



*CANADIAN INTERAGENCY FOREST FIRE CENTRE INC.  
CENTRE INTERSERVICES DES FEUX DE FORÊT DU CANADA INC.*

# CIFFC WILDLAND FIRE PREVENTION AND MITIGATION ACTION PLAN

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## Executive Summary

Destructive and record-setting wildland fire events have increased in frequency and severity in the past 20 years. Thousands of homes and businesses have been destroyed, tens of thousands of Canadians have been forced from their homes and many more have suffered smoky days and felt the social and economic impacts of challenging wildland fire seasons. Indigenous and remote communities have been disproportionately affected. Climate change projections tell us that extreme fire weather is more likely in coming years, and Canadians should prepare for more record-breaking summers living with wildland fire. Canada's wildland fire suppression and emergency response efforts are effective but, on their own, will not be enough to reduce the risk that difficult wildfires will become disastrous for homeowners, communities, and businesses.

Canadians can adapt to climate change and be resilient in the face of more frequent and extreme wildfire events. Half of wildland fires in Canada are human-caused and can be prevented. Wildland fuels and the built environment can be modified to reduce fire spread. Practiced preparation and cooperation by response partners will reduce wildfire impacts on people and the economy. A whole-of-society effort is required. The past decade has demonstrated the future of wildland fire risk: communities will be at risk; people and businesses will be disrupted. The coming decade provides an unmatched opportunity to galvanize leaders across society in a focused effort to prevent and mitigate disastrous outcomes.

In 2016, the Canadian Council of Forest Ministers (CCFM) renewed its commitment to the Canadian Wildland Fire Strategy and identified a priority to coordinate pan-Canadian efforts to prevent destructive wildland fires and to prepare Canadians to mitigate impacts when a wildfire does occur. In 2020, under direction from the CCFM, FireSmart Canada joined with the Canadian Interagency Forest Fire Centre (CIFFC) to provide a consolidated and stable foundation on which to build new pan-Canadian prevention and mitigation efforts. The CCFM also mandated the development of this Action Plan to identify and guide future prevention and mitigation activities.

With a vision of *Canadians working together to become better prepared and more resilient to wildland fire risks*, this Action Plan organizes new effort around four themes:

- Build and Expand Collaboration;
- Communicate to Build FireSmart Awareness as a Foundation for Engagement;
- Build the Tools that Support the FireSmart Vision; and
- Support Healthy and Resilient Forests.

Twelve Priority Actions (listed in the table below) are designed to set new direction to:

- expand the FireSmart conversation with strategic partners;
- support FireSmart partners and effort within CIFFC's governance model;
- provide structure and support to develop key prevention and mitigation messages together and ensure those key messages will be delivered in a culturally appropriate way;
- expand out from the interface and look at risk reduction actions across the landscape;
- engage with health and public safety partners to mitigate the impact of far-ranging and long-term impact of wildfire events, smoke, and evacuation; and
- take a broad-minded view of risk reduction to work proactively with partners on wildland fire policy, interagency preparedness, response and recovery.

Theme	Priority Actions
<b>Build and Expand Collaboration</b>	Build on existing relationships with Indigenous Peoples
	Establish the FireSmart Canada Advisory Committee
	Build capacity and working collaboration
<b>Communicate to Build FireSmart Awareness as a Foundation for Engagement</b>	Commit to a structured communication strategy
	Demonstrate FireSmart can reach people where they live
	Position and support the FireSmart brand
<b>Build the Tools that Support FireSmart Risk Reduction</b>	Connect National Risk Profile with practical tools for landscape risk assessment
	Advance a risk-appropriate technical standard for new building developments
	Develop tools to support mitigation of smoke and health impacts
	Improve existing FireSmart materials and programs
<b>Support Healthy and Resilient Forests</b>	Develop pragmatic approaches to FireSmart forest management
	Support prescribed and traditional burning

Measuring whole-of-society outcomes from a Strategy such as this is complex, particularly when goals include increasing resilience of Canadians and forests, reducing risk, and reducing socio-economic impacts. CIFFC and its partners should work with research partners to deliver three studies by 2025 that will help Canadians to assess how FireSmart activities contribute to improving resilience and reducing risks. Over the next five years, four elements should be tracked and reported to the CIFFC Board of Directors to measure the success of this Action Plan:

- progress on the Priority Actions;
- changes in awareness and engagement of key audiences;
- the percentage of communities and/or regions, categorized by assessed risk, that have engaged in partnerships to deliver FireSmart programs locally; and
- an assessment of the robustness of the collaboration model and whether the conversation with strategic partners has been expanded and sustained.

## Introduction

Wildland fires have forced tens of thousands of Canadians from their homes in the past two decades (NRCan, 2021). Many more have suffered smoky days and felt the social and economic impacts from disrupted communities, businesses, and forested landscapes. Indigenous and remote communities have been disproportionately affected (Beverly and Bothwell, 2011; Christianson, 2014; McGee et al., 2018; NRCan, 2021). Climate change projections tell us that extreme fire weather is more likely in coming years, and Canadians should prepare for more record-breaking summers living with wildland fire. Canada's wildland fire suppression and emergency response efforts are effective but, on their own, will not be enough to reduce the risk that difficult wildfires will become disastrous for homeowners, communities, and businesses. A renewed focus is required to prevent destructive wildland fires and prepare Canadians to mitigate the impacts when a wildfire does occur.

FireSmart Canada – a partnership among governments, communities, and business – has raised awareness that mitigating risk is possible and has created tools and initiatives to support local action. Provincial, territorial, and federal government departments, along with local communities, have put funding and effort into education, planning, training, and treating hazardous fuels.

In 2021, under direction from the Canadian Council of Forest Ministers (CCFM), FireSmart Canada joined with the Canadian Interagency Forest Fire Centre (CIFFC) to extend the reach of FireSmart (Intelli-feu) concepts to all regions of Canada where wildland fire is a risk and to expand the collaboration among more partners<sup>1</sup> to achieve, with their collective strengths and insights, what no one agency can do alone. This Action Plan has evolved from many conversations among those partners - all genuinely energized by the need to reduce wildland fire risk for Canadians. It has been largely agreed that:

- A new effort on prevention and mitigation programs is required. Prevention and mitigation programs have been active and respected in Canada, but under-resourced.
- This renewed pan-Canadian effort to reduce risk – whether it be in preventing ignitions, modifying wildland fuels or the built environment to reduce flammability, or interagency preparedness for effective wildfire and emergency response - should be an integrated effort such that local partners and the public get consistent support.
- While prevention, mitigation, and aspects of preparedness define the goals of this renewed effort, FireSmart is the publicly recognized brand that Canadian partners should use to advance public awareness and engagement. FireSmart, then, will become synonymous with proactive wildland fire risk reduction (i.e., prevention and mitigation) in Canada.
- This is certainly not a strategy just for CIFFC and its wildland fire agency members – they are facilitators in this effort. This is a strategy for all partners and Canadians who share in the responsibility to reduce risks from wildland fire.

### **Vision**

*Canadians working together to become better prepared and more resilient to wildland fire risks.*

**The goal of this Canadian Wildland Fire Prevention and Mitigation Action Plan** is to make Canada more resilient to wildland fire risk and a changing climate by:

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<sup>1</sup> There are many key partners who need to be engaged to make wildland fire prevention and mitigation a success. The Acknowledgements indicates the many people and organizations who are presently engaged and contributed to building this Action Plan and illustrate the diversity of perspectives required to develop a whole-of-society approach to risk reduction.

- building collaboration among partners and the public;
- creating information products that are effective and culturally appropriate;
- developing tools and sustaining initiatives that assess and reduce risk; and
- extending a risk-reduction focus across forested regions to support healthy and resilient forests for future generations.

## Background

Most of Canada’s forests are adapted to fire and have been sustained and shaped for centuries by natural fire regimes and traditional burning by Indigenous Peoples. Today, people depend on forests for economic and social benefits and many live in or near forested landscapes. Over the last 20 years, Canada has witnessed challenging wildfire seasons more frequently and a number of high-profile, economically destructive, and socially disruptive events. Recent events are evidence of a trend for which Canadians need to prepare (Hanes et al., 2019; Hope, E.S. et al., 2016).

