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Interagency Hotshot Crew

Programmatic Review



Front cover: Members of the Roosevelt Hotshot Crew hike back during a fire severity assignment in California. USDA Forest Service photo.

Back cover: Sierra Hotshot sawyers conduct mop-up duties on the Caldor Fire, Eldorado National Forest. USDA Forest Service photo by Cecilio Ricardo.

Opposite: Willow Fire, Caribou-Targhee National Forest. USDA Forest Service photo by Martell Gibbons.



Above, clockwise from left: The Ruby Mountain Hotshot Crew constructs fire line during the Dixie Fire, Lassen National Forest. Bureau of Land Management photo by Joe Bradshaw. A Ruby Mountain Hotshot crewmember sharpens her tool while on the Dixie Fire, Lassen National Forest. Bureau of Land Management photo by Joe Bradshaw. Crewmembers from the Tallac Hotshot Crew push a broken-down vehicle. USDA Forest Service photo by Kyle Betty.

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Foreword



The Feather River Hotshot Crew performs mop-up support during the Dixie Fire, Lassen National Forest. USDA Forest Service photo by Cecilio Ricardo.



Jaelith Hall-Rivera
Deputy Chief
State, Private, and Tribal Forestry

On July 16, 2021, I delegated authority for an Interagency Hotshot Crew Learning Team Review, requested by the [National Interagency Hotshot Crew Steering Committee](#).

The review was conducted by a 31-member interagency review team, and this report provides a comprehensive overview of how the [interagency hotshot crew program](#) has changed since its inception 80 years ago. It also presents 50 recommendations that have the potential to improve the hotshot work environment and increase firefighter recruitment, retention, and effectiveness across all Federal wildland fire agencies. Their findings are also applicable across the broader wildland fire community.

The team’s substantial research and recommendations come at a pivotal time and have already helped inform our work with the White House, the Office of Management and Budget, the Department of the Interior, the Office of Personnel Management, Congress, and others to recognize the specialized work our firefighters do on behalf of the Nation. These efforts include a permanent pay increase and pay table, an appropriate professional job series, improved housing, incident standby or response pay for all Federal responders, better recruitment and retention processes, increased firefighter capacity, and increased funding for firefighter mental and physical wellbeing programs. The President has submitted a budget and legislative proposal to Congress to make these desperately needed changes in fiscal year 2024. Congress is actively working on legislation to make permanent pay increases a reality.

As I reviewed the report, I was pleased to see we are already advancing some of the team’s recommendations through our work to implement the Bipartisan Infrastructure Law and through joint efforts with the Department of the Interior and the Office of Personnel Management. For example, the Forest Service and the Department of the Interior are developing a Joint Wildland Firefighter Behavioral Health Program and implementing reforms such as providing 3 days off after a 14-day assignment. Progress in these areas would not have been possible without significant input from the wildland firefighting community.

I want to thank interagency hotshots and Forest Service employees Josh Acosta and Kyle Betty for requesting this programmatic review as chair and co-chair, respectively, of the National Interagency Hotshot Crew Steering Committee. I also want to extend a special thank you to review team leader Jason Kuiken, Forest Supervisor on the Stanislaus National Forest, and all the other team members for the considerable amount of time, effort, and research that went into developing these recommendations and producing the report itself. This report provides us with a new perspective on the interagency hotshot crew program and makes it clear that—despite our progress in some areas—more work must be done.

As the report states, further dialogue is needed to create a shared understanding of the issues it raises. As also noted in the report, some recommendations are interwoven across multiple Forest Service programs, while others call for change beyond the agency’s purview. As we begin to organize around many of the report recommendations, we have already convened a group of senior leaders, including a regional forester, national and regional fire directors, and several others to create an opportunity for open dialogue with the National Interagency Hotshot Crew Steering Committee regarding key issues in 2023. The next steps in addressing the review team’s recommendations are to formally establish a Forest Service working group to ensure the intent behind the team’s recommendations is fully understood; assess the feasibility of implementing the report’s recommendations;

and develop a work environment improvement action plan that is responsive to the report’s recommendations, both specific to hotshots’ needs as well as those of our broader wildland firefighting workforce. This working group will include representation from hotshot superintendents and field practitioners to line officers and fire managers at all levels of the agency. The working group will also rely on subject matter experts in mental health, labor relations, pay, fleet, facilities, budget, and others to advise on implementation requirements. A nomination process for participation on the working group will be forthcoming. The targeted timeframe to begin these efforts is November 2023.

Some of the team’s proposals are complex, multijurisdictional, or both, so this effort will not be easy, and some recommendations may not be implementable. However, I feel certain that, at the end of the day we can lay the foundation for a robust, modernized interagency hotshot crew program with the leadership, expertise, and capabilities our firefighters require and deserve in today’s wildland fire environment as well as improve the entire system for all of our wildland firefighters.

JAELITH HALL-RIVERA
Deputy Chief
State, Private, and Tribal Forestry

Executive Summary



Firefighters with the Blue Ridge Hotshot Crew battle the Dixie Fire, Lassen National Forest. USDA Forest Service photo by Cecilio Ricardo.

In March 2021, the National Interagency Hotshot Crew Steering Committee requested a programmatic review, highlighting several opportunities around the “need to better contextualize and quantify the interagency hotshot crew program in totality to develop a more modern and relevant model to meet the needs of the agency, and the employees in the program” (Acosta and Betty 2021). Every aspect of the environment in which hotshot crews operate has changed since the inception of the original hotshot crews 80 years ago. Lengthening fire seasons, increased occurrence of synchronous wildfires, increasing fire complexity, and an improved knowledge of the role of wildland fire on the landscape have led to systemic challenges.

Simultaneously, current expectations around income and work-life balance, exacerbated by housing market conditions, have resulted in significant barriers to recruiting and retaining qualified firefighters in the Federal workforce. While factors such as the housing market are obviously beyond the control of wildland fire agencies, it is critical to understand the impacts they have on the workforce and the potential solutions that are within the agency’s control.

The programmatic review process included an extensive survey which resulted in over 700 responses, a series of focus group discussions, and sensemaking sessions to develop problem and objective diagrams from the data gathered

through the focus groups and survey. The review team developed influence diagrams to describe the many interconnected challenges facing the hotshot program. The sensemaking sessions and influence diagrams were used to identify key themes emerging from the focus groups and survey results. Each theme explores the questions of “what is working well, and what needs improvement.”



The themes identified in this review and the resulting recommendations create a powerful case for change. The hotshot program is at a crossroads. In a time where more wildland firefighting capacity is needed, applicant lists for hotshot crews are less robust and the workforce is diminishing. If these challenges are not addressed in a timely manner, the current unsustainable system may leave crews unable to provide the leadership, expertise, and capabilities required in today’s wildland fire environment.

