THE ALEXANDER MOUNTAIN FIRE:

IMPROVING THE LINK BETWEEN PRE-FIRE PLANNING, DURING FIRE RESPONSE, AND POST-FIRE RECOVERY

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COLORADO FOREST
RESTORATION INSTITUTE
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DECEMBER 2025 • CFRI-2513

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Document Development Statement: Following the 2024 Alexander Mountain Fire on the northern Colorado Front Range, leadership of the Northern Colorado Fireshed Collaborative (NCFC) and the Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARP) coordinated with members of the Colorado Forest Restoration Institute (CFRI) to develop a qualitative case study of the incident. CFRI had, and continues to be, highly engaged with both the NCFC and ARP to support their strategic fire management goals across the northern Colorado Front Range. The Alexander Mountain Fire provided the opportunity for CFRI to qualitatively evaluate the connection between strategic pre-planning activities across the Front Range, led by the NCFC and its partners including the ARP, and fire response actions in a real-world context. Specifically, this case study provided the opportunity to develop recommendations for the NCFC and its partners to improve the connections between pre-season planning, fire response, and post-fire recovery. CFRI led the development of the interview protocol, with support from both NCFC and ARP leadership. CFRI then collected and analyzed interviews and developed this report.

Tyler Aldworth: Conceptualization, Methodology, Data Curation, Formal Analysis, Investigation, Writing - Original Draft. Ch'aska Huayhuaca: Methodology, Validation, Investigation, Writing - Review and Editing. Tyler Beeton: Conceptualization, Methodology, Validation, Investigation, Writing - Review and Editing, Supervision.

Acknowledgments: The authors would like to acknowledge Karissa Courtney for her helpful edits and designing the layout. We also would like to thank Hannah O'Reilly for her edits. Additionally, we would like to thank Brooke Simmons, Ken Iida, and Alex Heeren for help developing figures and maps. We thank Corrina Marshall, former coordinator of the Northern Colorado Fireshed Collaborative (NCFC) and Daniel Godwin, the Northern Colorado Shared Stewardship Program Manager for the United States Forest Service (USFS, ARP), for their support assembling the cadre of study participants. We would also like to thank study participants for their generous contributions of time, knowledge, and relevant informational materials.

Funding was provided by the Colorado Forest Restoration Institute through the Southwest Forest Health and Wildfire Prevention Act.

Publication Date: December 2025

Photo Credit: USDA Forest Service/J. Sieg, 2024

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Suggested Citation: Aldworth, T., Huayhuaca, C., and Beeton T. (2025). *The Alexander Mountain Fire: Improving the link between pre-fire planning, during fire response, and post-fire recovery.* (CFRI-2513). Colorado Forest Restoration Institute.

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Executive Summary

This report was developed by the Colorado Forest Restoration Institute (CFRI) in coordination with leadership of the Northern Colorado Fireshed Collaborative (NCFC) and Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARP) to better understand the 2024 Alexander Mountain Fire and answer the following questions:

1) What was the progression of events over the course of the fire?

2) What recommendations could help improve the translation between pre-fire planning and safer, more efficient, and community-centered response and recovery across the NCFC footprint?

CFRI developed a qualitative case study approach consisting of semi-structured interviews (n=12) with Incident Management Team (IMT) members, local fire responders, local emergency managers, and members of relevant place-based non-governmental organizations involved with the lower Big Thompson Canyon area. The description of events for the Alexander Mountain Fire and associated recommendations in this report come directly from participant responses and follow-up activities by the research team. Recommendations were organized around three thematic areas:

1) Participation, coordination and outreach;

2) Standardized data development, maintenance, delivery, and socialization; and

3) Human and financial capital.

Participation, coordination, and outreach: Participants recommended place-based organizations within the NCFC should seek to encourage the engagement of local-level fire responders in membership, committees, and other collaborative activities. Participants also recommended strengthening the coordination between federal and locally based fire response resources, including county responders and fire protection districts. Relatedly, to coordinate the various decision-making loci that activate during cross-jurisdictional wildfires, participants recommended strengthening existing communication channels between IMTs (which may include Forest and county personnel), the ARP, and county emergency management. Finally, participants recommended NCFC personnel connect with county governments to see where they could bolster capacity in future post-fire recovery operations.

Data development, maintenance, delivery, and socialization: Participants recommended exploring barriers and opportunities to create a standardized, shareable database of completed home assessments, delineating Critical Values at Risk (CVAR), and exploring other opportunities to provide organized operational data to fire responders and emergency managers during incidents. They also recommended continuing to improve the Potential Operation Delineations (PODs) network across the NCFC, specifically with regards to ground truthing, improving, and attributing lines. Further, they recommended ensuring solid cross-county understandings of evacuation terminology in case of a multi-county evacuation event, and building better understandings of operationally useful, locally relevant tools, such as PODs and the Colorado Forest Tracker, among fire response and emergency management organizations.

Human and financial capital: Participants recommended strategizing fuel treatments to account for implementation capacity, fire response, and long-term risk reduction, emphasizing the importance of moving toward greater use of prescribed fire. In this vein, they recommended leveraging community capacity to fill gaps in land management organization fuel treatment implementation capacity where appropriate. Finally, participants recommended exploring ways to better fund immediate post-fire recovery on private lands.

To conclude this report, we situate recommendations within the context of the NCFC structure. We have drawn linkages between participant ideas, broader NCFC goals, and the committees within the NCFC best equipped to explore and address each suggestion. We leverage our findings in combination with supporting external literature to build upon participant recommendations and explore specific ideas in greater detail. Some recommendations support ongoing or completed actions within the NCFC, while others may require additional time, capacity, and resources to operationalize. The NCFC and its partners may therefore benefit from considering and prioritizing these recommendations based on potential impact, required capacity, and whether implementation would be a near, medium, or long-term endeavor. Overall, we found numerous opportunities for the NCFC to improve process, coordination, tool development and socialization, and investment across the contexts of pre-fire planning, incident response, and post-fire recovery.

Introduction

Since the historic 2020 Colorado fire season, there have been few opportunities to assess how pre-fire planning activities coordinated through the Northern Colorado Fireshed Collaborative (NCFC) and its place-based collaborative partners impacted fire response or post-fire recovery outcomes. The 2024 Alexander Mountain Fire provided such an opportunity, and the NCFC asked the Colorado Forest Restoration Institute (CFRI) – one of three Southwest Ecological Restoration Institutes (SWERI) – to conduct a case study of the Alexander Mountain Fire. The objectives of this case study were to better understand events over the course of the incident, and to develop a suite of actionable recommendations for the NCFC to consider for improving linkages between pre-fire planning, fire response, and post-fire recovery.

The request from the NCFC dovetailed with pre-existing SWERI-led research projects focused on Risk Management Assistance (RMA)[1] and the Incident Strategic Alignment Process (ISAP)[2] , and was in alignment with the NCFC's strategy of "leveraging, utilizing, and facilitating applied research and monitoring to evaluate progress" toward their overarching objectives of improving strategic fire management across the northern Front Range (Northern Colorado Fireshed Collaborative, 2023, p. 4). Due to the limited geographic extent of the fire (roughly 10,000 acres) entirely within both the NCFC footprint and Larimer County, and short duration (most firefighting activity occurred between July 29th and August 5th), the Alexander Mountain Fire provided a relatively bounded context whereby inquiry could be focused on a specific interval of time with a manageable cadre of participants. Thus, the fire served as an ideal case to develop and share recommendations for the NCFC. Though the intended audience of this report is the membership of the NCFC and the place-based collaboratives within its boundaries, it contains broad themes and lessons that can inform use by collaborative entities in other landscapes seeking opportunities to link pre-fire planning, mitigation, and response.

NCFC Overview

The NCFC was initiated in 2017 to improve landscape-level forest resilience and reduce risks of increasingly large and severe wildland fire to shared values and assets across the northern Front Range of Colorado. The NCFC's boundary spans from the I-70 corridor north to the Wyoming border, encompassing all four forested Ranger Districts of the ARP, Rocky Mountain National Park, several Front Range communities surrounded by forest likely to experience wildland fire impacts, and plains communities that rely heavily on major Front Range river systems for their municipal water supply (see Figure 1). Partners include federal land managers, state and local forestry agencies, non-governmental organizations, place-based collaborative groups, researchers, and other interested and affected entities throughout the northern Colorado Front Range and Grand County.

The NCFC's mission "is to increase the pace and scale of not only mechanical fuel reduction methods, but also prescribed fire and strategically managed wildland fires across jurisdictional boundaries" by acting as a

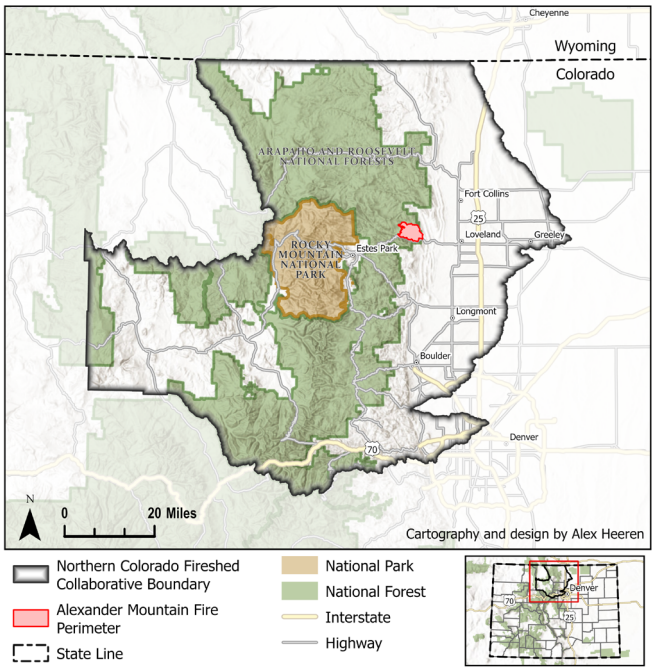

Figure 1: Map of the extent of NCFC footprint by Alex Heeren, CFRI.

[1] "Risk Management Assistance emphasizes pre- and post-fire training, on-incident support through a publicly available online dashboard that houses advanced spatial analytics and fire weather behavior data, and line officer development" (vonHedemann et al., 2022, p. 1).