Losses of homes and businesses to wildland fire had been relatively rare after 1960 in Canada with the success of modern wildfire suppression. Expansions of human developments within forested areas are putting them at increased risk to wildfire threat. The Chisholm Fire in Alberta in 2001 and, in 2003, the Okanagan Mountain Park and McClure-Barriere fires in British Columbia were the beginning of a shift to noticeable direct impacts on communities and the economy that has continued over the last 20 years. Examples of record fire seasons and significant events have occurred in many provinces and territories. A century of fire suppression and forest management has produced a forest condition that is more flammable, in some areas, and susceptible to increasing natural disturbance from both insect and disease outbreaks and more severe wildland fires. Climate change scenarios project that these risks will increase (Wotton, et al., 2017) – at the same time that communities<sup>[1]</sup> and human activity are further expanding into the forest estate.

The economic impact of wildfire has increased. A single wildfire in the British Columbia interior in 2017 is estimated to have had economic impact of more than \$1.8 billion (Subedi, et al., in preparation) in a year when B.C. saw as many as 14 concurrent states of local emergency (Abbott and Chapman, 2018) and considerable impact from long-range transport of smoke (Matz et al., 2020). Economic impact from the 2016 Horse River Wildfire at Fort McMurray (estimated by various sources at \$6.9 billion to \$10 billion) is estimated to exceed government, insurance (\$3.8 billion) and private offsets by \$1.66 billion or more. (Subedi, et al., in preparation; Canadian Press, 2017).

There are significant financial incentives for government, stakeholders, industry, and the public to invest financial capital and other resources in prevention and mitigation of natural disasters. International studies of the benefits of flood risk reduction show benefit/cost ratios ranging from 3:1 to 5:1 for reductions in response and recovery costs through investments in prevention and mitigation (Public Safety Canada, 2017). Studies referenced by Hesselin (2018) showed even greater returns on investment in prevention and mitigation of wildland fires – 24:1 in Australia and 35:1 in the United States. As has been the case with other disaster events, disruption of lives and businesses can have additional hidden cost in physical and mental health, job loss, and uninsured economic losses. Social disruption and the impact of smoke are having increasing effect on long-term mental and physical well-being (Dodd et

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<sup>[1]</sup> The term “communities” is used inclusively throughout this Action Plan to mean communities large and small; from Indigenous communities, settlements, and villages to municipalities, military bases, workplaces and residential camps. If it has a name and sense of place, it’s a community.

al., 2018). Community evacuations are increasing in frequency and consequence. Since 1980, more than 1,160 wildfire evacuation events have occurred across Canada, involving approximately 500,000 evacuees (NRCan, 2021). Indigenous and remote communities are being disproportionately affected. Of those evacuation events, more than one-third occurred in Indigenous communities, and one of out every three evacuees was Indigenous.

People remain the direct agents of ecological and social disruption: more than half of Canadian wildland fires are human-caused. Attention to prevention of wildfire ignitions continues to require engagement of partners and the public as a first opportunity to reduce risk.

Wildland fire resiliency will be achieved through collective engagement of the public, communities, industries and partners in preventing wildfires, reducing risk, and mitigating impacts when wildfires occur.

### The need for a Canadian prevention and mitigation strategy

Canada's wildland fire management agencies have worked to increase their preparedness and wildfire response capabilities, and to strengthen their resource and information sharing capabilities through CIFFC. As wildland fire conditions continue to change, the limitations of traditional response and suppression tactics are becoming evident and agencies are being taxed beyond their collective capabilities. In the light of recent challenging wildland fire events, the CCFM identified a critical need to enhance wildfire prevention and mitigation capability (CCFM, 2016). In September 2020, the CCFM endorsed expanding the mandate of CIFFC to embrace prevention and mitigation and recommended that CIFFC partner with the Partners in Protection Association to enhance operation of the FireSmart Canada program for wildland fire risk mitigation.

This Action Plan is designed to strengthen the ongoing efforts of FireSmart Canada, CIFFC, and Canada's federal-provincial-territorial (FPT) wildland fire management agencies and to transform that effort from a wildland-fire-management-centric perspective to an integrated, collective one of all parties. Reducing risk transcends individual federal, provincial and territorial mandates. Solutions must be developed in an integrated and coordinated manner that includes all levels of government and all sectors of society. If all organizations and Canadians share an understanding of wildland fire risk and share in the responsibility to act - implementing a whole-of-society approach - Canada may become resilient and live successfully with wildland fire.

A pan-Canadian effort by society at all levels is needed *to promote the health and resilience of our communities* in the face of changing climate and increasing risks.

Previous wildfire risk reduction and mitigation efforts have focused on the interface where the forest meets community boundaries and homes. Mitigation efforts must address risks and provide other benefits across the broader forest<sup>2</sup> landscape: fires can impact people, communities, industries and public services of any size, both urban and remote.

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<sup>2</sup> The term forest is used generally and inclusively to mean the whole of flammable forested and other ecosystems and all the benefits they provide (such as food, clean water, and recreation). To be concise, this Action Plan will use

For those wildland fires threatening communities, homes, or industrial assets, leadership from other governments, response agencies, the public and the private sector must become involved to secure public safety and reduce damage to property and infrastructure. Quick response as the wildland fire arrives is seldom effective on its own. Those same partners must work together well in advance of that dry, windy day to: prevent human caused fires; make people aware of the risks; prepare for that combined response to be effective; and undertake proactive actions to modify fuels and structures so that fire will not transfer from landscape fuels to the many values at risk. Similarly, significant suppression and emergency response expenditure can be avoided by committed investment in prevention and mitigation. Success depends on proactive efforts that bring the resources and strengths of many partners together long before a wildfire event.

Wildfire prevention and mitigation requires, then, a collaborative effort among many partners and the people who may one day be at risk. Collaboration must evolve from awareness of the problem into a commitment to a shared responsibility for solutions among the partners and the public – no single agency has the mandate or resources to protect values at risk. And organizations will not be able to divide the problem into individual responsibilities and achieve success. In fact, reducing risk requires that all government levels, residents, and businesses understand the steps they can take themselves and together.

“Resilient capacity is built through a process of empowering citizens, responders, organizations, communities, governments, systems and society to share the responsibility to keep hazards from becoming disasters.” (PSC, 2017; 2019).

New strategic directions for wildland fire prevention and mitigation do not stand on their own. They are linked to a number of other Canadian commitments and initiatives that support public safety and health, emergency management, adaptation to climate change, healthy ecosystems, and sustainable economies:

- The Canadian Wildland Fire Strategy (approved by the CCFM in 2006 and renewed in 2016) highlighted the emerging trends and directions required to address increasing wildland fire risk resulting from climate change, community and resource expansion into wildland areas, and declining forest health. Focus on the goals of the Canadian Wildland Fire Strategy has continued through priority commitments and action plans that provide precise context to this Prevention and Mitigation Action Plan.
- The CCFM has articulated a continued vision to maintain resilient, healthy forests that support vibrant communities, stronger collaborations with Indigenous Peoples, and competitive economies (CCFM, 2019).
- This Action Plan provides an opportunity to support Indigenous Peoples and remote communities to improve health and safety in their communities following their own priorities.
- Canada has adopted the Sendai Framework for Disaster Risk Reduction (United Nations Office for Disaster Risk Reduction, 2015), which emphasizes better understanding natural hazards and building disaster resilience rather than ignoring low-probability events and waiting to respond to, and recover from, disasters.

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the word “forest” generally and not repeatedly add the relevant detail that grassland and peat ecosystems are also flammable and may present local concerns.

- The *Pan-Canadian Framework on Clean Growth and Climate Change* (Environment and Climate Change Canada, 2016), where Chapter 4 outlines adaptation priorities for the country, including federal, provincial, and territorial governments partnering to invest in infrastructure that reduces disaster risks and protects Canadian communities from climate-related hazards such as wildfires.
- The Emergency Management Strategy for Canada (EMSC) (Public Safety Canada, 2019) provides an all-hazard approach to risk reduction informed by evidence-based risk assessment with emphasis on expanded risk mitigation. The EMSC includes Canada's commitment to the UN's Sendai Framework and development of a National Risk Profile for natural hazards, including wildland fire. In addition to protecting public safety, implementing the EMSC will build resilient communities and infrastructure that supports the economy.

Development of this Action Plan raised several Actions that can be undertaken by CIFFC and its partners in the near term. Discussion also raised a number of challenges that will take more discussion among government, Indigenous, and private sectors to achieve broad, long term commitments to build resilience and whole-of-society collaboration to reduce wildland fire risks over the coming decades. This Action Plan is an important step alongside efforts to meet those strategic challenges across Canada.