In total, the review team developed **50** recommendations that aim to strengthen recruitment, retention, and crew effectiveness by improving the work environment. However, as each component of this broad system is interwoven, there are recommendations that apply to other staff areas. To implement these recommendations most effectively, further dialogue to create a shared understanding of the issues and to finalize pathways to achieve the desired results will be needed.

The following abbreviated recommendations represent the breadth of issues that this review addressed:

- ▶ Finalize the wildland firefighter job series and apply the pay increase as broadly as possible.
- ▶ Provide a minimum annual supply budget of \$40,000 to each crew (or \$65,000 to nearly eliminate use of supply numbers (S#)).
- ▶ Modify the Interagency Incident Business Management Handbook to require 3 days of rest and recuperation.
- ▶ Increase commitment to employee well-being by allowing crewmembers to attend personal events.
- ▶ Modify hiring practices, to include using open continuous rosters and altering application periods (outside core fire season).
- ▶ Build an outreach program to increase overall recruitment and specifically to minority populations.
- ▶ Create a 30-day process to outreach and fill not-to-exceed 1-year details for key vacancies.
- ▶ Codify the Standards for Interagency Hotshot Crew Operations (SIHCO) in the appropriate agency manuals to make it policy.
- ▶ Sign an annual charter and program of work for the National Interagency Hotshot Crew Steering Committee.
- ▶ Improve the vehicle fleet by modifying the repair and procurement processes and vehicle design and composition.
- ▶ Assess the current condition of interagency hotshot crew facilities and develop a minimum facility standard.
- ▶ Add housing, develop consistent housing policy, and modify housing cost while on incidents.

This programmatic review provides a comprehensive pathway to ensuring a strong interagency hotshot crew program into the future. Land management agencies take pride in continual research to improve mission delivery and this approach was similar, aiming to improve employee conditions so that the agencies can best meet their respective missions. This is a call to action for leaders throughout wildland fire agencies to write the next chapter of how interagency hotshot crews are staffed, funded, and utilized.

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Note: Interagency hotshot crews will be referred interchangeably as the following throughout this document: IHC, hotshot crew, hotshots, and crew.



A Wolf Creek Hotshot boards a helicopter while air crewmembers load equipment to travel to a remote wilderness area affected by the Dodge Springs Fire. USDA Forest Service photo by Jess D. Harvey.

Introduction

The Nation is confronting a wildfire crisis caused by changing climate, increasing population in the wildland-urban interface, and more than a century of successful fire suppression in fire-dependent ecosystems. At the same moment, the wildland fire system is under strain caused by competing agencies with higher pay, a changing workforce with increased focus on family and personal well-being, insufficient vehicles and facilities, and more.

Overcoming this crisis requires innovative fire and land management approaches coupled with a well-trained, well-educated, and well-supported workforce. In the face of these daunting challenges, there is tremendous reason for hope—committed leaders throughout the system aim to improve both the work and natural environments; this review is testament to that.

Today, interagency hotshot crews (IHCs) have cemented their place as a critical resource for wildland fire management and there is little doubt they will continue to be in high demand, providing expertise and leadership developed over decades. IHCs are comprised of some of the most fire knowledgeable and innovative individuals, each one striving to accomplish the IHC mission to provide a safe, professional, mobile, and highly skilled hand crew for all phases of fire management and incident operations.

This review documents themes and recommendations to ensure IHCs continue to provide a high level of service for fire and incident response. Current efforts to increase wildland firefighter pay and the development of a specific wildland firefighter job series are recognized as critical steps in supporting firefighters in a manner conducive to the value they provide. There are many other opportunities to address the challenges threatening the future of IHCs that, when implemented, will create a more resilient organization adapted for responding to future endeavors.

“I am not a hotshot, and never have been. As such, I had certain perceptions and beliefs about what hotshots do, what their lives are like, and what the conditions are in which they operate. Spending months in detailed communication with folks throughout the country that are or were hotshots, and those that work with them every day, provided a unique glimpse into their world.

By and large, my perceptions and beliefs were either incorrect or not exactly aligned with reality. Throughout this report, we have identified themes and reasonable recommendations to improve the work environment for hotshots; it should be noted that many of these recommendations should be applied more broadly in the wildland fire community. I also acknowledge that their story is best told by them, so wherever possible, this report is in their voice.”

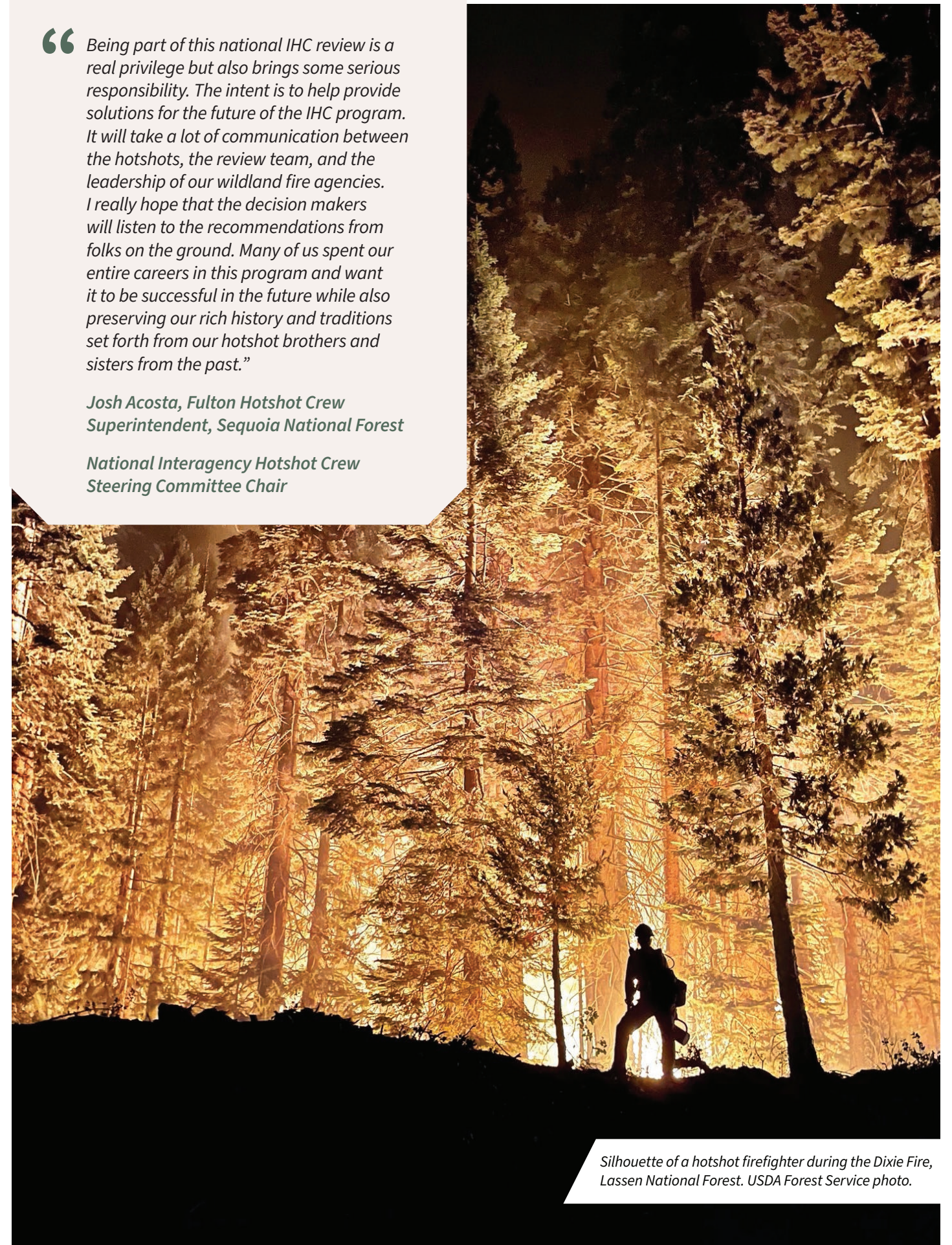
**Jason Kuiken, Forest Supervisor,
Stanislaus National Forest**