[2] "The ISAP is an emerging framework for considering risk and developing strategy during wildland fire management and all-hazard response. It is an iterative, collaborative, risk-based dialogue informed by advanced spatial and fire behavior analytics that takes place among Incident Management Team members, Agency Administrators, and external partners. Throughout these conversations, those engaged with ISAP focus on four 'pillars': critical values at risk (CVAR), strategic actions, risks to responders, and probability of success to co-construct durable incident-level strategy to minimize risks to communities, landscapes, and fire responders" (Aldworth et al., 2024, p. 1).

"force multiplier to maximize the impact" of NCFC members and their organizations (Northern Colorado Fireshed Collaborative, 2023, p. 3). To develop solutions that fit the landscape-level challenges of this mission, the NCFC functions as an all lands, regionally focused, informal collaborative organization that connects partners across the northern Front Range. This involves cross-scale integration of the many smaller-scale, placed collaborative efforts that exist within the NCFC's boundaries where much of the work of project-level planning and implementation, as well as community engagement and outreach occur (Huayhuaca et al., 2025). The NCFC's governance structure facilitates this integration through committees that can better interface with local place-based groups.

The NCFC's governance structure includes a Steering Committee and three distinct standing committees informed by the Steering Committee's leadership. The Steering Committee sets direction and oversees internal policies and structures to coordinate work and achieve the collaborative's mission[3]. The three other standing committees include 1) the Strategic Planning, Adaptive Management, and Operations (SPAMOps) Committee, 2) the Community Engagement and Outreach (CE&O) Committee, and 3) the Investment Committee. The SPAMOps Committee focuses on collaborative strategic planning; generating actionable science to fill knowledge gaps and meet the needs of the NCFC; increasing cross-boundary and interagency coordination throughout the collaborative adaptive management cycle (from project planning to implementation to monitoring); and understanding and addressing constraints to the use and application of beneficial fire across the NCFC. The CE&O Committee focuses on coordinating strategies to build broad public support for forest treatments and sharing tools for communication and public outreach. The Investment Committee focuses on making recommendations to the National Forest Foundation, which administers the Northern Colorado Fireshed Fund (NCFC Fund), to select and fund projects and capacity needs across the NCFC. Each of these committees meet regularly to make progress on their shared work plans and frequently communicate and coordinate across one another and with place-based groups to achieve NCFC objectives.

NCFC leadership across these committees has invested significant time and resources to improve landscape-level strategic planning that promotes "parallel investments in, and coordination of, mitigation actions, emergency response strategies, and recovery capacities" among partners (Northern Colorado Fireshed Collaborative, 2024, p. 3). This includes the NCFC's landscape-scale spatial strategy, which seeks to inform locally led prioritization of planning and implementation actions across the NCFC's geographic footprint by leveraging NCFC-wide and place-based risk assessments and a cross-boundary Potential Operational Delineation (POD) network to inform and coordinate collaborative dialogues, plans, and actions.

In 2025, the NCFC began monitoring the outcomes of collaborative process and performance, as well as evaluating the outcomes of projects within the NCFC for a) improving the strategic placement of vegetation and fuels management projects; b) increasing the scale of mechanical and prescribed fire treatments; c) changing fire behavior; d) reducing the negative fire impacts to highly valued resources and assets; and e) reducing hazards to firefighters to promote safe and effective wildfire response. The Alexander Mountain Fire case study supplements these ongoing NCFC monitoring efforts by highlighting how pre-fire collaborative engagement and planning impacts fire response and recovery; within this report we offer recommendations for improvement.

Methods

In partnership with leadership of the NCFC and the ARP, CFRI co-developed a qualitative case study approach to investigate the Alexander Mountain Fire and understand:

- What was the progression of events over the course of the fire?
- What recommendations could help improve the translation between pre-fire planning and safer, more efficient, and community-centered response and recovery across the NCFC footprint?

CFRI conducted 12 semi-structured interviews with incident management team (IMT) members, local fire responders, local emergency managers, and members of non-governmental organizations involved with pre-fire planning efforts, fire and emergency response

[3] Current (as of fall 2025) Steering Committee composition includes representatives of the Arapaho and Roosevelt National Forests and Pawnee National Grasslands, the National Park Service – Rocky Mountain National Park, the Colorado State Forest Service, the Colorado Forest Restoration Institute (CFRI), The Ember Alliance, The Nature Conservancy, the National Forest Foundation, the Boulder County Fireshed, the Grand County Wildfire Council, and Clear Creek County.

operations, and/or post-fire recovery efforts during the Alexander Mountain Fire. Most of these participants were involved with the fire from the time it emerged to the time it was contained, with the exception of two fire responders based outside Larimer County who were assigned to the incident for a shorter operational period and then rotated off the fire. Interviews lasted between 40 minutes and 3 hours, and followed a protocol reviewed and approved by the authors, members of NCFC leadership, and the Colorado State University Institutional Review Board (#2652). See the attached interview protocol in Appendix A.

Interviews were transcribed verbatim by the internet software REV. Transcriptions were reviewed by CFRI staff and checked for accuracy. The first author then analyzed the transcripts for thematic categories tightly linked to interview questions using the qualitative data analysis software Atlas.ti. These themes were iteratively and collaboratively revisited by members of the research team to ensure their relevance and accuracy. Additionally, After Action Review documents produced by Larimer County, and observations recorded by the first author at the 2025 Larimer County All-Hazard Summit were used to further confirm, refine, or challenge findings. Recommendations in the Results section, and further elaborations within the Discussion section were curated to highlight specific improvements the NCFC and its partners may consider.

Results

What was the progression of events over the course of the fire?

I stepped out my door and I could see the column...

– Type 3 IMT member (Participant 8)

The Alexander Mountain Fire was detected on July 29, 2024, on the north side of the Big Thompson River and U.S. Highway 34, west of the Sylvan Dale Ranch in southeast Larimer County[4]. Hot and dry conditions

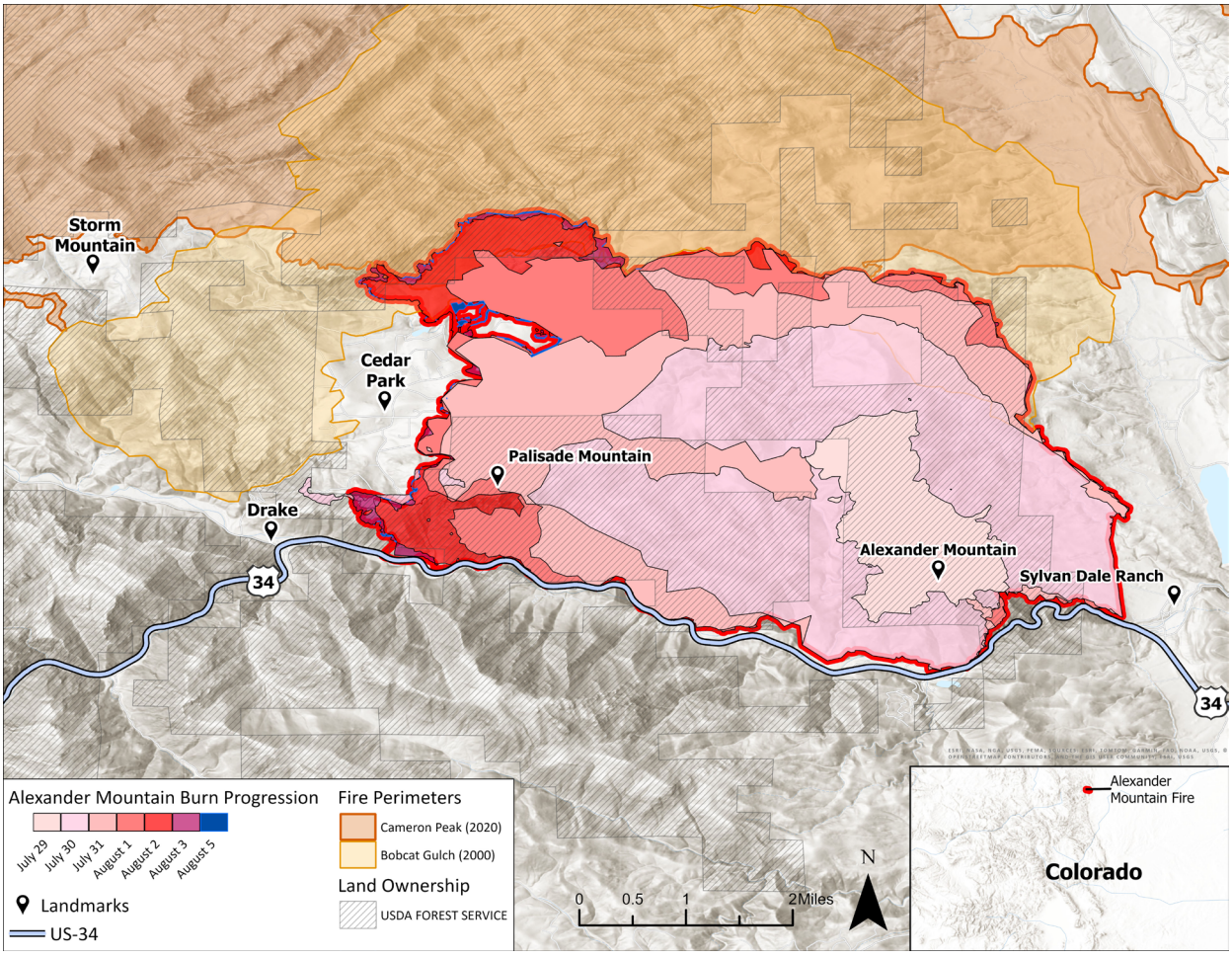

Figure 2: Map of Alexander Mountain Fire growth over time.

[4] Fire investigators concluded by August 9th that the fire was human caused. A joint investigation between county and federal law enforcement identified a Sylvan Dale Ranch employee as the primary suspect. This individual was charged with first-degree arson (Wertz & Markus, September 11, 2024). Map by Ken Iida, CFRI.

contributed to significant and rapid fire growth (see Figure 2). Winds from the south and east pushed the fire to the north and west away from major communities, including the town of Loveland. This type of fire spread – generally east to west – is a somewhat uncommon occurrence for the northern Colorado Front Range. More typically, the prevailing winds during the fire season push fires from higher elevations in the west to more densely populated, lower elevations in the east (e.g., the 2020 Cameron Peak and East Troublesome Fires).