### The Scope of Prevention and Mitigation

Traditionally, wildfire prevention and mitigation have been considered separate efforts: prevention designed to stop fire ignitions from happening and mitigation designed to reduce damages to homes and business once a fire occurs.

Prevention programs trace their origins to the earliest days of wildland fire management when unregulated land clearing and careless use of fire and other ignition sources were tackled through public education, enforcement of fire safety regulations, and engineering efforts. Wildland fire prevention programs exist in every part of Canada but have not been united under a pan-Canadian effort. Fire occurrence issues vary locally and efforts to change behaviours must be customized to local needs. Wildland fire prevention specialists gather in a CIFFC community-of-practice to exchange ideas and tools, but Canada has never undertaken or funded a pan-Canadian program designed to reduce fire occurrence at the source.

Organized efforts in Canada to mitigate risk for homeowners first evolved almost 30 years ago in Alberta from concepts promoted by the US Firewise program (NFPA, 2021). The Partners in Protection Association, a non-profit partnership of provincial, municipal and federal government departments, businesses, and committed individuals was formed and developed the FireSmart Canada program to promote community and homeowner protection from wildfires by providing guidelines and assistance in mitigating wildfire impacts through education, better planning, use of fire-resistant building materials, and landscape and vegetation management practices. Under the FireSmart banner, mitigation efforts have expanded somewhat to include reducing impacts on industry and infrastructure. The concept of "fire-smart forest management" has been around for more than 20 years (Hirsch et al., 2001) and has found acceptance in only some forest and wildland fire management activities, primarily in Alberta. To date, the scale of most FireSmart effort has been at the home and community interface.

Thirty years on, the development of this Action Plan is an opportunity to step back and ask, “What is the scope of prevention and mitigation that best reduces risk for Canadians?” The Canadian Wildland Fire Management Glossary takes a broad view of actions to be included:

Prevention is “actions taken to avoid the occurrence of negative consequences associated with a given threat; prevention activities may be included as part of mitigation;” and  
Mitigation is “the actions taken to reduce the impact of disasters in order to protect lives, property, the environment, and to reduce economic disruption.” (CIFFC, 2021)

There are several ways the past perceptions of prevention and mitigation are expanding and still fit within these established definitions:

- To most partners and Canadians, the definitions of prevention and mitigation are similar and overlapping. Canadian prevention and mitigation programming should take advantage of opportunities to communicate and support integrated prevention and mitigation messages and tools.
- Wildland fire is a landscape-scale phenomenon and efforts to prevent and mitigate the impact on people need to expand out from “the Interface” and look at actions across the landscape that contribute to or reduce wildland fire risk. Working at community and landscape scales will provide opportunities to tailor actions to where they can be effective. This landscape-scale perspective requires partners address a variety of ecological and social values at risk and management responses that can reduce risk over the coming decades.
- More than human-built assets are at risk. Climate change will have progressively noticeable effects on ecosystems and their health and resilience. Increasingly frequent and severe wildland fires will be a catalyst for change to the structure and condition of forest ecosystems. In addition to considering risk to people and structures, partners must rethink the management actions that will support benefits to communities and resilient ecosystems and forest-based economies in a changing climate.
- Much of the disruption of people and business and the impact on physical and mental health is related to smoke. Evacuations, while often prudent, can have subsequent negative impacts on evacuees’ physical and mental health, particularly for those evacuated from small remote communities. Decisions to evacuate are led by community leadership and must be respectful of the needs of each situation. Future discussions among community, emergency management, and healthcare partners should consider ways to mitigate the far-ranging and long-term impact of wildfire events.
- Partners interpret prevention and mitigation efforts to include all steps taken to proactively reduce risk, including interagency cooperation, emergency planning, and cross training, which are usually considered aspects of preparedness. In the end, the principle of making partnerships work to reduce risk ahead of a wildfire response should remain the priority.

## Scale

Under a pan-Canadian strategy, resilience will be achieved through partnerships and integrated effort at several scales. In the end, local partnerships at the landscape, community, and resident/neighbourhood scales are going to make the difference. Prevention and mitigation partners at the Canadian, provincial and territorial scales must bear in mind that their efforts are to support local activities. That is, to combine

their funding, resources, and expertise to support local partners, who need technical guidance, resources, tools, and incentives to create change.

Much of the wildfire mitigation effort to date has been at the Landscape-Community Interface<sup>3</sup> and homeowner scales, which remain an important focus. To reduce wildfire risk for Indigenous Peoples, connecting with communities will be critical. In larger communities, FireSmart efforts have had success at the neighbourhood scale, which demonstrates the importance of local connections and flexibility in how core program concepts can be delivered locally.

In some parts of Canada, however, a regional/landscape approach will be important for several reasons:

- Citizens identify with regional decision making, particularly when it comes to natural hazard and emergency management co-operation.
- The engagement of individual communities or neighbourhoods may be difficult when there is a perception that their individual wildland fire risk is very low.
- Public service and infrastructure providers may best engage at a regional scale.
- In the context of parks, protected spaces, and land areas less intensively managed, partners think more about ecosystems, ecoregions, and the values associated with natural systems than stationary built assets. Values at risk for these partners – and reducing risk while promoting healthy landscapes – will require conversations beyond the community scale.
- Wildland fire discussions can be aligned with landscape scale discussions of other natural hazards, forest management, regional government, and industry/business impacts.

Prevention and mitigation programs and partners working at the Canadian, provincial, and territorial scales must develop tools, key messages, and funding support that can be flexibly applied at local, community, and landscape scales. Ultimately, FireSmart will need to connect with individuals to raise awareness and answer the basic question, “What can I and my neighbours do to reduce our risk?” Efforts at different scales must be linked to be effective. Often, outreach directly to Canadians will happen through partners and local community initiatives. But in this web-connected world, it will be important for Canadians who reach out to find consistent information, key messages, programs, and materials. A whole-of-society effort requires that partners let their organizational boundaries fall away and focus on the objectives of reducing risk for Canadians.

With the merger of FireSmart Canada and CIFFC, there is an opportunity for CIFFC to facilitate a number of efforts and partnerships under this Action Plan. At the pan-Canadian scale, CIFFC’s role will be to:

- provide oversight and strategic direction to FireSmart programs;
- keep content of FireSmart moving in one unified direction;
- develop common themes, tools and materials;

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<sup>3</sup> This Action Plan uses the language of a Landscape-Community Interface (LCI) rather than the more traditional Wildland Urban Interface (WUI). Some communities do not see the land near the community as “wildland” – it is the land where people live, harvest food, recreate, and find renewal. And the community at risk may not appear very “urban”. This Action Plan will also use the term “the interface” as it includes the LCI and the interface with public services, infrastructure, industrial activities, and assets that are at a distance from communities.

- advise partners at provincial/territorial or local scales on best practices;
- support development of technical guidelines;
- recognize that implementation of FireSmart must be flexibly suited to each jurisdiction and must be culturally appropriate;
- facilitate engagement of non-wildland fire federal and inter-provincial groups;
- facilitate international agreements and partnerships (e.g., Firewise USA, North American Forestry Commission);
- facilitate multi-partner funding proposals and investments; and
- promote and co-ordinate analysis and science to inform future tools and support decision-makers.

At the provincial and territorial scale, partners will:

- promote fire-adapted communities by supporting regional (landscape), community, and individual actions;
- engage provincial or territorial partners in the overall prevention and mitigation goals;
- address priorities unique to their jurisdiction, but following common themes;
- facilitate multi-partner funding proposals and investments; and
- support development of common pan-Canadian tools and programs through staff time or funding.

## Investment

Reducing risk requires investment ahead of any impending emergency. The UN's Sendai Framework for Disaster Risk Reduction (UN 2015) encourages society to invest more in prevention and mitigation to empower local citizens ahead of disasters. To limit impact on public safety and economies, proactive resilience is commonly more cost effective when compared to the large sums spent on disaster response and recovery.

Certainly, additional effort described in this Action Plan will require additional investment to accomplish goals in a reasonable time. Shared responsibility means all partners will add their capacity to the problem. Sometimes that is funding, sometimes that is by organizing their program or local effort to support shared goals.