Programmatic Review Team Leader

“Being part of this national IHC review is a real privilege but also brings some serious responsibility. The intent is to help provide solutions for the future of the IHC program. It will take a lot of communication between the hotshots, the review team, and the leadership of our wildland fire agencies. I really hope that the decision makers will listen to the recommendations from folks on the ground. Many of us spent our entire careers in this program and want it to be successful in the future while also preserving our rich history and traditions set forth from our hotshot brothers and sisters from the past.”

**Josh Acosta, Fulton Hotshot Crew
Superintendent, Sequoia National Forest**

*National Interagency Hotshot Crew
Steering Committee Chair*



Silhouette of a hotshot firefighter during the Dixie Fire, Lassen National Forest. USDA Forest Service photo.

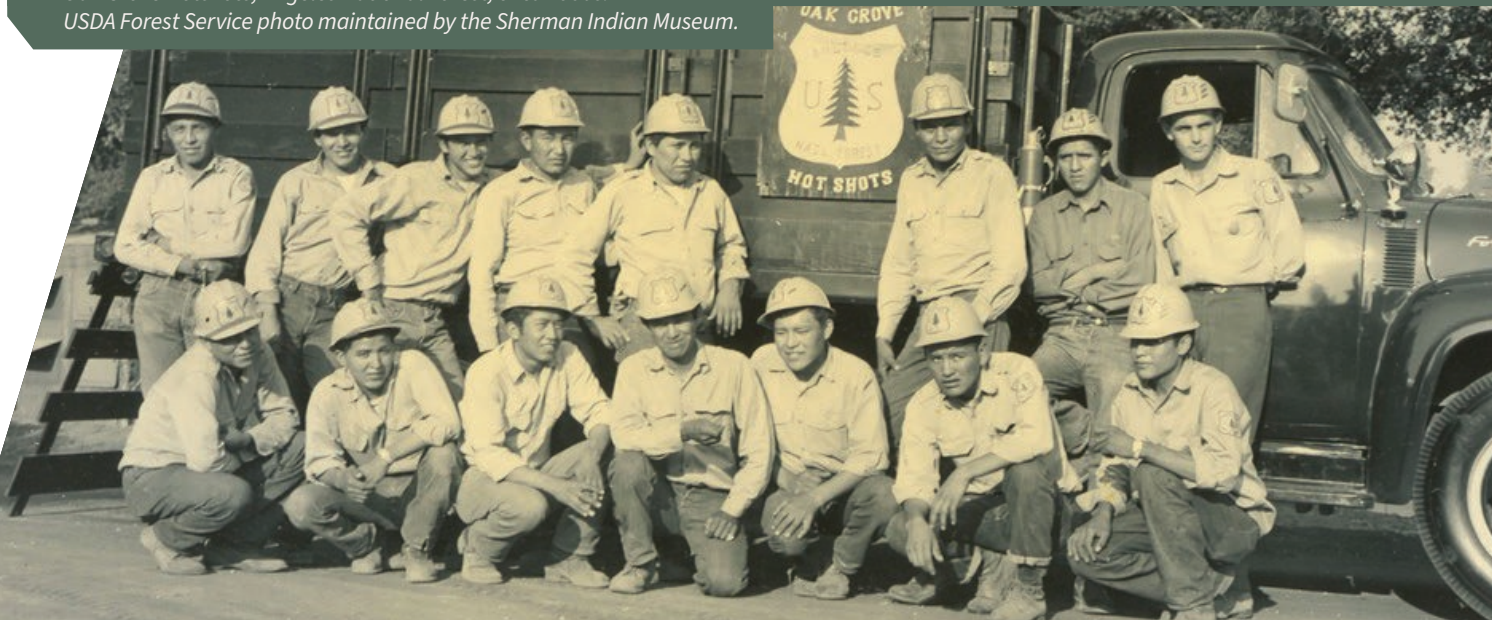
Hotshots: Local Roots, National Reach

The history of hotshot crews is as varied and colorful as the names of the 116 crews: Bonneville, Geronimo, Lewis and Clark, Midnight Sun, Smokey Bear, and Zigzag, to name a few. With establishment dates as early as the 1940s, the first crews grew from the inspiration of passionate individuals by successfully leveraging local support to organize, train, and equip firefighters from all walks of life into specialized and efficient mobile firefighting teams designed to carry out the “10 a.m. policy.”¹

As their reputation for aggressive firefighting on large fires grew, these crews began to travel to neighboring areas to fight fires and by the mid-1950s, pragmatic standards began to develop among the handful of crews, as seen in this excerpt from the early days of the Chilao Hotshots from the Angeles National Forest, 1949–1984:

“It was about this time that the hotshot crew size was standardized at 20 people (crewmembers) plus overhead. The 30-person crew size was a holdover from the [Civilian Conservation Corps] days when their stake side trucks had bench seats that ran across the bed of the truck. The hotshot crews had changed this to padded toolbox seats along each side of the bed of the stake side truck and across the front. This new set up (sic) did not provide seating for more than 12–14 people per truck. The main reason though for reducing crew size to 20 people was to be able to put the crew and their gear on a Forest Service DC-3 or C-54. In those days the crews seldom flew to a fire, but it was starting to happen, and the crew and their gear had to fit on the airplane” (NIHCSC 2013).

