for communities to learn about, share and complete this work.

Community action, with information and support from agencies, organizations, programs, and other community groups, can be extraordinarily effective in building awareness, capability, and success in reducing wildfire risk and preparing for, responding to, and recovering from damaging wildfires.

4. **Diversity, equity, inclusion (DEI) and environmental justice (EJ)**

Wildland fire impacts increase existing systemic inequities, resulting in further harm to historically marginalized, underserved, impoverished, and excluded populations. As we advance fire adaptation and resilience work, a strong focus on DEI (e.g., attracting and hiring for the wildland fire workforce) and EJ impacts (e.g., wildfire, wildland fire smoke and land management decisions) needs to be prioritized. Consider investments and solutions to ensure that they do not further entrench inequitable systems, including impacts tribes continue to face. It will be essential to guarantee equitable access to programs, grants and activities and reduce burdens to creating resilient landscapes and communities. Both community empowerment (enabling use of all community assets) and engagement (involvement in decision-making) are critical.

New Management Option: Empower communities to leverage assets to enhance wildfire resilience.

Community assets, including individual experiences, TEK, skills and abilities, informal associations, and formal institutions, should be recognized and leveraged as part of local solutions; this includes working in true partnership and making space for people, in addition to those who work for governmental agencies, to participate in fire resilience work.

New Management Option: Engage the community in local solutions and decision-making.

Community engagement occurs when people are included in discussions, decision-making, and implementation of the parts of government that affect their lives. Community engagement involves sharing power by proactively working with community stakeholders, including tribes, and building meaningful partnerships to inform decision-making. This effort requires inclusive communications that diverge from what has been the dominant narrative, and communications that reach people who have not been provided access to resources and information sufficiently in the past. Community engagement should be representative of the whole community, including those who have been historically marginalized and excluded.

New Management Option: Leverage and develop DEI action plans that institutionalize more racially just institutions and workforce diversity in wildland fire programming.

DEI action plans should guide local and national strategies that advance fire protection policies and programs. These plans often create equity outcomes and goals, include baseline data analysis, innovate service and program delivery to reduce disparities, evaluate and measure success, provide expertise and capacity to affect change and drive workforce diversity and leadership pipelines.

New Management Option: Consider DEI in budgets, budgeting, and contracting.

Budgets and budgeting processes should address the racial, ethnic and cultural roots of inequity that currently exist whenever making revenue, procurement, and contract decisions. Racial equity in budgeting can also be highly cost-effective when done with community input. Provisions for economic opportunities for all businesses should be leveraged to address structural barriers for small business development, particularly with businesses owned by traditionally underserved populations.

NEW MANAGEMENT OPTIONS

WFLC affirms that the original 19 Management Options are still valid. In addition, based on the identification of Critical Emphasis Areas that have surfaced over the last decade and the implementation challenges not addressed in depth in the 2014 Cohesive Strategy document, WFLC presents the following additional Management Options which stakeholders can consider to increase implementation of the Cohesive Strategy in today's rapidly changing wildland fire environment.

Resilient Landscapes
Expand or maintain prescribed fire in areas of current use.
Expand prescribed fire in areas of limited current use.
Utilize prescribed fire on a limited basis.
Manage wildfires for resource objectives in forested areas.

Manage wildfires for resource objectives in non-forested systems.
Manage wildfires for resource objectives in areas where increased awareness of community risk is necessary.
Use non-fire fuels treatments supported by forest products industry.
Use non-fire fuels treatments in non-forested areas.
Use non-fire fuels treatments in areas with limited economic markets.
Use fuels treatments as precursors to prescribed fire or managed wildfire.
Use science and traditional, place-based ecological knowledge (TEK) to inform climate-smart land and fire management.
Use predicted future conditions under climate change as potential reference conditions for the proactive use of wildland fire.
Manage landscapes and fuels for fire regimes altered by climate change, fire and other concurrent and cascading factors.

Fire Adapted Communities
Focus on home defensive actions.
Focus on combination of home and community actions.
Adopt strong building and construction codes in municipal areas.
Adopt strong building and construction codes in non-municipal areas (including WUI and interface codes).
Prepare for and mitigate post-fire impacts, focus on community mitigation, evacuation and recovery planning.
Reduce accidental human-caused ignitions, including those caused by electrical system infrastructure.
Reduce human-caused incendiary ignitions.
Focus on community smoke-readiness.
Work with public health agencies, tribes, and partners in addition to land and fire management stakeholders for community resiliency.
Incentivize communities to adopt codes, standards and zoning ordinances and to implement stronger land-use planning activities.
Create local collaboratives, forums and/or governance for communities to learn about, share and complete this work.
Empower communities to leverage assets to enhance wildfire resilience.
Engage the community in local solutions and decision-making.