Attention will be required to three aspects of investment:

- Foundational salaries and operating funds are important to stabilize the merger of FireSmart Canada with CIFFC. Base capacity to support FireSmart Canada is currently being funded from the annual levy CIFFC assesses to its member agencies.
- New projects will be required to build tools and enhance engagement. Investment must flow from several partners to projects designed to enhance engagement efforts, expand to more regions of the country, reach out to new partners, sustain media efforts, enter contracts, or support salaries to develop new materials.

Canadian partners should invest in a coordinated pan-Canadian effort to prevent wildland fires. The highest priority fires to prevent varies from region to region. There are common elements, messages and products that can be developed together and shared.

Some federal programs may be designed to allocate funding to emergency management, climate change adaptation, or infrastructure programs. On their own, individual provinces or communities might be too small to be considered in such funding programs. CIFFC may, when it is helpful to the partners, develop proposals on behalf of many partners to bring strategic funding into the partnership to support program design or local effort.

Investment is not just about capacity – it is an indicator that partners are taking shared responsibility to mitigate risk. Many private sector and government partners have contributed to projects and this model can clearly grow. CIFFC's corporate structure as a not-for-profit agency provides flexibility in managing and disbursing funds from partners and external sources.

- Investment to support or create incentives for communities and local efforts will be an ongoing challenge. Mitigation activities such as vegetation management or retrofitting homes are good concepts but evidence shows these activities will not take root without some financial incentive or offset. Research has also shown that individuals are unlikely to invest in change unless they can expect more than one benefit from the effort (Christianson et al., 2012; McFarlane et al., 2012). Reducing wildland fire risk, on its own, will not be incentive enough.

Private sector partners, such as insurers, have demonstrated they can provide both information and incentives to their customers. Communities and home builders have opportunities to build incentives into new developments that are more resilient. Messages to residents (who often do not own their home) should be matched with understanding of, and solutions to, their financial capacity to reduce risk.

Funding programs directed to support local efforts should encourage, in their application criteria, comprehensive application of the Seven FireSmart Disciplines. A modest investment in education, planning, interagency cooperation, and training, for example, may have greater benefit than expensive fuel treatment programs. Where government programs presently exist that assist local communities, intergovernmental dialogue should discuss how to make those programs work better for local partners.

## Strategic Themes

### Theme 1: Build and Expand Collaboration

When a wildland fire occurs and threatens a community, property, and/or public safety, a complex web of partners from government, community, and private sectors become involved in responding to the event and supporting the people threatened. The number of players involved in responding to the wildfire and supporting the resulting emergency and recovery “can be dizzying at the best of times.” (Abbott and Chapman, 2018. p 38.)

High-profile wildfire events in the last 20 years have shown that excellent capacity and response by wildland fire agencies and their many response partners will be necessary – but not sufficient – to reduce risks in the future. In extreme weather conditions – when most wildfire damage occurs – locally prepared communities and industries that have taken steps to prevent wildfires and mitigate damages will have better outcomes than those relying on response alone. The web of partners – other public safety and emergency management agencies, other levels of government, business and industry, and individual citizens – is needed to jointly address the wildfire prevention and mitigation challenge, and to reduce impacts to people, property, and the economy.

While the number of partners and relationships are many, strengthening collaboration and governance to increase resiliency is a primary goal of the Canadian Wildland Fire Strategy (CCFM, 2016), aligns with the UN’s Sendai Framework Priority #2 (United Nations, 2015), and is the first priority of Canada’s Emergency Management Strategy (PSC, 2019). To best serve Canadians and to accommodate the diversity of partners across the country, similar collaboration models will be required at pan-Canadian, provincial, territorial, regional, and local scales.

### Collaborative Governance and Shared Responsibility

Public-policy researchers have recognized that governance models should move beyond linear concepts shown on organization charts. Collaboration and partnerships are no longer an external influence that the governance model should inform, consult with, and adjust to. Changes in how society addresses complex problems requires collaboration and shared responsibility among government, Indigenous, private, public, and civic spheres to empower local communities, stakeholders and individuals to implement programs that best address the local situation.

“Collaborative governance is the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished.” (Emerson, et. al., 2012)

The principles of collaborative governance are appropriate for Canadian prevention and mitigation efforts which require empowering a broad group of partners toward a common goal without simple lines of authority. Eventually, discussion and collaboration build a shared sense of responsibility - that all partners are part of the solution and, without their effort, they and their neighbours will be at greater risk when a

wildfire occurs. Building this shared sense of responsibility is critical for better outcomes locally, regionally, provincially, and across Canada.

The merger of FireSmart Canada and CIFFC provides a solid foundation of partnerships and collaboration. CIFFC connects wildland fire organizations across the country and is connected to other Canadian and international wildland fire and emergency management agencies. FireSmart Canada has developed a broad network of partners including Indigenous Peoples, communities, government, and business. The scope and reach of Canadian wildland fire prevention and mitigation efforts will be strengthened by building on existing networks, making new connections, and initiating some new conversations.

*Priority Action: Build on existing relationships with Indigenous Peoples*

The CCFM aspires to better include and collaborate with Indigenous Peoples and organizations based on nation-to-nation principles of recognition, equity, partnership, good faith, and mutual respect (CCFM, 2019). In addition, Canada has committed to reconciliation through the Truth and Reconciliation Commission Calls to Action and as a signatory to the UN Declaration on the Rights of Indigenous Peoples (UNDRIP). Wildland fire partners need to demonstrate those aspirations can be designed into prevention and mitigation efforts wherever Indigenous Peoples live in Canada.

Indigenous partners – which include First Nations, Metis, and Inuit – are diverse in their interests, priorities, and representation across Canada. Several steps will be taken to strengthen existing relationships and ensure partnership on committees and working groups:

- CIFFC will include Indigenous partners immediately in the FireSmart Canada Advisory Committee
- Intergovernmental dialogue will be required with National Indigenous Organizations<sup>4</sup>
- Products and messages designed specifically to assist Indigenous communities will be developed in conjunction with Indigenous Peoples.
- Provincial and territorial partners will continue to reach out to communities so their local expertise, priorities, and plans can be applied to activities.

Implementing this Action Plan must demonstrate a commitment to partnership and build relationships that can be more specific about the road ahead and how Indigenous Peoples will be involved at various scales.

*Priority Action: Establish the FireSmart Canada Advisory Committee*

The FireSmart Canada Advisory Committee will be an integral part of CIFFC's governance structure and will report directly to CIFFC's Management Committee. The purpose of this committee is to:

- ensure the FireSmart brand, standards, and products demonstrate excellence and continuous improvement;
- provide a structure for partner organizations impacted by wildland fire to collaborate directly with wildland fire agencies in developing solutions that have broad application;
- enable partners to bring their expertise and funding together to support FireSmart and help solve priority issues by directly funding specific projects; and
- disseminate common FireSmart messages across many organizations.

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<sup>4</sup> Leading this dialogue is beyond the scope of CIFFC's mandate and is expected to be led by an intergovernmental group.

Strategic, collaborative leadership will be required from a diverse committee, which will meet regularly to review and guide progress on this Action Plan and FireSmart activities. Advisory committee members should have one or more of the following characteristics:

- they represent a key partner at the Canadian scale (i.e., are able to represent the decision-making process in their own organization);
- they represent a provincial, territorial, or regional FireSmart committee; and/or
- they are invested in funding FireSmart activities or projects.

Leaders and staff from CIFFC member wildland fire agencies may join the Advisory Committee to listen and provide context, but they should be in the minority. As members of CIFFC, these agencies have ample opportunity to influence prevention and mitigation efforts in other settings and will participate in working committees.