Oak Grove Hotshots, Angeles National Forest, circa 1950s.
USDA Forest Service photo maintained by the Sherman Indian Museum.



Over the next 50 years, diverse iterations of crews sprouted across the West, creatively repurposing old Civilian Conservation Corps facilities, military surplus, and meager budgets to scrape together crews with a growing reputation as dedicated, hardworking, firefighting experts. Referring to the “speed of the mobile crews and their fearlessness as they shot into the hottest parts of the fire,” hotshots would eventually be considered one of the Nation’s premier interagency wildfire suppression resources (Bramwell 2013).

The interagency hotshot crew (IHC) program was formalized in the early 1980s, and with the advent of the Interagency Hotshot Crew Operations Guide (now called the Standards for Interagency Hotshot Crew Operations), **standardization was adopted in the mid-1990s**. In response to several seasons of severe wildfires with devastating impacts to communities, the **2001 National Fire Plan**² increased firefighting capacity within the U.S. Department of Agriculture (USDA) and the U.S. Department of the Interior (DOI) and ushered in a new era for the hotshot crew with national level direction, increased funding, and the creation of 20 new hotshot crews—12 in USDA Forest Service and 8 in DOI—bringing the national total to 91 crews.

“IHCs (when fully staffed and being utilized appropriately) are of great value to wildfire suppression because they are a one-stop-shop for [incident commanders], [division/group supervisors], and agency administrators. The depth of experience and qualifications brought by IHC overhead allow for a great deal of flexibility and problem solving, while the work capacity, fitness level, and quantity of crewmembers provides a powerful workforce” (IHC Review Team 2022).

However, the following decade saw these crews struggle to hire new recruits, gain qualifications, build or repurpose facilities, and become fully equipped to meet the guidelines required to earn the coveted title of “Hotshot Crew” (NIHCSC 2013).

In March 2022, 116 interagency hotshot crews exist within the interagency wildland fire system. Hosted by a variety of organizations including the National Park Service, Bureau of Land Management, Bureau of Indian Affairs, Forest Service, Tribal, and State governments, these crews are vital to wildland fire operations in the United States. Each year, IHC’s respond to thousands of fires and all-hazard incidents and provide critical support to prescribed burning projects. In addition, they are often used for other projects and tasks due to their innovative problem-solving skills and team-oriented approach.

When hotshot crews report to a wildfire, they contribute significantly more value than simply boots on the ground. **Hotshot crews solve complex wildfire suppression problems, bringing leadership, qualifications, and expertise, in addition to a dedicated workforce capable of carrying out the solutions.**

¹ An official policy of the Forest Service during the mid-1900s to extinguish all wildfires by 10 a.m. of the day following the fire being reported.

² The “2001 National Fire Plan” refers to a report by the Secretaries of the Department of Agriculture and Department of the Interior, “Managing the Impact of Wildfires on Communities and the Environment: A Report to the President in Response to the Wildfires of 2000,” and subsequent actions by Congress. Source: <https://www.doi.gov/sites/doi.gov/files/uploads/2001-wfm-policy-review.pdf>.

The localized homegrown roots of hotshot crews cannot sustain the widespread role they currently fill, as evidenced by the stark contrast between their high capability reputation and the disparate reality of their working conditions. Over the course of many years, discussions of significant and complex challenges with recruitment and retention have occurred within the hotshot community. Reviews, briefing papers, and well-articulated recommendations show a pattern of unsuccessful attempts to adequately address issues surrounding pay and classification, retirement and health benefits, physical and mental health, vehicles, equipment, housing, and office space, among

others (Noel 2017; Belval et al. 2018; USDA Forest Service 2018; NIHCSC 2019; Lee and McLane [date unknown]).

Conditions are ripe for disaster as the “wildfire crisis” era, fueled by overgrown forests, megafires, and year-long fire seasons (USDA Forest Service 2022a), clashes with a dwindling, stressed, overworked, and under-supported workforce that is frustrated by the lack of positive change. Yet despite the overwhelming challenges faced by the IHC program, **there is a strong sentiment that the program itself is not broken, it just needs more support and consistency.**

“ We’ve got a system that is decaying from the inside out. Not because of the people, but simply because buildings need to be fixed, vehicles need to be fixed.”

Interagency Hotshot Crew Programmatic Review Focus Group Member

Introduction

Scope

In March of 2021, the National Interagency Hotshot Crew Steering Committee requested a programmatic review, indicating that the gap between the work hotshot crews are expected to do and the support required to meet those expectations continued to grow in the absence of consistency and common management strategies between crews (Acosta and Betty 2021). Chartered through the **Standards for Interagency Hotshot Crew Operations (SIHCO)**, this committee is comprised of fire operations representatives and hotshot superintendents from all agencies and regions. Ultimately, the long-term viability of the hotshot program—based on a more modern and relevant model to meet the needs of the agency and the employees—was at the center of this request; it highlighted inconsistencies in crew organization, budget, staffing patterns, vehicle configurations, facilities, hiring, and other topics.

In July of 2021, the Forest Service’s deputy chief of State, Private, and Tribal Forestry delegated authority for a national programmatic review

of the interagency hotshot crew program. The review would address the issues brought forth in the National IHC Steering Committee’s briefing paper and make recommendations on program delivery, efficiency, effectiveness, modernization opportunities, and ways to increase diversity, equity, and inclusion.

For the first time in IHC program history, the USDA Forest Service, along with interagency partners from DOI—National Park Service, Bureau of Land Management (BLM), and Bureau of Indian Affairs (BIA)—and State agencies have undertaken a national programmatic review to assess the current state of the program. With the goal of providing recommendations for program improvements, the team aimed to define agency capacity needs, determine barriers to firefighter well-being, understand the complexities of the conditions influencing recruitment and retention, and identify systemic barriers to efficient operations. This report is the result of that effort.

*Pioneer Fire, Boise National Forest.
USDA Forest Service photo by Kari Greer.*

Case for Change

In the past several years, hotshots and the broader wildland fire system have faced unprecedented challenges. As the coronavirus pandemic and its associated COVID-19 concerns threw hurdle after hurdle into managing firefighter safety, fires in the West burned millions of acres and countless structures. In 2020, Colorado experienced the three largest fires in State history. Of the 20 largest wildfires in California’s history, 9 burned in either 2020 or 2021 (CAL FIRE 2022). The year 2021 saw a record-setting 99 days at preparedness levels 4 and 5 nationally (NICC 2022).

Correspondingly, IHCs have been asked to work longer seasons, been subject to more complex and demanding wildfires, and spent more time on assignment than any other period in history. Over the past 5 years, each hotshot crew spent an average of 118 days on assignment or in travel status. This has resulted **in a challenging and stressful work environment for crewmembers** and increased concern for the impacts on personal mental health and well-being.