Leverage and develop DEI action plans that institutionalize more racially just institutions and workforce diversity in wildland fire programing.
Consider equity and inclusivity in budgets, budgeting, and contracting.

Safe, Effective, Risk-based Wildfire Response
Prepare for large, long-duration wildfires.
Protect structures and target landscape fuels.
Protect structures and target prevention of ignitions.
Increase the range of local roles, and access to training and equipment.
Provide for the health and well-being of the local workforce.
Utilize a comprehensive recruitment, development and retention strategy to keep pace with workforce needs.

Overall, these new 15 Management Options, taken together with the original 19 Management Options from 2014, represent opportunities at the local level to change the negative trajectory and impacts of wildland fire.

Stakeholders at all levels are encouraged to utilize these while considering what will assist them in learning to live with wildland fire. All the management options in this document should be approached with diversity, equity, and inclusion considerations as a lens for evaluating their application.

CHALLENGES TO IMPLEMENTING THE COHESIVE STRATEGY

While the above Management Options are focused on local ways to implement the Cohesive Strategy and affect change, this section is focused on national challenges that will take the breadth and depth of leadership, policymakers, partners, and others – a true "all hands, all lands" approach – to further identify and address the needs described in these challenges to implementation. These challenges have been identified as hurdles or roadblocks that reduce the impact of the Cohesive Strategy due to factors both internal and external to the wildland fire and land management community. By specifically identifying them and issuing a call to action, WFLC is enlisting the broader national community to address and create a path forward for positive change.

The following implementation challenges have surfaced since the original development of the Cohesive Strategy and are providing substantial barriers to implementation of the Cohesive Strategy:

1. **The existing wildland fire management system has not kept pace with demands.**

   The wildland fire management system needs are complex involving response, mitigation, fuels management, prevention, community adaptation to address fuel types, communities,

organizations, missions, policies, land, community and resource values, social and equity concerns (including public health), and costs. The current system includes a sophisticated, coordinated structure for wildfire response, but there is no similar system in place to address the collective needs of all these issues (especially pre- and post-fire).

The current wildland fire management structure does not equally support wildfire response, hazardous fuels mitigation, post-fire challenges, and community fire and smoke adaptation across the country. Organizational and community adaptation in the wildland fire management system is key to understanding and adjusting to change. This includes bridging the important gap between structural and wildland fire; addressing the uncertainty brought about by climate change, concurrent and cascading disasters, and other interacting factors; further utilizing traditional, ecological, place-based knowledge; and taking advantage of rapidly changing technology such as new sensors, platforms, powerful analytics and computers, and sophisticated models with visualization. Firefighter and wildland fire practitioner qualifications and training standards are not consistent and reciprocal across all levels of government and those external to government, especially outside of response. These are just a few of the many issues that have surfaced as indicators that the wildland fire management system needs a systems analysis and a holistic approach to address the realities of today's rapidly evolving wildland fire environment.

2. **There is still a need for the significant increase in the proactive use of fire (prescribed and managed wildfire) across the country.**

The original framework includes Management Options for increasing the use of prescribed and managed wildfire for resource objectives but meeting those objectives has been difficult for a variety of reasons and is not significantly contributing to landscape resiliency at scale.

Prescribed fires refer to the planned ignitions of fire by a team of fire experts under applicable laws, policies (including considerations for weather conditions) and regulations to meet specific objectives such as to restore health and resiliency to fire dependent ecosystems.

Managed wildfire for resource objectives in this context refers to the opportunistic activities that are presented to fire managers resulting from unplanned ignitions that result in reduced future wildfire risk and benefits to the landscape. The Cohesive Strategy recognizes that there is no one land management activity (e.g., prescribed fire, hazardous fuels reduction treatments) that will convert the condition of our landscapes to resiliency at scale and protect communities in a timely manner. Achieving all three goals of the Cohesive Strategy will require a collective response and investments by all stakeholders and the use of all available and appropriate tools.

While "planned and unplanned ignitions" are used to describe the two broad types of wildland fire in the fire management world, this document serves to engage a broader audience around understanding how prescribed and managed wildfire for resource objectives can be used proactively as tools in the fire management toolbox for better outcomes.