Initial Response

Loveland Fire and Rescue Authority (LFRA) firefighters were first to arrive on scene and discovered that the Alexander Mountain Fire perimeter straddled both USDA Forest Service (USFS) lands and private property. In response, the ARP and Larimer County Sheriff's Office (LCSO, the fire warden for Larimer County) formed a Type 3 IMT[5] organization staffed with fire response personnel based in the northern Front Range. The initial incident commander (IC) of this emerging organization was a member of the LCSO, but transitioned command within the first 24 hours to a member of the USFS.

Photo credit: Larimer County Sheriff's Office/G.Mogel

As the fire rapidly increased in complexity, the Larimer County Office of Emergency Management (OEM) activated an Emergency Operations Center (EOC), staffed by Larimer County OEM personnel and partners, to provide support for incident managers and communities impacted by the fire. One participant summed up the role of the OEM in relation to a firefighting IMT and incident management:

> *Anything within the footprint of the fire belongs to the IMT, and anything outside of that footprint is coordinated by the OEM. The law branch works within the IMT structure, establishing roadblocks, executing evacuation plans, and providing general law enforcement support. OEM supports these activities with resource support. OEM also provides support to any community members that are impacted by the incident as well as the larger community. Once community members have been evacuated out of the fire area, they become [the OEM's] responsibility to shelter, to house, and support as needed.*
>
> – Local Emergency Manager (Participant 11)

Evacuations for a wide footprint around the fire were ordered by Larimer County within an hour of the initial smoke report, and U.S. Highway 34 was closed to non-response traffic.

Strategy Development

According to our participants, the USFS IC for the Type 3 IMT worked alongside the acting ARP Forest Supervisor, the Forest Fire Staff Officer, the Larimer County Sheriff, the LCSO Chief of Emergency Services, other LSCO leadership, LFRA leadership, and representatives from the Colorado Division of Fire Prevention and Control (DFPC) to identify and prioritize the most important values at risk that would drive fire response strategy. These values included the communities of Cedar Park, Storm Mountain, Glen Haven, and Drake, as well as infrastructure including fiberoptic cables (for 9-1-1 connectivity), high-pressure gas lines, the Loveland Water Treatment Plant, Northern Water infrastructure, and transportation corridors to and from Estes Park.

Members of the Type 3 IMT then developed a suite of strategic actions to protect the most critical values, including: 1) executing structure protection for the

[5] An Incident Management Team (IMT) is the command structure within the United States Incident Command System. Type 3 teams are the most basic form of IMT. On less complex Type 4 and Type 5 fires the Incident Commander does not delegate management authority to a broader team of command staff (National Park Service, 2025).

communities of Cedar Park and Storm Mountain; 2) building indirect line between the fire front and Cedar Park; 3) using Highway 34 to prevent fire spread south across the Big Thompson Canyon; and 4) preventing fire spread to the east by leveraging existing features such as the Horsetooth Supply Canal and the footprints of the 2020 Cameron Peak and 2000 Bobcat Fires. Even with variable smoke and wind conditions, aircraft were able to provide support to ground firefighting operations, shoring up the fire on the north and eastern edges.

> *They [the aircraft] would put retardant down and they'd try to put a line in the sand, and in most cases it helped. It definitely slowed [the fire] down toward the Green Ridge Glade Reservoir side. They were able to do a lot of line drops along that ridge line. That was the same thing that protected Sylvan Dale Ranch because they did the lower portion, the very eastern flank of that fire and they kept it from backing down the hill too far.*
>
> – Local Fire Responder (Participant 7)

Incident Evolution and a Key Decision Point

By July 30th the fire had spread to over 5,000 acres. The ARP organized additional fire analysts and GIS support to assist the Type 3 IMT. Members of this support team worked to compile and deliver spatial data on locally relevant values and assets from the 2022 NCFC Quantitative Wildfire Risk Assessment (Rhea et al., 2022) for the IMT to strategically plan fire response operations. At this point, fire responders said they were preparing for the fire to grow significantly to the south across the Big Thompson Canyon and to the west toward Estes Park. Persistent dry winds and nearly 100-degree ambient temperatures continued to challenge fire suppression efforts. Around 2:00 PM on July 30th, another fire (the Stone Canyon Fire) was detected near the community of Lyons in Boulder County, roughly 13 miles to the south, drawing some aerial resources away from the Alexander Mountain Fire.

On the morning of July 31, participants said the IC received reports of high-intensity fire behavior near the community of Cedar Park where firefighters were set to engage. The IC halted fire response operations to minimize responder risk until the IC, leaders of the ARP, LCSO, and LFRA could survey the area and confirm it was safe for firefighters to engage. By mid-to-late morning, this group concluded that it was safe for firefighters to continue operating in the area. As firefighters re-engaged, the indirect line was abandoned as the fire advanced and overran it. Subsequently, nearly all firefighters worked to protect structures and build direct fireline where possible around the Cedar Park community.

Incident Command Transition

On August 1 at 6:00 AM, a Complex IMT (CIMT)[6] assumed command of the incident. The CIMT worked with the Sheriff's Office and ARP to review the values identified and strategic actions developed by the Type 3 IMT. By this point, the fire had entered the Cedar Park community and threatened the adjacent Storm Mountain area. The CIMT deployed additional crews, including interagency hotshots, to support ongoing operations and protect both Cedar Park and the Storm Mountain area as weather conditions moderated slightly. This operation continued over the course of August 2nd and 3rd to great effect:

> *The piece of line [between Cedar Park and Storm Mountain]... that was a very key success. Then the work we did in Cedar Park, putting in the direct hand line near the community to stop any further progression, that was also a success.*
>
> – ARP Fire Responder (Participant 2)

Operational Wind-Down

Shortly after the CIMT took command, the cumulative impact of firefighting efforts and increasingly favorable weather conditions began to stem the tide, and fire spread was largely halted. On August 3rd, after weather conditions and fire behavior near structures had moderated significantly, Larimer County Damage Assessment Teams entered the fire perimeter to begin formally assessing damage within the fire footprint. Firefighting efforts focused on extinguishing remaining fire activity near Cedar Park, continuing structure protection activities, and monitoring U.S. Highway 34 for potential new fire activity. No significant fire activity was reported after August 5th, prompting a drawdown and demobilization of fire suppression resources. On August 7th, U.S. Highway 34 reopened to the public. On August 9th, responsibility for the incident was transferred from the CIMT back to local units. On August 17th, thanks to firefighting efforts and more favorable weather conditions, the fire was declared contained. Over the course of the incident, the Alexander Mountain

[6] Complex Incident Management Teams (CIMTs) are the most advanced form of Incident Management Team, and respond to the largest and/or most difficult to manage wildfires in the United States. Additionally, they may be called upon to manage the response to other natural hazards including hurricanes and flooding events. Historically, there were Type 1 and Type 2 IMTs, but these designations were combined to form CIMTs (National Interagency Fire Center, n.d.).

Fire grew to 9,668 acres and destroyed 54 buildings, 29 of which were residential structures. Immediate post-fire recovery operations focused on hazard tree removal, debris-flow mitigation, and clean-up, which continued into 2025.

Recommendations to improve the translation between pre-fire planning safer, more efficient, and community- centered response and recovery across the NCFC footprint

Following questions about the progress of the Alexander Mountain Fire, we asked interviewees to reflect on whether and how pre-fire collaborative planning influenced fire response and recovery, and to offer recommendations for improvement. We organized individual recommendations around three thematic areas – participation, coordination, and outreach; standardized data development, maintenance, delivery, and socialization; and human and financial capital. These three thematic areas collectively support three highly practical components of effective collaboration including knowledge sharing, capacity building, and the facilitation of strong engagement and buy-in from collaborative partners. Holistically, they also support the linkages between pre-season fire planning, fire response, and post-fire recovery.

Recommendation Theme 1: Participation, Coordination, and Outreach

Recommendation 1a. Place-based collaboratives and the NCFC should actively seek opportunities to engage local-level fire response resources, specifically fire protection districts (FPDs), in activities, general membership, and on committees.

Currently, FPD personnel are not as engaged in the NCFC as other partners. However, many of the smaller scale place-based collaborative organizations within the NCFC, such as the Boulder County Fireshed, Big Thompson Watershed Health Partnership, and Red Feather Lakes Community Wildfire Defense Grant Project do count FPDs among their members or regular meeting attendees, but this engagement is not universal across place-based groups within the NCFC footprint. This sentiment was reflected in the interviews:

> *I was blown away at how many meetings I was going to and I was the only fire guy there. It's great that [the NCFC and collaborative groups] talk amongst yourselves, but if the local response agency is not present, that's a huge gap. You can do all of this preliminary work but if the guys and gals that are going to actually be responding have no clue about it, no interaction with it, then you missed the boat....We want to be a part of it.*
>
> – Local Fire Responder (Participant 4)

While some fire responders voiced a desire to participate, others said they struggled to see the value of engaging with the NCFC, which operates at a broader scale and tiers to place-based groups. For example, they said they did not feel they understood the direction, vision, or focus of the NCFC. They typically grounded their critiques in calls for tangible action – actions which they said were difficult to see at the level of the NCFC and made it difficult to justify a greater level of engagement.

> *I'd like to participate more, and I was very active the first couple years looking at things.... I feel there's no real [strategy]...It gets hard and I got frustrated...Plans have to be followed by action, so that's why I go to [the NCFC] and say, "This is what we've got going, but I'm focusing on my area first before looking out across the entire NCFC".*
>
> – Local Fire Responder (Participant 10)

Despite these critiques, participants emphasized the importance of including fire response perspectives in pre-season fire planning efforts at different scales. The primary frustration from fire responders appeared to be directed at the speed at which collaboratives make decisions and implement actions. To address this frustration, participants emphasized the importance of continuing to encourage FPDs to engage with both place-based groups and the NCFC but to focus this engagement on specific, actionable needs.

At the place-based level, FPD and other local fire responder engagement could facilitate and improve local-level dialogues around values at risk, home hardening, response capabilities, and fuels treatment effectiveness, all of which have direct implications for firefighter risk during incident response, are highly tangible at the local level, and could build upon past outreach efforts. An example some participants referenced after the Alexander Mountain Fire was that many structures lost during the incident may have had a better chance at survival if yearly defensible space maintenance had been completed and underscored the importance of including firefighters in dialogues with communities to increase community awareness.