As the IHC program has matured, it has seen substantial changes in crew capabilities and organization. Originally, crews were comprised of 18–20 personnel who were funded for 90-day seasons per year. Today, crews are comprised of 20–25 personnel who are funded for 130 days or more per year, with an increased workload due to the new demands of year-round fires and extreme fire behavior. The increased staffing is critical not to just “move more dirt,” but to better manage fatigue, accommodate mental health, and provide personnel with advanced fire training and

qualifications to support large fires; additionally, crews are required to have a minimum of 18 active personnel to deploy to a fire, and extra personnel are needed to ensure an IHC can meet that minimum.

Expectations of individual crewmembers are higher than in the past; senior firefighters often take on single-resource³ duties and firefighters in crew leadership positions are often used as taskforce leaders, division/group supervisors and type 3 incident commanders. The longer availability periods, increased staffing, and higher expectations have allowed the crews to become a unique, critical, and elite force within the fire suppression community, but it has also led to a far greater and more complex workload for the hotshot crew program. Despite these changes, the SIHCO has changed little since the mid-1990s, and crewmembers’ position descriptions (and subsequently pay) have not been updated to reflect the knowledge and skills now expected from the crews.

Despite being designated as a “national program,” **crew standards vary substantially across the Nation**, differing in fundamental aspects such as staffing, budget, crew organizational structure, facilities, and personnel management. While some crews have access to adequate resources, most crews struggle with inadequate facilities, understaffing, and insufficient budgets. Beyond hindering efficiency and effectiveness of the crews’ work, these conditions also contribute to lower crew morale. This, coupled with increased pressure from State and private entities that are

happy to hire highly qualified, agency trained firefighters for substantially higher pay than offered by the Federal Government, leads to recruitment and retention challenges for the Federal agencies hosting IHCs.

These retention issues are leading to record numbers of IHCs being unable to meet the minimum crew standards for national mobilization as type 1 hand crews, as defined in [chapter 13 of the Interagency Standards for Fire and Fire Aviation Operations](#) (commonly known as the Red Book) and the SIHCO, causing them to status as type 2 initial attack (IA) crews. Some crews are so understaffed they do not even qualify as type 2 crews. At the beginning of the 2021 season, a preseason survey of crews showed that close to a quarter of all crews did not expect to be able to meet type 1 qualifications.

Loss of these critical crew resources is a serious concern for a country experiencing year after year of catastrophic wildfires. However, understanding the complex nature of retention problems on hotshot crews requires a thorough discussion of what individual crewmembers need as well as the barriers that crews themselves face. The implementation of the recommendations that come from these discussions should lead to increased crewmember well-being, crew efficiency, and capacity at the program level.

“We’ve done our part; we continue to do our part...the hope is that we get some backup to continue to do our part and staff the crews.”

Respondent to the Interagency Hotshot Crew Programmatic Review Survey

Ample evidence shows the worsening of wildfire conditions: longer fire seasons (Jolly et al. 2015, Swain 2021, Westerling et al. 2006), more acres burned (Abatzoglou and Williams 2016, Williams et al. 2019), more frequent occurrence of simultaneous large wildland fires, and increased populations living adjacent to wildlands (Radeloff et al. 2018) resulting in increased catastrophic impacts to communities. Impacts from wildland fire are forecast to increase in the coming years, which will place further stress on an already burdened IHC community.

Imagine crewmembers living and fighting fires in their own communities, evaluating the safety of their families before going to the fire. In the face of these challenges, **a change is needed** to ensure hotshot crews are provided the tools they need to do their jobs efficiently and effectively while providing an invaluable public service.

³ “Single resource” is a broad term that refers to personnel who support wildland fire operations, such as staff who manage travel, public affairs, information technology, payroll, and other tasks; in this context, it refers to senior firefighters being pulled off their crews to oversee incident operations at a higher level.

The Time is Right

The recent catastrophic fire seasons have led to increased public awareness surrounding the issues facing wildland firefighters. Several efforts are ongoing that could substantially impact the findings and recommendations in this review. Congress passed the Infrastructure Investment and Jobs Act (also known as the Bipartisan Infrastructure Law) in 2021, which supports increased firefighter pay, development of a specific wildfire fighter job series, and significant funding to reduce hazardous fuels (Public Law 117-58).

In February of 2022, a group of U.S. Senators signed a letter to the Department of Labor's Director of the Office of Workers' Compensation Programs urging the establishment of a special claims unit for handling firefighter compensation claims before the 2022 fire season (Collins 2022). This letter was followed by legislation in both houses of Congress (S. 1116 and H.R. 2499). Other legislation has been

introduced in the U.S. House of Representatives that addresses issues around wildland firefighters, including the Tim Hart Wildland Firefighter Classification and Pay Parity Act (H.R. 5631) and the Wildland Firefighter Fair Pay Act (H.R. 4274); these have not passed into law and their fate is currently uncertain.

The Forest Service has launched the Wildfire Crisis Strategy and vows to develop needed workforce capacity (USDA Forest Service 2022b). Additionally, the Ground Based Firefighting Resource Modernization letter issued November 9, 2021, by the Forest Service's Deputy Chief of State and Private Forestry (now State, Private, and Tribal Forestry) provides support for significant changes to the hotshot crew program (Hall-Rivera 2021). The time is right for positive advancement within the hotshot program.



A Springville Hotshot works to contain the Creek Fire, Sierra National Forest. USDA Forest Service photo.



A member of the Mill Creek Hotshot Crew takes a short rest break while leading his crew on direct suppression of the Willow Fire, Los Padres National Forest. The crew worked in rugged terrain during 100+ degree temperatures. USDA Forest Service photo.



Firefighters with the Blue Ridge Hotshot Crew battle the Dixie Fire, Lassen National Forest. USDA Forest Service photo by Cecilio Ricardo.

Identification of Key Themes

Beginning in November of 2021, the programmatic review team gathered information directly from hotshot crewmembers, fire managers, and agency administrators through focus group discussions and an online survey. Approximately 75 people from 5 agencies participated in the focus groups. A total of 707 responses were collected from the survey, which was sent to all IHC crewmembers that superintendents could reach (approximately 2,500 individuals) as well as the IHC superintendents' chains of command. Through team discussions this information was synthesized into these key themes and recommendations. Detailed methodology can be found in appendix 1.