Like all tools in the land and fire management toolbox, the opportunity to manage unplanned ignitions are evaluated for use against risk tradeoffs in real time to be sure that it is the right tool for use, at the right time, in the right place, under the right conditions, for the right reasons. There are more advanced tools available now for planning and implementation of these activities to achieve the Cohesive Strategy goals.

Prescribed and managed wildfire for resource objectives may not be options in all places. Fire regimes and ecosystems (e.g., chaparral and lodgepole pine) that require stand replacement fire may create complicated situations because of subsequent vulnerability to invasive species (e.g., chaparral) or hazardous burning conditions (e.g., lodgepole pine). Other ecosystems have too much fire because of fire-adapted invasive species (e.g., sagebrush steppe, southwestern deserts) or a changing climate (e.g., tundra). Strategies for these systems should be an important part of pre-fire, fire response and post-fire management. Strategic, ongoing communications about the need for, and tradeoffs of the proactive use of wildland fire is needed year-round.

Multiple barriers continue to exist to the proactive use of fire. Liability insurance for practitioners and other protection issues continue to be a challenge for practitioners. While there are many local successes, fuels treatments and prescribed fire maintenance are still not occurring at adequate levels to change landscape resiliency at scale. Continuing to learn from TEK and using cultural burning, as appropriate, will be value-added to land managers. Climate change is altering time windows for prescribed fire. Additionally, state-level laws, policies and regulations on prescribed and managed wildfires create 50 different state programs that lead to barriers in resource sharing, certification and reciprocity, and capacity limitations. Further, federal agencies, tribal nations, state air quality agencies, state fire management agencies and other partners are not well-coordinated in the permitting process for prescribed fire use. Increasing communication and collaboration between federal fire land managers, state and local air quality agencies and tribal nations continues to be a high priority to ensure adequate protection of public health and air quality associated with fire-related smoke.

Public understanding and acceptance of these activities is necessary and requires year-round education and communications about the ecological and community benefits as well as the risk tradeoffs (e.g., smoke and air quality impacts, and the potential for escaped burns) that must be acknowledged to make substantial progress towards the three goals.

The need for increasing the proactive use of fire is essential to reduce accumulated fuels, restore resiliency to landscapes and protect communities. All land and fire management agencies, tribes and organizations should take advantage of opportunities to apply and learn from the proactive use of fire (using planned or unplanned ignitions) when the risks and tradeoffs associated with the activities are allowed and acceptable.

3. **Science, data, and technology has not kept pace with the extent of wildland fire and postfire impacts or been fully integrated into decision-making for fire, land and community managers.**

   Science, data and technology are at the core of implementing the Cohesive Strategy, realizing success, and adapting to future challenges. There are a number of explicit issues facing land and fire managers as well as communities including: never-before-seen fire behavior and fire effects, cross-cutting climate change issues, a lack of a comprehensive national assessment of the ongoing wildland fire situation and its impacts, fire behavior prediction and other tools are not effectively utilized and communicated to decision-makers and practitioners, a need for an assessment or inventory of ecosystem data, and a need for increasing investments in the building science related to wildland fire and community resilience.

   Adaptive management and using the best available information, data and tools should be the norm in land and fire management decisions, including learning from traditional ecological knowledge. Improving connections among providers of science, data, and technology and with the fire and land management community along with indigenous knowledge will help ensure critical information is available to decision-makers. Investment in fire science and technology has lagged, in fact it decreased over the last ten years, and has only started to increase with the drastic damages resulting from wildfires in recent years. Co-production is the best approach to ensure research and data collection and application meets the needs of fire managers. The factors affecting wildland fire are complex and dynamic, which require scientists working with federal, state, tribal, local and non-governmental practitioners and managers to jointly define the strategic information, data and tool requirements in the near future and over the next 10-20 years so that the best science is identified and used when and where it is needed.

4. **Markets, infrastructure, and skilled human resource capacity are inadequate to utilize biomass and other wood products from ecosystem management or hazardous fuel treatments.**

   It was noted in the original Cohesive Strategy framework that developing markets and infrastructure for utilizing woody biomass (small diameter material) was a key management option. Today, there remains a lack of markets, infrastructure, and skilled human resource capacity to utilize this biomass.