To be effective, the FireSmart Canada Advisory Committee will comprise about 12 members. Representatives of Indigenous organizations will be on the Committee and partners from the private sector and other government departments are eager to participate. A few members of the Advisory Committee will be challenged to represent the diversity of perspectives across Canada. Advice on prevention and mitigation programs will also require outreach in other ways to organizations. Two groups of partners are good examples:

- Community fire departments (including those in Indigenous communities) are diverse in their awareness of wildland fire risk and their capacity to undertake prevention and mitigation projects. The manner in which community fire departments connect with each other and provincial/territorial/national organizations is a complex fabric of relationships. These local departments are key, however, to building local awareness and support through their contacts and local credibility. Community fire departments are also essential partners in interagency cooperation for effective response when a wildfire occurs. Outreach to community fire departments is a task in itself; organizations such as Fire Marshals, Fire Commissioners, the NIFSC, associations of fire chiefs, and the National Fire Protection Association (NFPA) can help in this outreach effort but there is no simple mechanism to reach this group of partners. Reaching and supporting mixed and volunteer departments are critical as they are often at the nexus of high wildland fire risk and low capacity where ready-to-use materials, training, and messages will be helpful.
- As the scope of FireSmart expands out from the interface to landscape scale discussions, engagement with industry (forestry, oil and gas, for example) and infrastructure (energy, utilities, telecommunications, for example) will become increasingly important. Again, these partners are diverse and not easily engaged through one or two points of contact. They are similar in the nature of risks on the landscape and their approach to risk management through standards and systems. In addition to having values at risk in a wildland fire environment, these partners, when prepared, have capacity to shape landscape risk and assist during emergency events.

*Priority Action: Build capacity and working collaboration*

Implementing this Action Plan will require the collective efforts of managers, working level staff and partners working together to build consistent tools, initiatives, and key messages. The merger of FireSmart Canada with CIFFC provides an opportunity to consolidate the leadership of CIFFC's Mitigation and Prevention Committee (MPC) and several FireSmart Canada working teams under CIFFC's management structure.

The Mitigation and Prevention Committee has been functioning mostly as a community of practice and modest re-structuring is required. A refocused, possibly smaller MPC can play a greater role in coordinating prevention and mitigation activities if it is better supported with funding and additional working capacity.

To consolidate project management, the CIFFC Management Committee should initiate several changes in 2021 to its working team structure:

- Clarify the role and membership of the Mitigation and Prevention Committee (MPC) to coordinate prevention and mitigation projects and manage the workload of working groups and task teams reporting to them:
  - absorb the current FireSmart Standards Advisory Group and create a task team, if necessary;
  - provide oversight to the existing FireSmart Technical Review Working Group to undertake projects to improve evidence-based risk reduction guidance and standards;
  - form a Communications Working Group to develop and implement a FireSmart communications strategy (i.e., the Priority Actions under Theme 2);
  - initiate and facilitate two task teams comprised mainly of partners external to wildland fire agencies related to Priority Actions:
    - advance a risk-appropriate technical standard for new building developments; and
    - develop tools to support mitigation of smoke and health impacts; and
  - provide for outreach and to continue a community-of-practice function to keep a broad set of partners informed and engaged.
- The CIFFC Fire Science Manager and Fire Science Committee should be engaged to help accomplish some new elements of this Action Plan. Many of the Priority Actions in this Action Plan require additional research, science, evidence, or design which will require engagement with the broader research community. The Fire Science Committee is the pan-Canadian working forum that engages with the Blueprint for Wildland Fire Science, the Canada Wildfire NSERC Network and other researchers engaged in wildland fire science; social science, economics, management, ecology, etc. Leadership with fire science engagement will be required on several Priority Actions:
  - connecting the National Risk Profile (NRP) with practical tools for landscape risk assessment;
  - engaging in a structured dialogue on climate change adaptation requires discussion of forest science that supports policy evolution;
  - evaluating cost-effectiveness of vegetation management and risk reduction activities; and
  - develop pragmatic FireSmart forest management.
- Improving and streamlining training on FireSmart concepts are important to supporting local partners, such as community fire departments. These projects will require the expertise and support of the CIFFC Training Working Group.

New structures will not be effective at managing the agenda without new capacity – people and investment will be required to undertake projects in a timely fashion.

## Theme 2: Communicate to Build FireSmart Awareness as a Foundation for Engagement

Communicating, building awareness, and engaging Canadians to build a more resilient future are fundamental to achieving all aspects of this Action Plan. While there are many aspects of prevention and mitigation efforts, FireSmart is a trusted brand associated with wildland fire risk reduction that is recognized by individuals, community groups, governments, researchers, and fire departments from coast to coast to coast. This theme will bring a focus to how FireSmart messages, tools and products should evolve to make the public aware of wildland fire risk and how to prevent ignitions and mitigate damages. Building awareness is just a first step – engagement means people take the information, change behaviours locally, and take new actions that help achieve common goals. And while FireSmart messages are a key focus under this Action Plan, CIFFC and its partners will be able to apply the same structure and skills to other wildland fire engagement with the public.

Canada is a diverse society to engage in a set of risk-reduction messages. Wildland fire risk varies considerably across the country and extreme wildfire events happen infrequently. Regions are at different levels of awareness and risk perception. Audiences at highest risk are often in small communities or rural or remote areas where vulnerability may be high and capacity for action is low.

Communication strategies will require development of common key messages that articulate the themes of FireSmart and provision of tools and materials so those messages can be adapted to specific local audiences. Some partners will use the core message materials directly while others will adapt them to fit their regional or local situations. Crafting media, messages, and materials will require attention to the culture of the receiving community and current risk perceptions. This principle of designing culturally appropriate materials from core messaging will be particularly critical for engagement in Indigenous communities and in French, but also extends to regional differences in the far north and Atlantic Canada, for example, and for audiences in parks, on military bases and within industrial organizations.

Ongoing FireSmart communication efforts provide this Action Plan with a sound starting point from which to extend the reach to new audiences and to develop more comprehensive messages. In 2020, with funding support from the Co-operators Group, FireSmart Canada contracted with a national communications advisor to increase reach, ensure consistent and accurate messaging, engage audiences, and maintain the integrity of the FireSmart Canada brand. Since September 2020, audience engagement on all social media platforms has grown. Website visits, the time users spend on the FireSmart Canada website, resource downloads, and participation in programs have similarly expanded.

Content is particularly effective when FireSmart Canada tags partners, agencies and organizations such as The Co-operators, the Institute for Catastrophic Loss Reduction, the National Fire Protection Association, Intact Centre on Climate Adaptation, Canadian Red Cross, Indigenous groups, provincial FireSmart committees, provincial and territorial ministries, scientists and researchers, and climate-focused organizations. Use of social media has resulted in increased engagement:

- Wildfire Community Preparedness Day campaign has grown steadily since 2015 and is becoming a truly national endeavour.
- New social media assets are developing in French, including a twitter account – @IntellifeuCA
- A new video series profiles Recognized FireSmart Neighbourhoods.

Targeted messaging that leads viewers directly to resources that help them protect their homes from wildfire results in a strong, engaged social-media following. Maintaining the momentum and engagement that has been developed with partners will require ongoing support and attention to a structured Canadian FireSmart communications strategy.

*Priority Action: Commit to a structured communication strategy*

FireSmart Canada has had success in engaging communities and has recently enhanced its communication with audiences through social media. Extending the reach of FireSmart across all of Canada and broadening the set of messages under this strategy requires an evidence-based communication strategy.

A more strategic and robust communication program requires:

- common key messages across the breadth of FireSmart including attention to common fire prevention themes that can be shared across Canada;
- best-practice agreement on provincial, territorial, and local adaptation of key messages;
- engagement with partners for culturally appropriate adaptation of key messages;
- technical standards and science concepts translated into understandable messages and materials;
- extending community-oriented tools and materials to landscape and regional scales;
- communication tools and materials that can be used directly or adapted by media and partner agencies during major wildfire events;
- connecting wildland fire risk reduction to societal goals for climate change adaptation;
- FireSmart tools and materials that are easily usable by local partners without development cost.

Development of a communication strategy will employ data-driven identification of risks and target audiences, development of key messages specific for those identified risks and audiences, and program creation, implementation and evaluation.

Building and executing a robust communication strategy requires support:

- analysis of root causes and priorities for awareness;
- communication planning and technical expertise;
- a commitment to social-media programming, monitoring and engagement;
- a robust and current website that is updated regularly to provide quality user experiences and a Canadian hub for reliable, consistent material across the breadth of prevention and mitigation;
- video capability and content creation;
- multi-lingual translation services; and
- development of evidence-based educational and training material, tools and online resources that support FireSmart program design decisions.

Current media and materials (manuals, website, etc.) require an update and realignment. Recent social-media work is engaging Canadians, but social media is a means to direct partners and the public to more detailed core materials and tools, which are not currently robust enough to support the FireSmart vision

for future engagement. Communication effort in a piecemeal fashion and without structured content will not be cost effective. Where existing messages and programming are in place, they can continue. In areas new to FireSmart, such as engaging partners in discussions of prevention and risk reduction and resilient forests at the landscape scale, FireSmart may need simple, practical interim messaging that will support future efforts.