The current challenges facing the hotshot program fall into several themes, each of which is interwoven with the others (fig. 1). These themes are explored in the sections below to create a better understanding of how the recommendations could positively influence them. Because 92 of the 116

hotshot crews are hosted by the Forest Service, this report comes from a Forest Service centric perspective. Other hosting agencies were included in the programmatic review process and many of the recommendations do apply across agencies, but recommendation specifics may need to be reviewed to ensure applicability to each agency. Due to the outsized impact of Forest Service policies on the IHC community and that the agency sponsored this report, many recommendations are specific to the Forest Service and some terminology, policy, and processes may not apply directly to other agencies—though the general principles are still likely to apply.

The IHCs are a part of the wider wildland fire response community. While the scope of this review was limited to IHCs, the themes that emerged are not strictly limited to hotshot crews; **many of these recommendations are likewise applicable to the broader fire community** and perhaps generally to the entirety of resource management agencies.

What is the biggest challenge to recruitment and retention on IHCs?

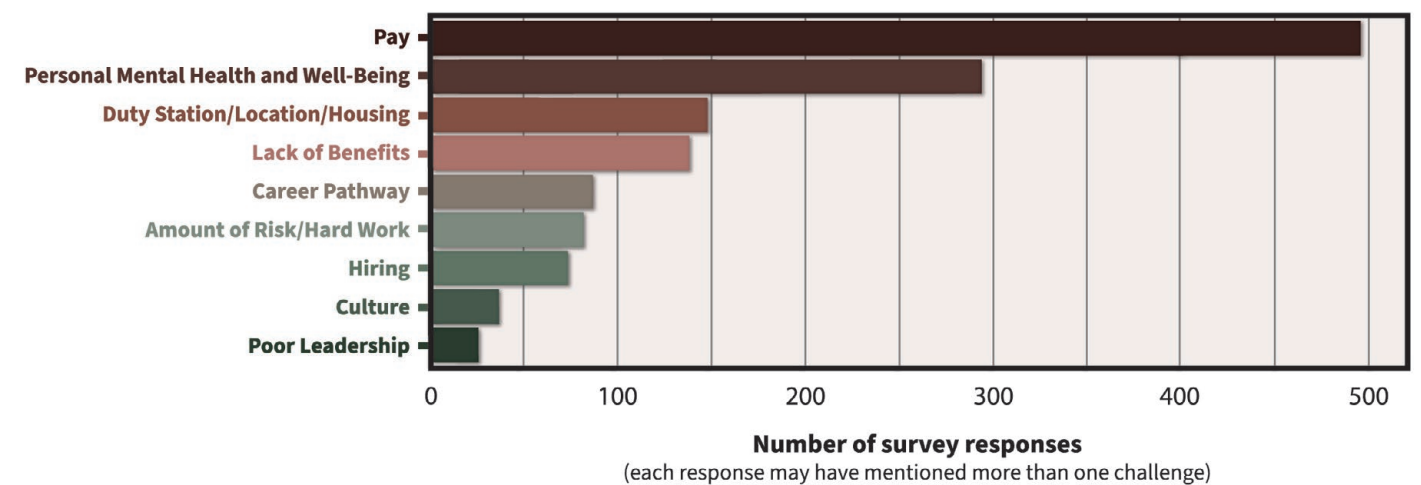


Figure 1. Number of responses, by theme, to a survey question about challenges to recruitment and retention for interagency hotshot crews.

Pay

Pay was the most prevalent theme captured in both the focus groups and the survey results and, from the perspective of hotshot crewmembers, is considered the most important issue to resolve. One IHC review team member noted, “The pay does not match the value of the service.” Hotshot crews pride themselves on providing an elite workforce; they provide **high-quality work in a high-risk, high-complexity, remote environment**. The decisions the crewmembers make in these challenging environments have high stakes: their decisions impact lives.

The increased complexity of the fire suppression environment and higher expectations of crew skills and abilities requires crewmembers to invest more time and energy into training and building qualifications. Crew leadership now includes a high administrative workload, a wide span of supervision, and advanced knowledge of fire suppression, all-hazard response, and fuels management. While crewmembers’ capabilities have increased substantially over time, hotshots identified that **their pay has not increased in proportion to their responsibilities and the complexity in which they operate**.

Pay is the main reason that hotshots cite for leaving the organization. One of the most obvious roles that pay plays in retention is that there are other organizations outside the Federal Government that hire firefighters and pay as well or better. For example, the firefighters with the Colorado Division of Fire Prevention and Control (DFPC) can

earn 40 percent more annually than their Federal counterparts, and California Department of Forestry and Fire Prevention (CAL FIRE) firefighters more than 50 percent. This disparity drives experienced personnel to leave Federal service for local, State, or private employment.

To understand retention issues associated with pay, it is critical to understand how most hotshots earn the bulk of their annual pay. Federal employees are assigned a base hourly salary rate determined by the General Schedule, which is linked to the qualification level set by their position description and the length of time they have served in the Federal Government at their current qualification level.

When the employee works overtime hours (more than 8 hours in a day or 40 hours in a workweek, depending upon work schedule or on their regularly scheduled days off), they are paid one and a half their base rate for that time. If the employee is assigned to a wildfire, they are also paid hazard pay, which is an additional 25 percent to the employee’s base pay. Often on assignments, firefighters work 16-hour days for 14 days straight.

Since 2015, an average of slightly over 50 percent of hotshots’ hours during the fire season were classified as overtime and slightly under 70 percent were classified as hazardous; therefore, a substantial portion of their pay comes from overtime and hazard pay. Because most hotshots are seasonal or temporary employees, they generally expect the income they earn during the summer months to

support them through the off-season as well.

The relatively low base pay rate and reliance on overtime and hazard pay incentivizes crews to be on assignment as often as possible during the summer. Because the hotshots are in high demand, having crews out on assignment is often limited only by the mandated 14-2 work-rest ratio required of most firefighters and 14-3 for Forest Service firefighters. Thus, during the summer, **hotshots spend extensive amounts of time away from home** to ensure that they are making the maximum amount of overtime and hazard pay. This schedule can be punishing on firefighters’ physical and mental health, and time away from home can be very challenging for firefighters’ families. These negative impacts exacerbate retention issues and are detrimental to firefighter well-being.

Moving to other positions within the Federal Government can also be challenging for hotshots because of the way their pay is structured. Since overtime and hazard pay comprise a large portion of a hotshot’s salary, moving to a position that is the same or a single grade above their current hotshot position, but does not offer as much overtime and hazard pay, typically results in a significant pay cut. Career ladder positions offer a route for hotshots to maintain their income without hazard and overtime pay, but these opportunities are limited and require individuals to leave the hotshot program. These factors contribute to retention issues as talented individuals transition out of hotshot crews or leave Federal agencies to advance their career while

retaining their current level of total income.