   Natural resource management activities that produce usable biomass provide a range of benefits for supporting the three Cohesive Strategy goals. Risk reduction activities provide opportunities for the utilization of biomass before prescribed fire is used, is an economically viable option in many areas, and can contribute to renewable energy development and reducing climate change impacts. An increased focus is needed on creating new pathways for reducing hazardous fuels. New and expanding markets for biomass will create new ways to reduce fuel loads and accelerate forest restoration. Hazardous fuels, forests that are too dense, and event driven fuels such as those created by severe storms can be treated at scale and at an accelerated pace because the demand for biomass will be considerably greater.

5. **Education, communications and marketing are insufficient to inform stakeholders and decision-makers about the Cohesive Strategy and its implementation.**

   Despite the development of a National Communications Framework to accompany the Cohesive Strategy in 2014, there has been relatively little information and education communicated to and within agencies, tribes, organizations, and stakeholders about what the strategy is and how to implement it. There is a need for more integrated community and natural resource program planning and implementation at the national, regional, state, tribal and local levels to bring more expertise and resources together to address the areas of greatest wildfire risk, and to simultaneously produce multiple resource benefits (e.g., work products, improved wildlife habitat, reduced invasive insect and disease infestation impacts and community risk reduction to the built environment).

CALL TO ACTION

We stand in a unique time, in a unique position. History will continue to judge the actors and their actions, as well as the lack of action taken to change the increasingly negative trajectory of wildland fire. We cannot be diverted from the vital actions that are needed to address these issues. The look back across almost ten years has reignited the urgency and seriousness of the challenges to implementing the Cohesive Strategy. The experience led to thoughtful and meaningful additions to the Cohesive Strategy framework but also exposed a glaring need for immediate, collective, collaborative, strategic engagements, and activities to improve wildland fire outcomes across landscapes, in and around communities, and within response. No one agency or organization can effect change at the level and scale necessary to improve these outcomes. Every person, community, organization, tribe, and agency with a stake in the outcomes of wildland fire must work together and take action to redeem their responsibility to reduce the risk of loss and change the trajectory of wildland fire. This must occur collectively and across all landscapes to address these five challenges and take the necessary steps for positive change. Tradeoffs will be necessary, investments must be collective, and all stakeholders must understand the value of taking short-term risks for longer-term benefits.

Success of the Cohesive Strategy and addressing wildfire challenges requires a definition of the desired outcome in 20-30 years and actions that will be required to accomplish those outcomes using the best science, TEK, program knowledge and modeling tools available. Telling the Cohesive Strategy story of reaching those accomplishments is equally important.

We no longer have the luxury of waiting to see what happens. The time to take collective action at congressional, national, federal, tribal, state, and local levels is now. Bold actions to address the five challenges to Cohesive Strategy implementation will set the stage for reversing the negative trajectory and result in positive wildland fire outcomes over the decades to come. We call on all of you to collectively engage in meeting these needs.

CONCLUSION

The purpose of this Addendum Update is to affirm the Cohesive Strategy framework from 2014 and to identify additional emphasis areas that have surfaced along with challenges that have impeded more substantial progress towards Resilient Landscapes, Fire Adapted Communities and a Safe, Effective, Risk-based Wildfire Response. Building upon the 2014 Cohesive Strategy provided us with a rich opportunity to examine what has changed in the "all hands, all lands approach" and what is new in the wildland fire environment since. This document is considered a supplement to the original 2014 framework. It presents new Management Options, enhanced strategic direction, and critical areas for immediate focus in implementing the Cohesive Strategy through the next quarter century. The ultimate success of the Cohesive Strategy effort depends on how the Call to Action, strategic direction, and national priorities can be translated into the on-the-ground, local actions of agencies, tribes, organizations, communities, and individuals with meaningful, cumulative effects.

In the 2014 Cohesive Strategy framework, three pillars of success are discussed. The three pillars still hold true today.

> *Planning efforts thus far have established a firm foundation for achieving strategic alignment, one of the three pillars of a successful strategy. Collaborative engagement, a second pillar of success, has been a staple of the planning efforts thus far, and will continue to be a high priority for involved partners. The final pillar, programmatic alignment, is unique in that it begins to shift the focus back to individual roles, responsibilities, and actions of entities, agencies, organizations, and the public at large. Alignment with the strategic direction and national priorities is essential in this shift.*

To build upon these pillars, increased urgency and work at greater scales, including a broader expanse of partners, will be necessary to catch up with and overtake the immense challenges we now face. The unfailing commitment exists, and this Addendum Update enhances the Cohesive Strategy framework to help achieve success.

Approved this 31st day of January 2023:

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