A communications strategy will lead to development of turnkey communication tools (media kits, logos and images, social media posts, talking points, press release templates) that can be adapted to specific regions and audiences by regional, provincial/territorial, municipal, community and neighbourhood partners.

Many partners and community members will be engaged in development of communication strategies. A Communications Working Group will be formed within the CIFFC governance structure to develop the communications strategy and key messages. Outreach beyond the working group will be required to understand how messages can be adapted to local regions, communities and audiences. Indigenous Peoples should determine how communication to Indigenous communities is designed. Parks Canada and provincial parks organizations, for example, can assist in the creation of messaging for recreationists who visit wildland areas from urban environments and should understand the importance of wildfire prevention for campgrounds and infrastructure, and complex issues such as wildland fire's natural role in healthy forests and under a changing climate.

*Priority Action: Demonstrate FireSmart can reach people where they live*

While Canadians are similar in many ways and share a desire to reduce risks from wildland fire and adapt to climate change, they are diverse in how they want to get there. Perspectives on risk and local actions are rooted in local culture. FireSmart success will require people learn to understand each other and jointly develop the tools they can use to make a difference.

Specific outreach and conversation will be required to determine how key messages should be adapted in culturally appropriate ways. Indigenous Peoples have diverse perspectives on how to engage with communities and adapt common messages to their needs and priorities. Partners will need to consult with communities, acknowledge local expertise, and support those perspectives that can shape FireSmart materials and methods. Similarly, attention will be required to reach French-speaking Canadians appropriately. Other sectors of society (people who visit parks, members of the military, workers in industry, the agricultural sector, for example) are at different places in understanding wildland fire's roles and risks to public safety. Reaching out to them may require different methods or unique materials, but the key messages must be consistent. Individuals who interact with national campaigns and local campaigns should see that FireSmart is one set of messages.

A recent project, *Blazing the Trail: Celebrating Indigenous Fire Stewardship* (see box below) was successful because it was written by Indigenous Peoples for Indigenous Peoples. It doesn't follow or offer specific solutions, but instead provides stories of different actions people were taking and is a good example of successes that can be achieved by bringing new voices to the table to communicate in culturally appropriate ways.



*Blazing the Trail: Celebrating Indigenous Fire Stewardship*, a 56-page book, recognizes the contributions to wildfire prevention of Indigenous communities in Canada. Its descriptive, first-person stories provide insight and context about Indigenous Peoples and fire stewardship. The narrative encourages celebration and sharing of wise practices and lessons learned across generations. Artwork, photos, and writings throughout the book acknowledge the significance of storytelling and expressive arts as ways of sharing knowledge about the roles and uses of fire in Indigenous communities. The publication acknowledges how Indigenous communities have been leading, in many ways, fire mitigation and prevention. The book includes an Indigenous fire risk-reduction tool kit to help communities prepare for wildfire or evacuation.

Key to advancing this priority action will be support of social and behavioural research – particularly as climate change related events drive increasing awareness of risks and shifts in public attitudes. FireSmart programs will need to stay on top of change in public understanding by facilitating studies and workshops or knowledge transfer conversations to increase skills of practitioners in reaching audiences where they live.

*Priority Action: Position and support the FireSmart brand*

FireSmart will be the public (and partner) recognized brand<sup>5</sup> for wildland fire prevention and mitigation in Canada. The investment in the FireSmart brand by Partners in Protection and FireSmart Canada has created value for Canadian wildland fire partners. Under this Action Plan, CIFFC will endeavour to promote

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<sup>5</sup> Brand, in the CIFFC and *FireSmart* context means a name, design, symbol or product that identifies CIFFC's or FireSmart's service as distinct from those of other providers. Key components that form a brand include identity through logos and trademarks, brand awareness as a trusted source of services or information, and "first search" loyalty to the brand for services or information.

and enhance the FireSmart brand as the vehicle for all wildland fire prevention and mitigation communication with the public.

CIFFC will continue current efforts by FireSmart Canada and Partners in Protection to standardize, license, and protect the FireSmart brand from inappropriate and inconsistent use. The FireSmart brand may appear jointly with a licensed partner's branding according to licensing agreements.

### Theme 3: Build the Tools that Support FireSmart Risk Reduction

FireSmart Canada's merger with CIFFC brings with it a set of well-developed and public-focused materials and programs. Several initiatives are underway to improve, standardize, and expand the use of these materials and programs. Under this Action Plan, CIFFC and its partners should, based on a prioritized list, work to modernize and unify FireSmart tools and materials. This effort will take some time and effort but will be essential to bring about the change members and partners have asked for: consistent key messages; expanded awareness; tools and materials that can be flexibly adapted or applied at the appropriate scale; and a comprehensive consideration of prevention and mitigation efforts.

#### Risk Assessment as a Foundation for Focused Action

Reducing risk requires a sound understanding of where and when risk exists, and how wildland fire will threaten public safety (e.g., from encroachment on homes, ember transport, or smoke). Wildland fire, like other natural hazards, is dynamic in when it may threaten communities, but is not completely random. Spatial and temporal fire danger can be predicted and communicated to the public. Assessing risk requires a science-based understanding of how wildfires occur and move through forest or grass fuels to threaten people or property. Complicating the risk picture is the need to assess exposure at the interface, the vulnerability of those threatened, and the resulting social-economic impacts.

While FireSmart messaging and programming should be consistent and made readily available, the interest and engagement of communities and people will vary, based on their own perception of risk. Materials and tools should be designed so that people can articulate risks present in local conditions, rather than in gross generalities. Practical risk assessment tools help clarify risk perceptions and allow actions appropriate to local conditions.

Risk management frameworks are useful when they facilitate better decision-making by clarifying the nature of the risk, likelihood or conditions for occurrence, and the severity of consequences (PSC, 2017). Canadian or provincial/territorial programs should be able to assess and focus support to those areas of the country where a serious outcome, such as personal injury, property loss, or social or economic disruption is more likely. Such approaches are consistent with the UN's Sendai framework and the Emergency Management Strategy for Canada (PSC, 2019).

#### *Priority Action: Connect National Risk Profile with practical tools for landscape risk assessment*

A Canadian wildland fire risk assessment framework will function at several scales. For example, PSC has initiated a National Risk Profile (NRP) project, which is underway. Natural Resources Canada is creating a high-level Canada-wide framework for describing wildland fire risk in the context of other natural hazard and human-induced public safety risks. This scale of the NRP risk assessment is appropriate for political,

senior government and business leaders who need a cross-sector analysis of risk that does not go into detail. The NRP project will establish this framework for consistency and integration with other hazards, but further work is required to bring the risk assessment framework down to regional and landscape scales to support local decisions and actions. Equally important to any product from the NRP project may be the process that engages various government partners in dialogue about wildland fire risk.

For partners to prioritize prevention and mitigation efforts at the provincial/territorial and regional/landscape scales, more tools are needed. Many programs designed to support communities are operating on the ability of those communities to self-identify the relative risk and on their capacity to apply for and implement mitigation projects. Regional organizations, such as the First Nations Emergency Services Society (FNESS), have helped communities and governments interact in British Columbia to assess risks and set priorities and implement mitigation programs. This effort is a good example of the work possible by regional organizations across Canada to support communities in assessing risk and accessing funding.

Federal or provincial programs should support addressing risks in the manner best suited to each community, rather than attempt to apply one effort or solution to all circumstances. New tools that help partners assess risk and connect plans at the regional, landscape, and community scales will help many partners. Practical tools for landscape scale risk assessment will also assist industrial partners (forestry, utilities, oil and gas, telecommunications, mining, and others) who work outside communities to set priorities and take action.

For example, some community or industrial partners may be convinced that vegetation management or a fuel break is appropriate based on their perception of risk and what FireSmart means. It is possible that close wildfire encroachment on that community is less likely and embers from an approaching wildfire may be more likely. Risks may be best mitigated by a pre-organized and practiced deployment of sprinklers.

Effort will be focused on practical and consistent risk assessment tools for landscape and community risk assessment. Such tools will be based on science and technical understanding and should incorporate methodologies that accommodate the social and cultural dynamics of risk management: risk mitigation actions have credibility when they are based on an understanding of real risk and an opportunity to discuss local perceptions and priorities.