The Bipartisan Infrastructure Law included pay increases for all Federal wildland firefighters, demonstrating a commitment to support firefighters nationally. However, base pay is also influenced by where a person lives and works (known as locality pay). Locality pay is determined by the Office of Personnel Management (OPM). As USDA and DOI work on permanent solutions, it is advised that locality pay should be equalized to avoid mass movement toward the higher paid locations. There are existing examples of hotshot crews that are stationed as few as 20 miles apart who earn substantially different amounts due to OPM-determined borders for cost-of-living adjustments. The crew that receives the higher cost of living adjustment has a substantially easier time recruiting and retaining crewmembers (Acosta 2022).

Many of the pay issues identified during this review **cannot be solved without addressing job classification and grading**. Job series are created by OPM, while position descriptions are created and classified by the individual agencies. Below is an in-depth explanation of how current job series, position descriptions, and pay grade collaborate to create multiple negative impacts on hotshots. This section also addresses two other pay-related issues that surfaced during the review: (1) the pay variance between wildfire suppression and fuels work and (2) retirement calculations.

A hotshot crew hikes along a ridgeline during the Saddle Ridge Fire, Angeles National Forest. USDA Forest Service photo by Andrew R. Mitchell.



Job Classification and Grading

Series: In Federal agencies, the official occupational series for hotshots is “forestry technician.”

This harkens back to a time when the seasonal workforce was typically built upon the “jack-of-all-trades,” hired to fix fence, build trails, mark timber, fight fires, and complete an eclectic list of tasks to support the resource management mission. As fire suppression has evolved, many hotshots advocate for their job series and position description to be updated to better represent the work they do. This would foster a more professional identity and improve retention. When asked what the appropriate job classification for a hotshot is, 79 percent of respondents chose “firefighter” and a mere 6 percent chose “forestry technician.”

“ I am currently classified as a forestry technician. That is inaccurate. I am a professional firefighter.”

Respondent to the Interagency Hotshot Crew Programmatic Review Survey

There are significant implications of a wildland firefighter series to pay, and hotshots have been voicing this concern for a long time. There is hope in the firefighter community that reclassification of the firefighter positions would result in higher grade levels. As a result of the Bipartisan Infrastructure Law passed by Congress in November 2021, OPM finalized the new wildland fire management job series in June 2022 (OPM 2022). The new job series is intended to more accurately depict the work done by wildland firefighters; **however, the true impact of this law remains to be seen.**

Position Description: A position description (PD) is a statement of the major duties and supervisory responsibilities of a position. The review found that many experienced hotshots believe current PDs do not accurately account for program management duties combined with the technical skills provided to manage the fire complexity of today. IHCs are national shared resources, with fleet, facilities, supplies, equipment, and the full complement of administrative responsibilities for 20–25 employees. The increasing demand for IHCs is not just for their ability to “cut line” but the wide array of skills they bring to incident management.

Hotshot crew leadership is particularly impacted by this gap between the duties detailed in their PD and their actual responsibilities. As the fire environment has evolved over decades, the administrative and operational expectations of crew superintendents have advanced into a greater role than simply being a crew boss. Today’s superintendent is responsible for duties similar to those of a program manager, including developing budgets, evaluating program strengths and weaknesses, devising strategies to improve the effectiveness and efficiency of the crew, hiring, managing fleet and facilities, leading local prescribed fire programs, coordinating local project work, participating on training cadres, and additional collateral duties such as peer support, steering committees, and duty officer coverage, on top of providing operational expertise in fire suppression. The supervisory, budgetary, and administrative responsibilities associated with these positions are not reflected in their PDs, which appear outdated from a time when IHC superintendents were “just a crew boss” with far fewer responsibilities.

This evolution of duties not only impacts the superintendent; by necessity, additional work falls on other team members. **Expectations of crewmembers are higher than in the past.** As crew leadership is pulled up to be used as taskforce leaders, division/group supervisors, and type 3 incident commanders, it leaves senior firefighters to coordinate crew activities and complete administrative work. This has resulted in duties that used to be associated with the superintendent falling on squad leaders (graded only at the GS-06/07 level). One review team member noted, **“The whole leadership structure is asked to do more year-round.”**

Within the Forest Service, the only way to change the position descriptions is to have the position reevaluated and updated by Human Resources Management (HRM). Any such reevaluation would need to include Fire and Aviation Management (FAM) workforce development to ensure the final position descriptions accurately reflect current position duties. There have been a few fundamental shifts in how IHCs are staffed, used, and funded throughout their storied history. This is an opportunity to recognize the next shift and make significant change to modernize and support the hotshot program into the future.

Pay Grade: PDs are the basis for determining the grade level, which controls the base level of pay received. More than 83 percent of survey

respondents stated that superintendents, assistant superintendents, and squad leaders should be classified at a higher pay grade level than currently because their PDs are inaccurate.

PDs outline the duties and responsibilities of management needs performed for a given position. Because the PDs may not accurately reflect the current duties and responsibilities, hotshot positions must be reviewed to assess the duties, knowledge, skills, and abilities required to perform the work management has assigned.

One example provided by the review team was that IHC squad leader positions (graded as GS-06/07) supervise five to seven people and are hired at a lower GS level than many type 6 engine captains (graded as GS-07/08), who supervise two positions with comparable job duties.

Final classification of positions is based on many factors that are unique to each position, and number of employees supervised is only one part of the overall equation. Salary comparability is not a factor in the classification process. Any reevaluation of PDs by HRM should include **classifying the new PDs in the appropriate series and grades that reflect the updated duties and the complex skillset of IHC crewmembers** based on revised input on the PDs by FAM and line leadership. This review may or may not result in a higher grade.



Recommendations: Job Classification and Grading

- ▶ FAM workforce development and line leadership should reevaluate and update all hotshot position descriptions, and HRM should reevaluate classification of the new PDs following the development of the wildland firefighter job series.
- ▶ Continue to apply long-term pay adjustments as broadly as possible across locations, recognizing that, nationally, pay is a constraining factor in the ability to hire and retain firefighters.

Pay Disparity Between Fuels and Suppression

On a fire assignment, hotshots can work up to 16-hour days, getting both hazard pay and overtime, which constitutes the trade-off for work-life balance sacrifices made during the primary fire season. Prescribed fire work, however, rarely permits hazard or overtime pay. For the most part, hotshots want to contribute to accomplishing fuels targets. The tension often results from balancing how long they are away from home with how much money they are earning. **Working away from home outside of their primary availability period for little to no overtime and no hazard pay can be difficult to justify, however,** when also managing work-life balances and the cumulative fatigue accompanying lengthening fire seasons.