Fire responder engagement with the NCFC, on the other hand, would help influence conversations around the refinement of the landscape spatial strategy and support cross-scale coordination of local place-based and Fireshed actions. This in turn would ideally increase support for a broader suite of fire management strategies and increase the decision space for firefighters by building additional alignment between pre-fire planning and fire response focused partners. One fire responder suggested local fire chiefs may be appropriate individuals to engage in these conversations:

I think you should share the opportunity [to engage with the NCFC] with fire chiefs and say, "We need you to be engaged. We want your expertise at the table to help guide us, and at the same time we want to provide what we learn and the resources that we have to make you more prepared for emergency response".

– Local Fire Responder (Participant 4)

Recommendation 1b. **Leverage opportunities to strengthen the coordination between federal and locally based fire response partners to improve strategic fire management across the northern Front Range.**

Incoming fire response resources on the CIMT spoke highly of the preparedness and engagement by members of the ARP, LCSO, LFRA, and other local fire districts during the Alexander Mountain Fire. Said one CIMT member:

The Sheriff - the degree of engagement that he demonstrated, the sheriff and the undersheriff together, I've never seen that before… they set the bar in my mind….Honestly it was a pleasure to deal with the Forest too. The Forest knew [their leadership] was going to be checking their work and so everybody wanted to work together… Everybody knew that there was going to be accountability and that drove them to pay more attention. It was good.

– CIMT Member (Participant 12)

However, some participants said there was still room to improve the connection between federal and locally based response organizations. They highlighted how federal land managers and local fire response personnel operate under fundamentally different policy frameworks, with federal land managers statutorily responsible for land management concerns and local fire response organizations statutorily responsible for public safety. Some participants described challenges and disagreements during the Alexander Mountain Fire. Importantly, they said these were not personality conflicts, but instead stemmed from the different responsibilities each agency shouldered. Because of these differences, participants recommended strengthening the lines of communication and planning between federal and local responders during pre-season gatherings. They said this would also build a shared trust of workforce capabilities across organizations, which sometimes isn't understood. Some participants said northern Colorado enjoys a wealth of capacity and expertise that could be better leveraged to improve outcomes during fire response.

I respect the consideration [of firefighter safety]. That's where local knowledge and knowing our workforce is a different situation than [an IMT] just traveling into an area that has volunteers that they don't know. That's where I wish [local fire responders] could have played a little stronger part.

– Local Fire Responder (Participant 10)

Participants also said the NCFC could play a pivotal role in facilitating dialogues between organizations in the pre-season. They said this was important given the bridging role the NCFC naturally plays between different fire managers in northern Colorado, and how difficult navigating challenging conversations can be if those conversations have to take place during a fire.

There was some miscommunication happening, particularly between the forest and the home fire districts. Across the NCFC we are talking about how to integrate our county and federal emergency managers a little bit better ahead of time.

– NCFC Member (Participant 3)

Recommendation 1c. Establish expected channels and lines of communication between the ARP, County Office(s) of Emergency Management, and IMTs during incidents.

It is critical for county resources and the ARP to have fluid lines of communication throughout the course of wildland fire incidents. Early in the fire, a triad communication network formed between the wildland fire response Type 3 IMT, the county-based Emergency Operations Center, and ARP-focused USFS personnel (Later on, the CIMT took the Type 3 IMT's place). At different stages of the incident, the three nodes of this network shared geospatial, logistical, or strategic planning information with one another, such as spatial datasets of highly valued resources and assets, information regarding impacts to critical infrastructure, and strategic information on planned future suppression

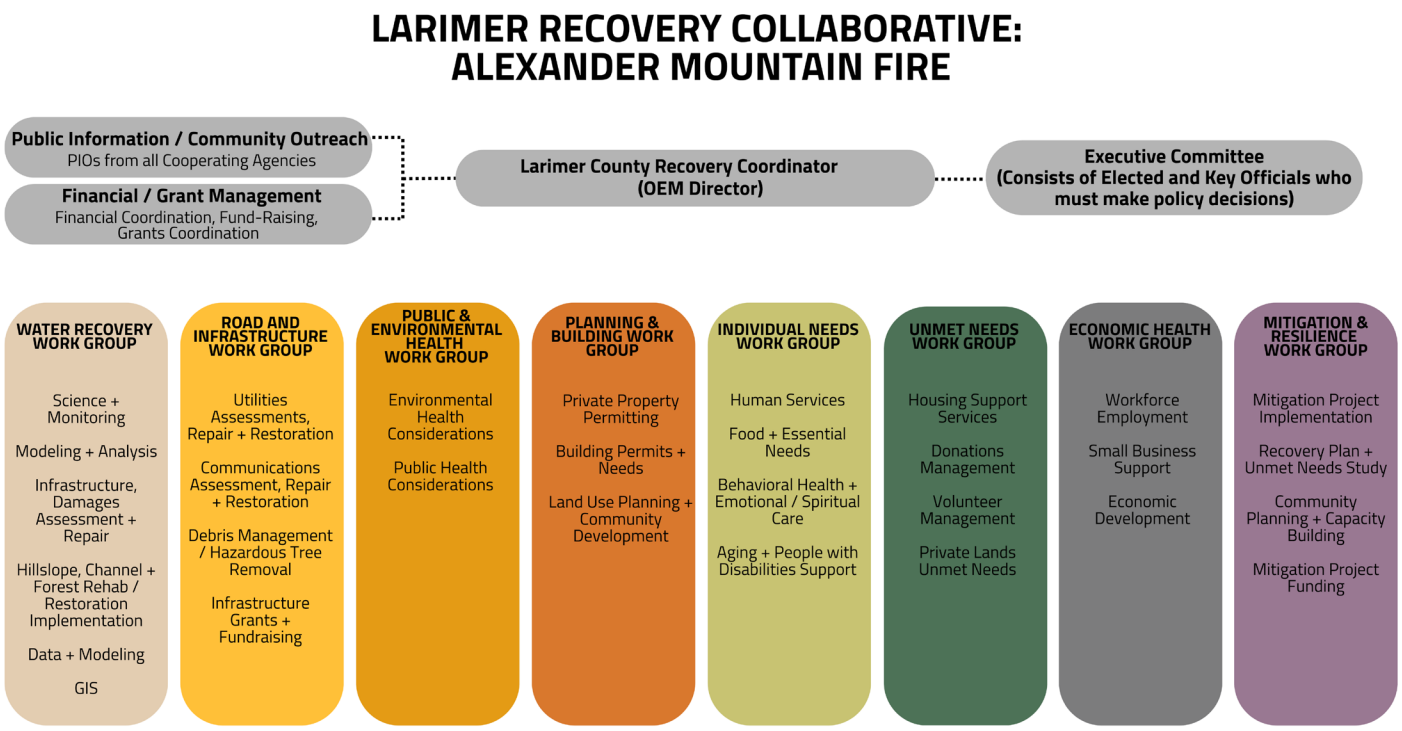

Figure 3. Structure of the Larimer Recovery Collaborative activated for the Alexander Mountain Fire, adapted from Larimer County Office of Emergency Management (original figure credit: Larimer County OEM Director) Each work group includes a facilitator who is typically, but not always, a leader from a county department. Membership to each of the work groups is more open ended and Fireshed partners would likely be welcome to participate.

and repair actions. Ensuring pre-established, direct lines of communication between these types of organizations was said to be important by many participants, and many spoke positively of the existing arrangement. Said one interviewee:

> *Anytime there's a significant fire we break off somebody from [the additional ARP capacity] and embed them in the relevant EOC so that we have a direct connection between the fire program here and the EOC to help with general communication and coordinating with GIS staff. The Sheriff's or the county's programs have access to different materials than we do, they're also making different maps for different end users. Then if we have an IMT come in, they also have a different GIS specialist. Ideally, having them all sit at a table, or at least having a [virtual option] for remote GIS support so that everyone is tied in together and talking in a formal way is valuable.*
>
> – ARP Fire Responder (Participant 1)

To improve this arrangement, some participants recommended discussing in the pre-season who in the county and ARP could serve as the key points of contact for each group to ensure the rapid establishment of fluid lines of communication during fires. Additionally, some participants highlighted the importance of building relationships among individuals and organizations outside of incidents to facilitate communication even under dynamic and challenging circumstances.

Recommendation 1d. NCFC members could prepare to tie in directly with immediate post-fire recovery efforts coordinated by counties.

Post-fire recovery is often challenged by limited capacity and funding and narrow operational windows to complete post-fire recovery actions, such as slope stabilization and flood risk mitigation. Participants said county OEMs largely take the lead in addressing these complex challenges on non-federal land. For example, in Larimer County the county OEM creates an ad-hoc recovery collaborative among their network of partners and organizations after an event like the Alexander Mountain Fire. The OEM recruits, across different jurisdictions, those who are responsible for disaster recovery tasks like flood and debris flow mitigation. Participants recommended that members of the NCFC pre-emptively review county-level structures governing post-fire response to determine whether NCFC member skillsets or capacities fit with post-fire response needs (see Figure 3). Specifically, the NCFC could facilitate conversations between its members and county level OEMs to better prepare capacity for post-fire response and support existing county structures.

When you get each work group together, I would look to you guys to say, is there anything on that chart that fits what you guys do where you guys could be like, 'Hey, it'd be great if we could get involved in this'. That would help me answer that question [of how the NCFC and its members could assist in post-fire recovery efforts].

– Local Emergency Manager (Participant 11)

Recommendation Theme 2: Standardized data development, maintenance, delivery, and socialization

Recommendation 2a. Explore the creation of a standardized, shareable database of home ignition zone assessments.

Within the NCFC footprint, thousands of residential structures have received home ignition zone assessments (hereafter referred to as 'home assessments'). Participants said these home assessments represent a potential resource to help incident managers and firefighters develop strategic actions and triage structures during future incidents. However, there were many challenges with using these assessments to inform incident response identified during the Alexander Mountain Fire. First, there were at least two different types of home ignition zone assessments in the area: some from previous fires where firefighters triaged structures, and some from a county-administered pre-season program. Second, these assessments were not aggregated into a cohesive database that would make them easily accessible to fire responders. As one participant elaborated:

I think that we need a better common operating picture for sharing home assessments between multiple groups doing these assessments so that we have that information available at different scales from the engine captain and hand crew boss up to the EOC with communication in between. Because a home assessment that nobody knows the results of is not meaningful.