*Priority Action: Advance a risk-appropriate technical standard for new building developments*

FireSmart has been successful in defining and mitigating risks at the built environment. Retrofitting existing structures will provide marginal gains and will be important in some circumstances. Where wildland fire risks are expected, future home and business developments should build in FireSmart ways from the outset. Often new developments are close to wildland environments, putting high value structures close to wildland fire risk. Where a landscape analysis demonstrates wildland fire risks are high, there are opportunities for local governments, home builders, insurers, and lenders to provide standards and incentives to develop new homes and other buildings according to FireSmart guidelines.

CIFFC should facilitate a task team of private sector/municipal partners to review a number of projects and tools are under development that could be integrated in the first 12 months of this Action Plan to advance this effort:

- A checklist for home builders is under development by the Canadian Home Builders' Association, the Intact Centre on Climate Adaptation (University of Waterloo), Canada Wildfire (University of Alberta) and FireSmart Canada that would provide a practical model on which to build industry-led standards for new home construction.
- The National Research Council (NRC) and partners have developed a guideline for building that provides detail behind the checklist. Partners are interested in pushing this guideline toward a risk-based standard for new buildings (NRC, 2020).
- Property and casualty insurers and mortgage lenders are looking for standardized guidance on wildfire risk assessment and mitigation measures to support their underwriting and lending decisions. Recent wildfire damage in California has caused lenders and insurers to partner with government to establish market-based standards (California Department of Insurance, 2021). Canada should develop similar standards and reward wildfire preparedness actions, working out incentives for FireSmart home/community construction, renovations, and redevelopments.
- The Institute for Catastrophic Loss Reduction (ICLR) has developed, with the Standards Council of Canada, case study methodologies to gather data and validate science for continuous improvement of building standards (Westhaver and Taylor, 2020).
- Private sector partners involved in ongoing projects are eager to push these methodologies forward and can engage homeowners and builders in financial incentives to reduce risk.
- For local governments, rather than adopting generic regulations or by-laws requiring certain building materials, for example, a risk-appropriate standard would provide for local standards and cost-effective options for homeowners to meet FireSmart goals.
- Once a standard is in place, incentives similar to energy efficiency retrofit programs may be possible rather than regulatory approaches.

*Priority Action: Develop tools to support mitigation of smoke and health impacts*

A wildland fire near a community or worksite can have acute risks of fire encroachment and intolerable smoke and, in many cases, evacuation is a prudent action to remove people from harm. But communities and partners who have been involved in evacuations know that the timing, disruption, cost, and impact on the people and businesses are often significant and long-lasting. Record wildfire seasons have also demonstrated that smoke can have far-reaching, less intense impacts on public health at a distance from wildfire events (Matz et al. 2020, Reisen et al. 2015). The greatest prevention and mitigation of public health and safety impacts may be possible from a new focus among emergency management and public health partners to develop guidance and planning to reduce exposure to smoke and the socio-economic impacts of evacuation.

Several recent regional efforts have taken steps to mitigate these impacts by providing guidance to communities, residents, and industries developing clean air and/or shelter-in-place strategies, sharing community experiences and best practices, and investing in equipment or infrastructure that may provide for timely public health responses for communities or populations at risk.

Proactive efforts among partners to build plans and tools will help with critical decisions when a wildland fire does occur. Engagement of Indigenous, public health, environmental monitoring, disaster response, and emergency management organizations will be critical. CIFFC should facilitate development of tools and guidance for communities and workplaces and assist with integration of key messages as part of outreach efforts.

*Priority Action: Improve existing FireSmart materials and programs*

Partner and public engagement depend on good content that is accessible, fits with individuals' needs, is locally relevant, provides necessary information, is interactive, and includes a clear definition of risk (Hesseln, 2018). FireSmart has a number of products that are useful today but are showing their age. Many of these resources are important, but few position FireSmart for a strategic advancement across Canada and into a broader scope of prevention and mitigation. New products can be stronger when developed using the latest research relevant to the Canadian context and collaboration among partners. Expectations for modernization of FireSmart materials will have to be measured against capacity to deliver such products.

While there are established concepts around mitigation activities (such as fuel modification, using less flammable building materials, creating fuel separation, etc.) these ideas have largely been imported from the US FireWise program. Implementation of these ideas and research over the last 20 years provides enough experience to assess how those programs and tools are working, what is cost effective, and what is appropriate in the Canadian context. Improvement of existing FireSmart material will require attention to consistent risk assessment tools and evaluation of cost-effectiveness in Canada.

Several existing products are candidates for renewal:

- The FireSmart *Protecting Your Community from Wildfire* manual (2003) requires updating by 2023. Part of the renewal of this manual should broaden considerations into ignition prevention, mitigating smoke impacts, and landscape/regional scale actions.
- Home assessment training (Home Partners Program and Initial FireSmart Home Assessment Program) and supports for fire departments to complete local home assessments.
- Neighbourhood wildfire hazard assessment – a basic form completed by a trained local person identifying homes and critical infrastructure at the interface. This form should evolve to provide a product that increases interagency preparedness – especially related to critical infrastructure.



Tackling this challenge will require action beyond the scope and timeline of this Action Plan. While Priority Actions described above get underway starting in 2021, the CCFM and its partners and Working Groups can discuss the broader issues of resilience to wildland fire risk under climate change scenarios, intergovernmental relationships (including Indigenous organizations) that support Canadians, the health and resilience of Canada's forest ecosystems, and the nature of risk to the forest-based economy. For the most part, these discussions will engage a broader set of partners in new and different conversations than the first three Themes of this Action Plan.

As a broader conversation on the future of wildland fire risk management unfolds, partners involved in the delivery of this Action Plan can undertake two Priority Actions that will help support healthy and resilient forests into the future.

*Priority Action: Develop pragmatic approaches to FireSmart forest management*

The concept that adjusting forest practices (the shape, size and timing of harvests and silvicultural practices) at the landscape scale could reduce wildland fire risks has been discussed (Hirsch et al., 2001) and is embedded in forest policy in at least one province in Canada. These concepts are different than fuel treatments at the community interface. Examples where these landscape scale "FireSmart" forest management concepts have been put into practice are rare. Forest managers have been important partners in wildland fire management across Canada, and most forest management plans accommodate wildland fire disturbance in some way. Forest industries are also important partners in wildfire prevention and have a significant interest in minimizing wildfire impacts on their operations and timber supply. Decades of fire suppression and forest management have changed forest landscapes, but not toward a FireSmart condition as envisioned by Hirsch et al. in 2001.

Change in forest management practices requires that concepts are tested in practice and evolve into practical guidelines and methods that can be implemented when policy, regulatory and planning direction provide for such change. Application of science to forest planning models and systems will be required.

CIFFC's Mitigation and Prevention and Fire Science Committees should work with forest management and research partners to develop updated guidance for pragmatic FireSmart forest management. In addition to reviewing existing FireSmart forest management concepts, a new task team could consider several levers to generate change. (

*Priority Action: Support prescribed and traditional burning*

Any discussion of mitigating impacts of wildland fire and improving forest resilience will lead to a discussion of the use of prescribed fire to reduce hazards, renew ecosystems, and as a silvicultural practice. There are many examples in Parks Canada, Australia and the United States where progressive prescribed fire programs have shifted risk and ecosystem health in measurable ways. For many Indigenous communities, the use of fire is a traditional activity that connects the people to the land and ecosystems. There are many case studies where re-introduction of fire to fire-adapted ecosystems has rejuvenated ecosystem function, reduced fire hazards near communities, and supported developing or improved partnerships.

In a few areas of Canada, prescribed and traditional fire are used regularly, and local practitioners are experienced in the safe and effective application of modern science and traditional knowledge. However, decades have passed in some places since prescribed burning has been used on the landscape. Working with fire requires experience and co-operation among local, provincial, and territorial governments. Escaped fires or injuries can set back progress. Policy and regulatory rules in place are designed to protect public and worker safety. The forest has changed over decades and, in most cases, burning is more challenging now than it was in the past, especially with communities and human infrastructure close to or embedded in forested areas. The climate is also changing and, even with traditional weather patterns, the number of days when burning can meet objectives and still be done safely are few. Patience will be required.