– ARP Fire Responder (Participant 1)

Third, the county-administered home assessment program included privacy protections prohibiting the sharing of home assessment locations and results. Fear among homeowners that home assessments would be used by insurance companies to set rates or deny coverage was cited as a primary reason for the privacy protections. Additionally, the assessments required no follow up or additional action by landowners. The privacy protections and limited maintenance led some fire responders to be skeptical of their utility to assist firefighters.

If I knew that all of the homes have had an assessment, all I could say is these folks have had an assessment, but I have no idea whether they've done any work. That's why I say it's probably not the best use...Then if [the assessment] is five, ten years old, a new person might've come in and planted new stuff, even though they're not supposed to.

– Local Fire Responder (Participant 10)

All of these factors impacted the ability for completed home assessments to inform fire response on the Alexander Mountain Fire. Nevertheless, even with these challenges, participants said some home assessments from previous incidents were indeed used to develop strategic actions and triage structure protection actions.

[Our GIS lead] was able to pull all of the spatial data for home assessments that were done during Cameron Peak and pull that into response maps. I put it...into COTAK[7] so that anybody could pull it up on their phone. I got it to the operations folks on the ground as well as the planning section chief for the Type 3 IMT.

– ARP Fire Responder (Participant 1)

Participants said there was a workable foundation to create a comprehensive database of home assessments to support fire responders and planners across the NCFC. Participants recommended the NCFC review existing home assessment protocols to confirm consistency in approach and content, determine processes and capacity to continually update home assessment information, identify opportunities and constraints for sharing information during incident response, and explore potential options for creating consistent and standardized information on home assessments while maintaining an appropriate level of privacy protection for private landowners.

Recommendation 2b. Enhance understandings and physical improvement of the NCFC's POD network across northern Colorado.

The NCFC has embraced the PODs framework as a central pillar for their landscape spatial strategy, vegetation management, and fire response. POD lines

[7] The Colorado Team Awareness Kit Application – a mobile application used by Colorado first responders to build situational awareness on a variety of incident types including wildland fire.

represent potential control features, and they are not created equal. Some lines may be more effective under moderate fire conditions and less so under extreme conditions and likely require improvement before or during a fire to be effective. The utility of PODs lines also depends on dynamic fire behavior, resources required to improve a line, and the location of PODs relative to values at risk. Some of the fire response personnel we spoke to across the ARP, LCSO, and LFRA noted this as a challenge with the PODs around the Alexander Mountain Fire. For instance, some interviewees said POD lines, except for the Big Thompson Canyon, were not preferrable suppression opportunities due to their condition and their location relative to identified values. Further, a participant of the NCFC PODs workshop revision in 2023 (which updated and expanded the ARP's original network developed in 2018) said they suspected some of the control features identified in that exercise were ineffective or unsafe holding features, such as dangerous narrow roads.

Thus, participants suggested the need for resources to invest in ground truthing and improving POD lines through vegetation management. In addition, attributing the existing network to articulate the type, condition, and resources needed to improve the line may help further contextualize the PODs network and inform vegetation management needs and fire response. Participants broadly recognized that PODs are dynamic and should be considered a living feature that needs to be maintained and updated as conditions change. One Type 3 IMT member underscored the importance of conducting the time and resource intensive work of attributing, validating, improving, maintaining, and updating the NCFC POD network; this participant indicated they personally would be less likely to use PODs on incidents unless such pre-work was completed:

> *Look, it's a great map exercise, but I don't think we should be talking about PODs [on a fire] until we've actually ground truthed and done the work on them.*
>
> – Type 3 IMT member (Participant 8)

Recommendation 2c. Establish lists of prioritized Critical Values at Risk (CVAR) that will inform fire response.

Critical Values at Risk (CVAR) are the values an Agency Administrator would ask responders to take an elevated risk to protect and are the priority values that should drive strategy during incident response (see ISAP story map). However, these are typically identified and prioritized during an incident, which often takes valuable time. Participants recommended engaging with cooperators and the public in the pre-season to identify and categorize CVAR, which could then be quickly discussed, validated, and prioritized during a fire. Interviewees said this would be beneficial to build alignment across organizations, and provide avenues for public engagement, which could support a shared understanding of values important to communities. This, in turn, could allow agencies to better act in the interest of local communities during incidents.

> *I think we need to formalize that and have those conversations before fire season because there's a reticence to bring all of the stakeholders or all of the partners into the room for "real" ISAP discussions during an incident. There's a thought that the Agency Administrators already represent their interests. I have concerns about that line of reasoning… that doesn't mean they necessarily know either the needs of that community or even subject matter expertise around things like bridges or other critical infrastructure. That can be buried in people's minds who you haven't brought into these conversations.*
>
> – ARP Fire Responder (Participant 1)

One interviewee recommended that any CVAR mapping exercise in the northern Colorado area start at the county scale or smaller and use fire modeling to inform likely fire spread and impacts, leveraging key NCFC members or partners to act as neutral facilitators for these exercises.

> *Scale it down to at least the county level so it's the Forest, county, local fire department and maybe some conservation groups… Let's get folks together, model some fire starts, have somebody make 72 hour runs…and start coming up with some critical values. Include [County] OEM, they've also got a huge list of critical infrastructure…I think some pre-ISAP would be useful. Let's focus it at the county level versus the entire NCFC, but still have folks in the NCFC facilitate some of that.*
>
> – Local Fire Responder (Participant 10)

Recommendation 2d. Explore opportunities to provide organized, operationally relevant data to functionally diverse fire responders and emergency managers during incidents.

Participants suggested organizing data for optimal use by on ground-level firefighters, IMTs, and local emergency operation centers. Many said it was rarely a lack of data that posed challenges, rather it was the

difficulty of sifting through the large amount of existing data.

> *From a data perspective, I don't think data is missing. I think the data isn't organized the way that it needs to be. We're a data heavy society, and data analysis has become so important in emergency management and in these disasters. Everybody has their piece of data, but we need to be able to coordinate it all, put it all together in a data bucket, and then be able to let people use all of the data to do what they need to do.*
>
> – Local Emergency Manager (Participant 11)

In this vein, participants suggested ground-level firefighters might benefit from data on potential control locations, home assessments, and ingress/egress routes, especially if they were all available on mobile applications (e.g., Avenza or Caltopo). For IMT's, one participant recommended spatial data on closed historic roads, which often take less time and resources to improve with heavy equipment and were preferrable options to consider over constructing new line.

> *There should be old maps or LIDAR layers or something that shows old road beds and shows old logging roads, old decommissioned roads, those kinds of things...Things that let you see where there's opportunities for success, because especially in difficult terrain, pioneering a dozer and taking a dozer down old road – the production rate differences are huge.*
>
> – CIMT Member (Participant 12)

An appropriate first step might be for subgroups of the NCFC to work with county and federal partners to conduct an internal data needs assessment for different users. Partners would identify what data is relevant for initial responders, IMTs, EOC, and post-fire specialists, where it is housed, and how to either collectively manage or share this data.

Recommendation 2e. Ensure cross-county collaborators involved with incidents understand the differences in evacuation terminology between counties.

According to all participants, the evacuations for the Alexander Mountain Fire were successful. However, some participants noted that if the fire had spread across the Big Thompson Canyon, evacuations likely would have needed to occur across both Boulder and Larimer counties. One participant described their confusion about the evacuation software and terms:

> *What's our evacuation terminology? The terminologies are different from county to county. Boulder County uses Zone Haven as their evacuation software. Larimer County doesn't use it. How many fires have we had on the boundary...as an Ops chief I need to make sure I understand their terminology.*
>
> – Type 3 IMT Member (Participant 8)

In cross-county scenarios, the different evacuation systems and terminologies might cause confusion among emergency responders and evacuees. For example, Larimer County issues "Voluntary" and

Photo credit: Larimer County Sheriff's Office/G.Mogel

"Mandatory" evacuation notices, while Boulder County issues "Advisory" notices, "Evacuation Warnings" and "Evacuation Orders," which do not neatly map onto one another. Participants recommended pre-season coordination and education efforts between neighboring counties and their respective fire responders to develop a shared understanding of different evacuation systems and terminology in case multi-county evacuation is required. This would allow local authorities to work seamlessly with IMTs and other fire responders who provide evacuation recommendations and prevent miscommunications that could put people at risk.

Recommendation 2f. Ensure a shared understanding of locally relevant tools that can be leveraged during fire response across and among fire and emergency response organizations.

There are many tools, such as the NCFC's Common Operating Picture, the Colorado Forest Tracker, and the NCFC Quantitative Wildfire Risk Assessment that can help fire responders identify fuel treatment locations (both planned and completed) to leverage as suppression opportunities. Members of the Emergency Operations Center said they were able to use the tools to build strategic plans and said the ability to visualize completed treatments across boundaries was a critical value-add.

> *Just the ease at which we were able to get some of the previous mitigation treatments loaded up onto that map, the connection point with [an ARP Fuels planner] and all the things that he was doing, it just made it a lot easier so that had some foresight, some advanced awareness of what was going on. It's not that we're making fire management decisions, but it helps us strategize consequence management and longer-term things in the Emergency Operations Center - we have to always be thinking ahead.*
>
> – Local Emergency Manager (Participant 5)

Yet, some participants said not all project partners were familiar enough with these tools to upload and access the relevant data. Thus, continued socialization of these tools may be needed. For example, a NCFC member could liaise with different groups to build confidence in using and interpreting local tools. This liaison would be able to connect people with the appropriate tool to address specific needs. Because of the dispersed nature of land ownership in the mountains of northern Colorado (multiple USFS districts interspersed with private land) and the collaborative history of the area, participants indicated the NCFC (particularly the NCFC Coordinator) would be well positioned to act as a liaison between groups in a pre-fire planning and fire response context:

Photo credit: Larimer County Sheriff's Office/G.Mogel

Because the Forest is broken up into different ranger districts, not everyone at the Forest knows everyone in the NCFC. That's a role [the NCFC coordinator] is able to fill. [They] don't know absolutely everyone, but [they] know pretty well if somebody needs something, where to go get it, and where those relationships need to be…. I think that's really useful…I think it alleviates some of the bottlenecks both between the Forest and the counties, but also becomes even more important if there's an IMT that has no home connection.

– NCFC Member (Participant 3)

Recommendation Theme 3: Human and Financial Capital

Recommendation 3a. Strategize fuels treatments to account for implementation capacity, fire response operations, and long-term risk reduction.

Participants noted that within the Alexander Mountain Fire footprint there was a backlog of unburned piles. These piles had yet to be burned due to limited prescribed fire windows and a lack of local community buy-in. In some cases, during the incident, unburned piles functioned as ember sources across firelines and as ladder fuels that helped fire spread into the canopy.

I feel very comfortable saying that yeah, the treatments worked in specific areas… but the reverse of that, as you start working up towards Palisade…yeah, those [unburned] piles contributed to some degree of increased fire behavior.

– Local Fire Responder (Participant 2)

Some also said many of the piles were built on potential holding features, and fire crews reportedly spent considerable time breaking down piles before they could move on to building fireline.

[Regarding]the placement of the piles, there was no thought of how long the interim time between the cutting project, building the piles, and then burning the piles would be. I think there needs to be more thought given when we build these piles about 'where are we going to put 'em'? Because [the squad] ended up pulling apart hundreds of piles to get them out of the way of the ridge between Palisade Mountain and the next knob to the east, which was the obvious place that we wanted to try and catch the fire as it hooked around and was making these runs up at the subdivisions.

– Type 3 IMT member (Participant 8)

Thus, participants recommended discussion among the NCFC regarding the benefits and constraints of alternative treatment types (e.g., cut-pile-burn, broadcast burn) and treatment placement to support suppression activities, which could be incorporated into the NCFC's spatial strategy. In particular, some emphasized the need to focus on opportunities for landscape-scale prescribed fire and also on the management of unplanned ignitions to reduce long-term risk.

We've got to break the cycle of people believing that we can cut our way out of this…. You can't just cut in terms of being ready for fire. If we would've had broadcast burning through here, then fire wouldn't have come into the community. We can't tell people that [cutting] is enough, or lead them on to believe that we can prevent fire from occurring. There will be fire. And the best thing is for us to be lighting it now…We have to get fire on the ground and tell people we cannot cut our way out of this.

– ARP Fire Responder (Participant 2)

Recommendation 3b. Leverage place-based capacity to fill gaps in fuels treatment implementation capacity.

Some participants acknowledged their agency partners' limited capacity to implement treatments at scale. Participants said place-based organizations could identify local 'spark plugs' to engage with their local communities to activate and coordinate additional capacity for fuels treatment implementation. Specifically, participants said that desires within local communities to assist firefighters with protective activities could be leveraged to help complete local prescribed fire projects.

I understand that there is a group in Cedar Park that does community fire protection….Having people that are committed and invested in wildfire response and mitigation…that's something I'd like to talk about more internally. How can we support groups like that? To me that sounds like a prescribed burn association in the making. This is a group that we could see as valuable.

– ARP Fire Responder (Participant 1)

Recommendation 3c. Establish methods to increase funding and capacity for immediate post-fire recovery.

Participants discussed challenges of funding recovery work, specifically accessing unrestricted funds in the immediate aftermath of a wildfire to complete time-sensitive post-fire recovery projects. While the NCFC Fund provides unrestricted capacity funding to place-based collaboratives and community-connected partners to support pre-fire mitigation work, disaster

recovery funding is not typically as flexible. Funding immediate post-fire recovery work on federal lands is fairly straightforward through the Burned Area Emergency Response (BAER) program[8]. However, immediate post-fire recovery funding on non-federal lands can be much more challenging. Many non-profit entities who are crucial partners to local governments for supporting post-fire actions struggle with this, as funding is typically acquired for specific projects. This structure means there are frequently lag times between an unanticipated incident, such as the Alexander Mountain Fire, and the procurement of funds to complete recovery actions on private lands. This can create missed opportunities to mitigate post-fire risks, such as flooding. Participants said finding ways to overcome this challenge was critical to effectively mitigating time-sensitive post-fire recovery risks.

> *We are not set up to a place where we can just respond after a fire with the funding mechanisms that we have. We have to apply for funding and wait to get it. Sometimes it takes a long time for that to happen. That is a challenge for us.*
>
> – Place-based Group Member (Participant 9)

Participants said that developing solutions for immediate post-fire recovery funding challenges would be a useful task for the NCFC to help address. One partial solution participants discussed was increasing communication and coordination between the EOC, post-fire recovery partners and the IMT, which could align fire response actions with post-fire recovery needs. For example, strengthened linkages between the post-fire focused actors and the IMT could promote strategic use of firefighting capacity to address post-fire concerns, such as hazard tree mitigation, before resources are demobilized and transferred off the incident.

Discussion

This case study examined the events of the Alexander Mountain Fire from the perspectives of IMT members, land managers, local fire responders, local emergency managers, and members of non-governmental organizations, in alignment with the NCFC's goal to "leverage, utilize, and facilitate applied research and monitoring to evaluate progress, the results of which will help guide future actions in an adaptive management framework." Throughout the process of data collection and analysis, we were interested in understanding ways to better link the pre-fire planning activities of the NCFC to fire response and post-fire recovery. Fortunately, participant recommendations to improve 1) pre-fire planning, mitigation, and response, and 2) the linkages between these phases of fire management align with these remaining NCFC goals and could potentially be implemented through the work of NCFC committees

Table 1. Recommendations relating to Participation, Coordination, and Outreach. Includes the general problem each recommendation aims to address, as well as the applicable NCFC committees and overarching NCFC goals.

Participation, Coordination, and Outreach	Problem it addresses	Relevant NCFC Committee(s)	Relevant NCFC Goal(s)
1a. The NCFC and its constituent place-based collaboratives should actively seek opportunities to engage local-level fire response resources, specifically fire protection districts (FPDs), in activities, general membership, and on committees	Lack of fire responder input in NCFC direction setting	SPAMOps, CE&O	Goal 1, Goal 2
1b. NCFC members could prepare to tie in directly with immediate post-fire recovery efforts coordinated by counties	Lack of capacity during post-fire recovery	Steering	Goal 2, Goal 6
1c. Leverage opportunities to strengthen the coordination between federal and locally based fire response partners to improve strategic fire management across the northern Front Range.	Misalignment between federal land managers and local fire response/public safety agencies	SPAMOps, Steering	Goal 2, Goal 6
1d. Establish expected channels and lines of communication between the ARP, County Office(s) of Emergency Management, and IMTs during incidents	Coordination between federal and county agencies	SPAMOps	Goal 2, Goal 6

[8] For fires over 500 acres, the BAER program seeks to identify and mitigate near-term post-wildfire dangers to human life and safety, federal property, and critical natural or cultural resources on National Forest System lands. Once dangers and risks are identified, program funds can be leveraged as appropriate to manage and mitigate threats on federal land, as outlined by program guidelines (Buettner & Schultz 2025).

and their members. The seven remaining NCFC goals include:

Goal 1) Increase agency, community, and private landowner understanding of, support for, and engagement in active wildland fire risk management activities at the landscape level.

Goal 2) Build and engage a network of organizations to collaboratively identify strategic areas and plan NCFC efforts.

Goal 3) Collaboratively plan and coordinate the implementation of cross-jurisdictional, landscape level forest treatments in strategic areas using adaptive management and science-based frameworks.

Goal 4) Build and support local capacity to implement mechanical and prescribed fire treatments at scale.

Goal 5) Identify, cultivate, sustain, and allocate diverse funding sources through a NCFC Fund to support implementation.

Goal 6) Facilitate agreements to share risk, resources, and responsibilities among multiple entities to achieve impacts at the large landscape level and across jurisdictional boundaries.

Goal 7) Enact a common set of collaboratively agreed upon best management practices for conducting prescribed burning across boundaries to achieve large-scale risk management and ecologically beneficial impacts.

Below, we expand on a selection of recommendations within each thematic area, connect them to the relevant NCFC goals, and describe ways NCFC committees could either explore or support implementing these actions. To assist the reader, we have included Tables 1, 2, and 3 which group the recommendations by respective theme. Each table includes the recommendation, the problem the recommendation attempts to address, the committee that we anticipate could help implement the recommendation, and the NCFC goals the recommendations may support.

A. Participation, Coordination, and Outreach (see Table 1)

A common recurrent theme voiced by participants was the desire to increase engagement of fire responders within the NCFC. This theme not only weaves throughout our discussion, but echoes findings from the NCFC's recent Collaborative Governance Assessment which highlighted that fire responders were a key perspective underrepresented throughout the NCFC in strategic dialogues (Huayhuaca et al., 2025). Goals 1 and 2, increase agency support for risk mitigation activities and engage a network of organizations to identify strategic areas and plan NCFC actions, respectively, suggest that the NCFC would benefit from the increased participation of local-level fire response resources in planning efforts, since they are often highly trusted individuals within a community, the primary advisors to decision-makers (line officers and agency administrators) during wildfire response, and the actors who translate and implement actions during wildland fire incidents. While fire responder perspectives are highly applicable at the place-based level, they could also play a key role in higher-level coordination within the SPAMOps group, working among multiple place-based groups and supporting the more conceptual strategic discussions of the Steering Committee.

The SPAMOps and Steering committees might consider recruiting people associated with fire protection districts or emergency response to more active coordination roles, or at least as committee members. The increased participation by fire responders in these spaces would not only allow their perspectives to be better represented in large-landscape planning considerations, but it could also enhance perceived legitimacy of the NCFC among other fire response partners and help socialize concepts and intent of the NCFC to local partners with whom FPDs and OEM engage. This may help the NCFC engage a broader suite of partners necessary to achieve the overarching goals of the collaborative. For example, efforts to recruit representatives from the Division of Fire Prevention and Control (DFPC) have been slow and challenging, even though they hold substantial influence over both non-federal fire suppression and prescribed fire actions across Colorado. However, the DFPC's role supporting prescribed fire is currently an underfunded legislative mandate; capacity constraints and internal organizational challenges make it difficult for DFPC to fulfill directives related to prescribed fire. More intentional engagement of local fire responders within the NCFC could spur new relationships that build bridges to the DFPC, and constituent partners of the NCFC could help advocate for the funding and personnel needed for DFPC to be an effective prescribed fire resource and state partner.