Provincial and territorial wildland fire management agencies will take a lead role in advancing this Priority Action. Each will find their own position on the role of applied fire in managing risks, engaging communities, and building understanding and skills in new generations of wildland fire partners. CIFFC can support this Priority Action by:

- including the role of prescribed fire and traditional burning as part of the discussions of integrating wildland fire and forest management described above;
- Developing content and key messages describing the important role of prescribed fire as part of public engagement. Attention will be required to position prescribed fire in the context of FireSmart risk reduction principles.
- Developing training standards on the use of low-intensity prescribed fire and awareness of traditional burning in wildland fire agency training.

## Measuring Success

Measuring success of a prevention and mitigation program may be challenging: some proposed actions may take years to be realized; multiple partners and collaborators must participate; and distinguishing the influence of human effort on natural events may be confounded by other factors beyond our control.

Conceptually, a number of things could be reported in five years to indicate the success of this Action Plan. Reporting that the Priority Actions and initiatives have been accomplished and that tools are being developed is a benchmark of progress. Leaders and partners, however, will be looking for more comprehensive measures that outcomes have improved and the goal of the Action Plan is being reached.

Some ideas for more comprehensive outcome measures, while conceptually good, will be expensive, difficult, or impossible to measure.

- Some of the risks and impacts that should be reduced (on human or forest health, for example) are bound in many other activities of society and nature and cannot be easily or directly attributed to prevention and mitigation programs and partnerships.
- Some readily measured factors, such as costs and insured losses, may not be helpful measures as they are highly variable, they represent negative outcomes, and historic events are not always good indicators of existing or future risk.
- There is always a challenge showing the benefit of preventing something from happening, particularly when events are highly episodic and a few extreme weather events dominate the costs and losses. A changing climate, the variability of natural events, and other external influences will challenge our ability to parse out and measure the impact of FireSmart efforts and our related activities.
- Finally, there are certainly outcomes that should be measured, but research or data collection systems would be required to make those measures practical and useful.

Notwithstanding, we must resolve some of these complexities, clarify how success is defined, and commit to report back on the success of this Action Plan. This effort will be particularly important to celebrate the contributions made locally, regionally, territorially, provincially and nationally to set the stage for future pan-Canadian investments and effort. If a program cannot describe its benefit in socially or economically relevant terms, it will struggle to stay relevant and find funding.

In the initial years of a new strategic direction, changes in outcomes, such as reducing net damage and losses or improved forest resilience, will be hard to measure, particularly with respect to wildland fire, where outcomes are highly variable and episodic. It is appropriate, then, over the first five years of the Action Plan to report on a few outputs of the program effort that indicate progress in the right direction:

- Are the Priority Actions and initiatives being accomplished and are the tools in place?
- Do people know about the need/responsibility to prevent and mitigate wildfire risk?
- Are the communities most at risk aware, building a plan, and taking any actions?
- Is the FireSmart collaboration model evolving as expected?

It is also important to invest some effort over this first interval in understanding and explaining better and more comprehensive measures of long-term outcomes:

- Are the collaboration efforts reducing health and safety risk or increasing resiliency for people?
- What are the trends or examples of changing costs, losses, and economic impacts?
- Are efforts reducing landscape risk and improving healthy and resilient forests?

### Four Outputs to Measure by 2025

1. A report-back on progress on the Priority Actions that indicate elements of the Action Plan have been assigned and tools are in development or in place.
2. Through a survey and reporting associated with engagement efforts (such as website visits, downloads, applications and awards for programs such as Wildfire Preparedness Day and Neighbourhood Recognition), identify the key audiences and if they are aware of and engaged in preventing and mitigating wildland fire risks. Assess awareness, confidence and trust in FireSmart messages, tools and materials (by target audience). The CIFFC Mitigation and Prevention Committee in collaboration with the University of Saskatchewan carried out surveys of public awareness of fire prevention messaging (2016) and the FireSmart program (2017) that can be used as baselines.
3. Count the percentage of communities, categorized by assessed risk, that have engaged in partnerships to deliver FireSmart programs locally.

This indicator would require some work on:

- a simple risk assessment matrix and
- a benchmark to describe “engaged” that includes a comprehensive approach to the Seven FireSmart Disciplines.

For example,

Risk Category	Characteristics	Engagement Target By 2025
1.	Small community or neighbourhood with low internal capacity at high risk from wildfire encroachment	80 to 100%
2.	Organized community with capacity and high risk relative to its size (e.g., Slave Lake)	80 to 100%
3.	Mid to large sized organized community or region with areas of high risk (focus on neighborhoods)	60%
4.	Large urban cities outside wildland fire risk areas General awareness and efforts locally beneficial but not a priority.	Seek general public understanding and supportive awareness

4. To indicate that robust partnerships are developing and sustaining FireSmart efforts across Canada, reporting should assess:
  - a. The collaboration model among CIFFC and its partners is strong, inclusive, and supporting expanded local activities.
  - b. Additional dialogue has expanded the conversation to bring government, Indigenous, private and civil sectors together across the scope of FireSmart activities.

Completing an activity once in an effort to build resilience in society or ecosystems is fleeting. Any partnership, training, or education lasts only as long as all the participants work together. In most organizations, participants will change in five years. A review of this Action Plan in 2026 should focus on how to measure that collaboration models, program activities, and awareness are being sustained for the future as new players take on key roles.

## Three Outcome Measures to Work Toward

Addressing the complexity of measuring outcomes should be undertaken collaboratively with research partners to deliver three studies by 2025 that will allow Canadians to assess whether FireSmart activities are improving resilience and reducing risks. The CIFFC Fire Science Committee will be helpful in facilitating these evaluations, as several disciplines should be engaged to ensure that the annual variation in wildland fire activity is accounted for in a similar way across these outcomes. Longer term outcomes may be best evaluated through periodic reviews that put inter-annual and spatial variation of wildland fire seasons in context and can use survey and case study methods to improve understanding.

### 1. Reduction of Risk

As work progresses on frameworks for assessing and defining wildland fire risks (Theme 3), partners should identify how progress can be measured on reducing risk and increasing resilience of those affected by wildfire events. This area of study is consistent with Theme 6 (Reducing the effects of wildfire on Canadians) of the Blueprint for Wildland Fire Science in Canada (NRCan, 2018) and will need to consider social impacts of wildland fires, mitigating health effects of smoke, societal adaptation to climate change, reduction or increase in the frequency and intensity of catastrophic interface wildland fire events, and increasing effective recovery post-fire.

### 2. Socio-Economic Impact

Wildland fire, as a natural hazard, is usually reported in hectares burned, response costs, and insured losses, all of which are easily counted but do not describe wildland fire in the context of other risks or in terms of socio-economic impact. Several studies or reports may be necessary to outline the broader socio-economic impact of wildfire events or particularly challenging fire seasons. Canada should continue to build robust case studies of challenging outcomes and successful examples of FireSmart at work. Work should be completed on the cost/benefit of prevention and mitigation programs to better understand where future investments should be made.

### 3. Wildland Fire Contribution to Forest Health and Resilience

This Action Plan, over a five-year term, will not be able to directly measure forest health and resilience, which are a result of a number of complex natural processes and management interventions. Discussions leading to this Action Plan asked that Canadians begin to support forest health and resilience to risks. Wildland fire and forest management partners should report back on how existing state-of-the-forest criteria and indicators should be augmented to describe wildland fire risk over a projected rotation that includes climate change risks. Changing the risk presented by the legacy forest over the course of several decades will take bold action and may upset existing sustainable management paradigms. Whether existing indicators are appropriate, considering the risks and challenges that Canada will face in the coming decades, should be debated and adjustments made in the next five years. While this deliverable is beyond the scope of CIFFC's Action Plan, the organization is committed to supporting partners in this process.

## Conclusion

Every year, wildland fire threatens homes and businesses somewhere in Canada. Several years in the last two decades have set provincial records for cost, number of people evacuated, property damage, and area burned. Climate change projections only support more challenging wildfire seasons ahead.

Organizing Canadian partners and the public to be better prepared and reduce risk ahead of those fire seasons will be well worth the effort. Mobilizing people to imagine risks – and take action – is difficult. This document is an attempt to set out a pathway for partners to build effective collaboration, communicate consistently and clearly, and build the tools to reduce risk to people, the values important to them, and biodiversity.

## Acknowledgements

This Action Plan reflects many conversations with the people listed below that framed both a complex challenge and what a path forward may look like. All perspectives, ideas, and comments on draft documents have been helpful and appreciated.

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