Participants in this case study also highlighted ways in which the NCFC and its members could better support post-fire recovery, increasing the collaborative's impact throughout the fire cycle. For example, in Larimer County, the OEM's post-fire recovery collaborative offers

Table 2. Recommendations relating to Standardized Data Development, Maintenance, Delivery, and Socialization. Includes the general problem each recommendation aims to address, as well as the applicable NCFC committees and overarching NCFC goals.

Standardized Data Development, Maintenance, Delivery, and Socialization	Problem it addresses	Relevant NCFC Committee(s)	Relevant NCFC Goal(s)
2a. Explore the creation of a standardized, shareable database of home ignition zone assessments	Existing home assessments are difficult to access and may differ in structure/content	SPAMOps, CE&O	Goal 1, Goal 2, Goal 3
2b. Enhance understandings and physical improvement of the NCFC POD network across northern Colorado	POD framework not yet widely adopted by fire responders	SPAMOps	Goal 1, Goal 2, Goal 3
2c. Establish lists of prioritized Critical Values at Risk (CVAR) that will inform fire response	Challenges categorizing and prioritizing values efficiently during incidents	SPAMOps	Goal 1, Goal 2, Goal 3
2d. Explore opportunities to provide organized, operationally relevant data to functionally diverse fire responders and emergency managers during incidents	Disconnect between the data and resources of the Fireshed and its partners and fire responders who could use them	SPAMOps	Goal 1
2e. Ensure cross-county collaborators involved with incidents understand the differences in evacuation terminology between counties	Potential evacuation miscommunication	CE&O	Goal 1
2f. Ensure a shared understanding of locally relevant tools that can be leveraged during fire response across and among fire and emergency response organizations	Disconnect between the data and resources of the Fireshed and its partners and fire responders who could use them	CE&O	Goal 1, Goal 2

an existing framework within which Larimer County-based NCFC members could potentially engage and serve in immediate post-fire recovery roles. It may be beneficial for NCFC committees, general membership, or place-based collaboratives across the Fireshed to consider local government recovery frameworks, such as Larimer County's post-fire recovery collaborative, and discuss how their skillsets may fit into those existing structures and how current NCFC efforts could be coordinated to complement local government actions. This would further support Goal 2 by encouraging greater NCFC member participation within existing recovery apparatuses, which in turn, could inform strategic NCFC post-fire recovery discussions and actions. This recommendation may also support Goal 6 by improving coordination of post-fire recovery actions and potentially increasing the impact of recovery actions at a landscape-scale.

B. Standardized data development, maintenance, delivery, and socialization (see Table 2)

The NCFC should consider developing additional tools for use by fire responders on incidents to improve the integration of pre-fire planning with fire response. For example, the NCFC could create easily accessible attributed lists of CVAR. This may help achieve Goals 1, 2, and 3 by helping to construct a shared understanding of important values between fire responders, land managers, communities, and other partners and catalyzing cross-boundary mitigation activities to protect these values. At the time of publication, CFRI is engaged in supporting a CVAR inventory with the Shoshone National Forest and cooperators, as well as a small-scale effort with one community within the NCFC footprint (Livermore, Colorado). Undertaking similar efforts to identify CVAR across the NCFC would align with ongoing regional efforts to create CVAR databases for use by fire managers, including those facilitated by the USFS Enterprise Program in USFS Region 1, and others facilitated by regional staff in USFS Regions 5 and 6 (Aldworth & Beeton, 2025). Developing CVAR products across the NCFC would involve bringing together local fire responders, land managers, community partners, and other interested and affected entities to collaboratively identify, map, and attribute CVAR lists (Aldworth & Beeton, 2025). Identifying CVAR in the pre-season would meet a need of IMT members and other fire responders, who are taught to develop strategic actions based upon understandings of CVAR (Aldworth et al., 2024) but are often forced to

do so with limited information and significant time pressure in highly dynamic environments. Creating attributed CVAR lists across the NCFC could: 1) help gain alignment on CVAR among community partners, Agency Administrators, and local fire response organizations without the time crunch of an active incident; 2) help Agency Administrators articulate CVAR that are community-informed; and 3) speed up strategy development and implementation during incidents. In short, developing CVAR in the pre-season with partners can provide detailed and relevant information in an easily referenceable form to support and improve fire responder decision-making.

Another potential product recommended by participants that could serve the needs of fire responders was a standardized, inter-organizational database of completed home assessments that could be used during incident response to assist in structure triage and protective actions. A home assessment database could also help coordinate cross-boundary outreach and engagement actions with private landowners. Home assessments are one of the most direct interactions wildfire-focused organizations have to engage with individual private landowners, and provide key opportunities for 1-on-1 discussions about a variety of wildfire preparedness topics, including structure defensibility, fire responder capabilities under a range of conditions, evacuation information, and how groups like the NCFC are building strategy to coexist with wildfire across northern Colorado. The cross-boundary coordination potential of a standardized home assessment may therefore also support Goals 1, 2, and 3. The CE&O Committee of the NCFC may be well positioned to work closely with counties to develop tailored messaging that could be shared and discussed during home assessment visits. The SPAMOps and CE&O committees might consider exploring the opportunities and challenges for developing a standardized home assessment database that is shareable and maintained, with an associated outreach package. These committees may benefit from building off existing efforts within the NCFC, specifically in Grand County, to track parcel level assessments (SWCA Environmental Consultants, 2023).

Beyond creating new tools, the NCFC could improve existing ones. Specifically, an opportunity the SPAMOPs Committee could leverage is refining, ground truthing, and maintaining the NCFC's cross-boundary PODs network in partnership with local fire responders – an approach which may further progress towards Goals 1 and 3 by supporting cross-boundary, strategic fuels treatments with impacts at the landscape level and have the additional benefit of encouraging increased fire responder buy-in to PODs as an overarching strategic framework. PODs are not a novel tool to fire responders in northern Colorado. PODs and other spatial analytics were used on the Cameron Peak Fire to delineate the initial planning area and to build primary and contingency lines. Approximately 30% of the fire perimeter fell along POD lines and 65% of all constructed or improved line fell along POD lines (Caggiano et al. 2021). However, the decision to use POD lines as control features is not always straightforward. On the Alexander Mountain Fire, responders noted there are a variety of factors that affect decisions on how to choose, build, and hold fire lines, such as observed fire behavior, predicted weather, the type and condition of the holding feature, and resource availability to improve and hold the line. Not all POD lines are equally

Table 3. Recommendations relating to Human and Financial Capital. Includes the general problem each recommendation aims to address, as well as the applicable NCFC committees and overarching NCFC goals.

Human and Financial Capital	Problem it addresses	Relevant NCFC Committee(s)	Relevant NCFC Goal(s)
3a. Strategize fuels treatments to account for likely implementation capacity, fire response operations, and landscape needs	Overreliance on mechanical thinning methods, strategy that does not fully consider fire response resource capability	SPAMOps	Goal 3, Goal 7
3b. Leverage place-based capacity to fill gaps in fuels treatment implementation capacity	Lack of public support and capacity to conduct prescribed fire	SPAMOps	Goal 4
3c. Establish methods to increase funding and capacity for immediate post-fire recovery	Lack of funding for post-fire recovery on private lands	Investment	Goal 5

effective containment features, and while the NCFC has taken efforts to update and refine their POD network, PODs are a living database that requires resources to update, ground truth, attribute, and maintain containment features. Local fire responders are well positioned to support these efforts, and coordinated cross-jurisdictional efforts may be warranted to evaluate, track the condition of, and improve PODs lines during the pre-season. It may also help to increase trust in, and use of, PODs for smaller incidents and help communicate suppression opportunities to out-of-area resources called in to support fire response on larger incidents. The SPAMOps and CE&O committees could help communicate and translate the purpose and intent of PODs to fire responders across the NCFC, emphasizing the following: 1) PODs are a strategic fire planning framework and decision support tool – they do not tie your hands to a fixed fire management strategy; 2) PODs represent potential control features and are not the only containment features on the landscape; 3) PODs are more likely to hold under moderate conditions, on a fire's flanks, and will likely need additional improvement before or during a fire to be successful; 4) all PODs lines are not created equal – a well-maintained road is different from one that is not, and from trails or fuel type transitions, for example; and 5) the use of PODs during incidents ultimately depends on the unique incident context, for example fire behavior, nearby values at risk, and available resources. Improving PODs in the pre-season with vegetation management, documenting the type, quality, and condition of POD lines, and communicating this among fire responders may go a long way in facilitating the application of PODs and improving safe and effective response.

C. Human and Financial Capital (see Table 3)

Local community responses to the Alexander Mountain Fire demonstrated a desire by some local landowners to take proactive roles in protecting their land from catastrophic fire. The SPAMOps Committee could explore the possibility of developing local landowner prescribed burn associations (PBAs) to increase capacity to implement prescribed pile burning on private lands across the NCFC. PBAs have grown increasingly common within the United States and have demonstrated success at returning beneficial fire as a tool to individuals and groups outside professional fire response organizations (Deak et al., 2025). In fact, the NCFC has already begun advancing this concept: through NCFC Fund capacity grants, the NCFC is supporting The Ember Alliance's pilot Pile Burn Cooperative (PBC) initiative, a localized adaptation of the PBA model designed for Colorado's prescribed fire context and conditions. The pilot is focused on developing the legal, organizational, and community foundations needed for nonprofit and resident-led pile burning on private lands, including model landowner agreements, interagency collaboration with DFPC and local fire protection districts, and community training

Photo credit: USDA Forest Service/Q. Pearson

workshops (Ember Alliance, 2025). While still in early stages, the PBC model offers a promising, scalable pathway for building local prescribed fire capacity and culture within the NCFC. If the SPAMOps Committee elects to expand this approach, it should build on the lessons emerging from The Ember Alliance's PBC program, particularly around legal frameworks, risk management, and gradual community empowerment, while also maintaining close coordination with county fire managers and suppression authorities.

Participants discussed ways to better integrate NCFC members into post-fire recovery efforts, however, they nonetheless highlighted the challenge that organizations face in funding immediate post-funding recovery actions and capacity on private lands, which restricts their ability to engage in post-fire recovery activities. This key finding aligns with other work reporting on challenges with post-wildfire recovery and governance (Buettner & Schultz, 2025). One solution would be for the NCFC to build awareness of, and connect partners to, new financing options designed to address cash-flow delays, such as Coalitions and Collaboratives' Forest and Water Renewal Revolving Loan Fund, currently in a 3-year pilot phase. This and similar bridge financing options provide below-market rate loans to organizations with reimbursement-based grants from specific agencies; Coalitions and Collaborative's fund can be used for both pre- and post-fire work supported by grants from the USFS, Colorado State Forest Service, and the Colorado Water Conservation Board (Coalitions and Collaboratives, 2025). In cases where bridge financing is a poor fit, another potential avenue the NCFC Investment Committee could explore is whether the NCFC Fund could be leveraged to support immediate post-fire recovery actions on private lands, which would help work toward Goal 5 of allocating funds in a way that broadens opportunities for project investments across the NCFC landscape, and fills critical gaps. Specifically, the NCFC Fund could potentially provide support to non-governmental organizations who often scramble to secure funds to implement post-fire recovery actions, such as flood mitigation, immediately following a wildfire. This action does come with potential tradeoffs that should be considered. For example, leveraging money from certain sources may specifically disqualify applicants from being awarded other sources (Buettner & Schultz, 2025). Nevertheless, because funding immediate post-fire restoration activities on private land is both time-sensitive and difficult, and fire impacts frequently transcend jurisdictional boundaries such as municipalities or counties, the NCFC Fund may be well positioned to bridge this critical gap.

Conclusion

The 2024 Alexander Mountain Fire provided an opportunity to evaluate the linkages between fire planning, response, and recovery and develop recommendations for improvement. We acknowledge some of the recommendations included within this report may be more difficult than others to address and may require experts and resources outside the current capacities of the NCFC. We suggest the NCFC review these recommendations and identify which are feasible and appropriate to address in the near term, and which should be medium and/or long-term endeavors. It may be important to consider which could be "quick wins" - recommendations that are already being addressed or are related to ongoing efforts. It may also be beneficial to identify who would be best suited to move certain recommendations forward to action, and whether that requires internal and/or external capacity not currently leverageable by the NCFC. Regardless of how feasible certain recommendations turn out to be, they nonetheless may generate additional conversations within the NCFC and its committees. This in turn might lead to additional ideas, capacities, and opportunities for improving the linkages between fire planning, response, and recovery. Given emerging challenges at the federal level, impacting both capacity and funding and multiple scales, the collaborative creativity of NCFC members will likely be an increasingly critical resource for improving strategic fire management strategies and outcomes across the Northern Colorado Fireshed moving forward.

Photo credit: Larimer County Sheriff's Office/G.Mogel

Literature Cited

Aldworth, T. & Beeton, T. (2025). Considerations for developing Critical Values at Risk in the preseason with partners. CFRI-2504. https://cfri.colostate.edu/wp-content/uploads/sites/22/2025/03/Aldworth_Considerations_developingCriticalValuesRisk_CFRI_2504.pdf

Aldworth, T., Buettner, W.C, Greiner, S.M, Beeton, T., Schultz, C. (2024). Improving the Incident Strategic Alignment Process: Recommendations from the 2023 Fire Season. CFRI-2408. https://cfri.colostate.edu/wp-content/uploads/sites/22/2024/06/ISAP_Recommendations_Brief_Aldworth_CFRI_2408.pdf

Buettner, W. C., & Schultz, C. (2025). Governing across jurisdictions in post-wildfire response and recovery: An analysis of the 2022 Hermit's Peak Calf Canyon Wildfire. Journal of Environmental Management, 381, 125272. https://doi-org.ezproxy2.library.colostate.edu/10.1016/j.jenvman.2025.125272

Caggiano, M., Beeton, T., Gannon, B., White, J. (2021). The Cameron Peak Fire: Use of Potential Operational Delineations and Risk Management Assistance Products. CFRI-2106. https://cfri.colostate.edu/wp-content/uploads/sites/22/2021/06/CameronPeakFirePODsReport.pdf

Coalitions and Collaboratives (2025). Forest & Water Renewal Revolving Loan Fund: Our new revolving loan fund provides communities with below-market rate bridge loans to accelerate watershed and forest health and wildfire mitigation. https://co-co.org/forest-water-renewal-revolving-loan-fund/

Ember Alliance (2025). Colorado Pile Burn Cooperative: Neighbors Getting Good Fire On The Ground. https://emberalliance.org/cpba/

Deak, A., Fawcett, J. E., Quinn-Davidson, L., Adlam, C., Weir, J. R., & Stackhouse, J. (2025). Burning from the ground up: the structure and impact of Prescribed Burn Associations in the United States. International Journal of Wildland Fire, 34(3). https://doi.org/10.1071/WF24178

Huayhuaca, C., O'Reilly, H., Beeton, T., vonHedemann, N., Roberts, M., Cheng, A.S., Colavito, M., & Teel, T. (2025). Collaborative governance assessment report for the Northern Colorado Fireshed Collaborative. https://cfri.colostate.edu/wp-content/uploads/sites/22/2025/05/Huayhuaca_NCFC_CollaborativeGovernanceAssessmentReport.pdf

National Interagency Fire Center (n.d.). Incident Management Teams. https://www.nifc.gov/resources/firefighters/incident-management-teams

National Park Service (2025, May 30). Wildland fire incident command system levels. U.S. Department of the Interior. https://www.nps.gov/articles/wildland-fire-incident-command-system-levels.htm

Northern Colorado Fireshed Collaborative (2023). The Northern Colorado Fireshed Collaborative Charter. https://nocofireshed.org/wp-content/uploads/2023/05/NCFC_Charter_Final_030323.pdf

Northern Colorado Fireshed Collaborative (2024). Principles & Components of the Northern Colorado Fireshed Collaborative Spatial Strategy.

Rhea, A., Ritter, S., Caggiano, M., Huayhuaca, C., Edinger, J. (2022). Northern Colorado Fireshed Wildfire Risk Assessment. CFRI-2221. https://cfri.colostate.edu/wp-content/uploads/sites/22/2022/10/Rhea_et_al_2022_NorthernColoradoFireshedWildfireRiskAssessment_CFRI_2221.pdf

SWCA Environmental Consultants (2023). Grand County Public Assessment Viewer. Grand County Community Wildfire Protection Plan. https://experience.arcgis.com/experience/89f6a430ac5c431a9c6a31120ec43237/page/Parcel-Assessments/?data_id=dataSource_7-18b243793b7-layer-3%3A21%2CdataSource_5-18acda84f47-layer-4%3A20&draft=true

vonHedemann, N., Aldworth, T., Beeton, T., Colavito, M., Caggiano, M. (2023). Use of Risk Management Assistance on the 2022 Bear Trap Fire, New Mexico. https://cfri.colostate.edu/wp-content/uploads/sites/22/2023/06/RMAssistance_2022BearTrapFire_NM.pdf

Wertz, J. & Markus, B. (2024, September 11). Man accused of impersonating police and firefighters charged with arson in Alexander Mountain fire. Colorado Public Radio. https://www.cpr.org/2024/09/11/alexander-mountain-fire-arrest/

Appendix A: Interview Protocol

We would like to focus on your involvement in, and perspectives of: a) the decision-making process and actions on the Alexander Mountain Fire; b) how pre-fire planning activities supported incident response; and c) what is needed to increase readiness to receive and respond to fire.

1. What was your position on the fire/or how were you involved in the fire?
2. Can you describe the fire conditions and progression when you were on the fire?

This series of questions will ask you to walk through the process of identifying risk and developing strategy on Alexander Mountain Fire.

3. When were homes identified as at risk? And when were homes impacted?
4. What were some of the social or political factors that impacted decision making?
5. What strategic actions were ultimately implemented? And why those?
6. Can you discuss what defensive actions were taken and why they didn't work?
7. Conversely what homes were protected and why did that work?
8. Who or what entities participated in these risk and strategy discussions?

I want to switch gears and talk about how pre-fire planning activities supported (or not) response.

9. How did the pre-fire planning activities across the NCFC impact the preparedness and response to this fire? For example:
10. What types of information (e.g., PODs, other risk-based planning) were used to inform decisions? Which were most helpful and which were less helpful and why?
11. Which, if any, vegetation treatments interacted with the fire? Did they affect fire behavior and/or support operations/suppression actions?
12. Do you feel the entities involved and communities impacted were adequately prepared for the incident? Why or why not?
13. What lessons from this fire can you share that could help the NCFC/Front Range community better prepare for the next fire? For example:
14. What data/information was missing? Or how could spatial data be packaged in a different way so that it can more readily support AAs/IMTs in their decision making?
15. Is engagement with the NCFC or other place-based collaboratives the best way to ensure community values are considered in response operations? If so, how can interactions/coordination between incident managers and collaboratives be improved?
16. What types of communication occurred before the fire with homeowners in areas impacted by the fire, including those who lost homes? How might this experience and outcome shift how local groups engage with homeowners in the future?
17. How do unplanned treatments, like Alexander Mountain Fire, factor into the ongoing development and evolution of the NCFC spatial strategy?
18. What other successes or challenges would you like to share from this incident?
19. What (if any) lessons from the Alexander Mountain Fire were applied to the Pearl Fire?
20. Is there anyone else you would recommend we speak with to gather lessons learned from this fire?

Appendix B: Acronym Reference List

ARP	Arapaho and Roosevelt National Forests and Pawnee National Grassland
CE&O	Community Engagement and Outreach
CFRI	Colorado Forest Restoration Institute
CIMT	Complex Incident Management Team
COTAK	Colorado Team Awareness Kit
CVAR	Critical Values at Risk
DFPC	Division of Fire Prevention and Control
EOC	Emergency Operations Center
FPD	Fire Protection District
GIS	Geographic Information System
IC	Incident Commander
IMT	Incident Management Team
ISAP	Incident Strategic Alignment Process
LCSO	Larimer County Sheriffs Office
LFRA	Loveland Fire and Rescue Authority
LIDAR	Light Detection and Ranging Technology
NCFC	Northern Colorado Fireshed Collaborative
OEM	Office of Emergency Management
POD	Potential Operational Delineation
RMA	Risk Management Assistance
SPAMOps	Startegic Planning, Adaptive Management, and Operations
SWERI	Southwest Ecological Restoration Institutes
USFS	USDA Forest Service