It is commonly understood that opportunities for overtime pay completing fuels objectives are less than that of emergency suppression. To manage cost per acre, **managers will often limit overtime whenever possible** and in some cases substitute compensatory or credit hours in lieu of overtime. Additionally, senior level crewmembers also lose out financially when working on fuels projects due to Federal regulations that prevent getting paid a full 150 percent overtime rate when working outside of emergency suppression, which further reduces the amount they are paid relative to fire suppression assignments.

Regarding hazard pay, many in the wildland fire community anticipated that the new firefighter classification and grading would take the hazards of the position into consideration when assigning a grade. The hazards associated with performing the work are considered in the classification process as

it relates to the duties performed and considered in establishing the grade of the position—i.e., the knowledge, skills, and abilities required to perform that duty are considered in the classification of the position (5 CFR 550.904(c)).

If hazards are taken into consideration during the classification review process, then employees would not be eligible for hazard pay per 5 CFR 550.904. However, the agency could request to OPM through USDA that wildland fire be added to the hazard list per 5 CFR 550.903. The agency would need to justify the request and OPM would make the final decision. The agency could also ask OPM to consider the use of a special pay rate that would be tied to the series identified for certain positions.



Recommendations: Pay Disparity

- ▶ Within the Forest Service, increase allocation of wildfire salary and expenses to units for implementing critical hazardous fuels work and provide intent that compensatory time off or credit hours are not to be used widely for hazardous fuels reduction.
- ▶ Expand the use of hazard pay for prescribed fire.

Retirement

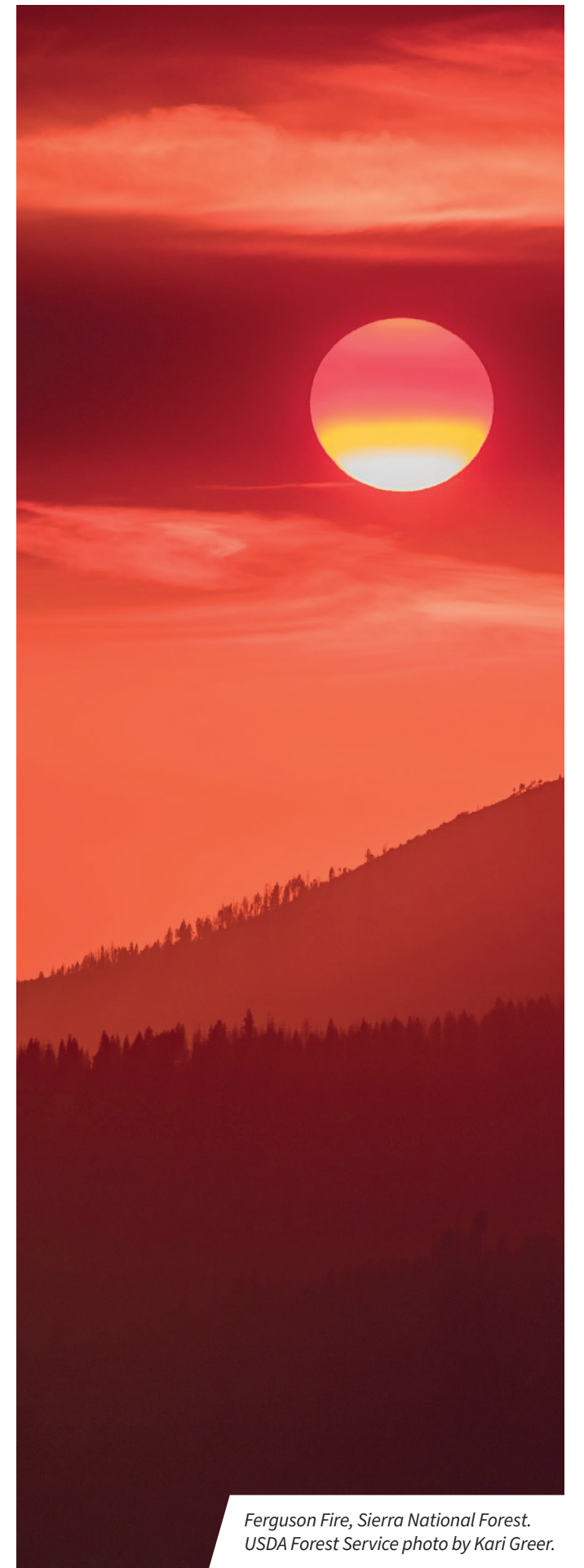
The reliance upon overtime and hazard pay for employees to cover their income substantially impacts retirement benefits. On average, hotshots work 1,934 hours during their fire season, without vacations and usually on Federal holidays, which is comparable to the number of hours an employee working 8-hour days, with 2 weeks' vacation and 10 Federal holidays, works over the course of a year (1,920 hours). However, overtime and hazard pay earned do not count toward Federal retirement benefits. Specifically, overtime and hazard pay are not considered in calculations for matching Federal retirement funds for Thrift Savings Plans (TSP) nor when calculating the three highest annual salaries used to compute pension benefits.

Therefore, despite working a year's worth of hours in 6 months, the retirement benefits hotshots accrue are substantially less than an employee making the same amount without overtime and hazard pay, leading to a loss of financial benefits later in life. For example, a squad leader in a permanent, full-time position, retiring with 25 years of experience will receive a FERS retirement of approximately \$19,000 per year. If total overtime and hazard pay were included in their retirement calculations, this would be approximately \$42,000 per year instead.



Recommendation: Retirement

- ▶ Modify the policy on retirement calculations to account for overtime and hazard pay income.



Ferguson Fire, Sierra National Forest.
USDA Forest Service photo by Kari Greer.

Well-Being

Employee physical and mental well-being are critical elements to maintain a high functioning workforce. Expectations for hotshot crewmembers during the fire season **not only require peak physical fitness and stamina, but also mental acuity and resilience.** These expectations are required under particularly harsh conditions, which can include temperature extremes, remote and rugged terrain, long workdays, maximum physical exertion, and persistent exposure to hazards such as falling trees, rolling rocks, and equipment. Add high-stress, high-operational tempo decision making to suppress complex and ever-evolving fire conditions and the rather unique and demanding impacts to the physical and mental health of hotshots become clearer. The high-risk work environment sometimes takes the ultimate toll, and many hotshots struggle with the lingering effects of losing a comrade in the line of duty. Much is asked of the hotshot.

Hotshot crews are highly valued by all incident management organizations for their expertise and effectiveness in wildland fire containment



Procession for Charles Morton, squad leader for the Big Bear Interagency Hotshot Crew, who died while engaged in fire suppression operations on the El Dorado Fire in 2020. USDA Forest Service photo.

and control. When the high praise for the hotshot capabilities is coupled with the problems addressed in this review—such as compensation, hiring, discretionary budgets, vehicles, and facilities—it contributes to the perception that hotshot crews are only valued when needed but are not fully supported off the fire line. As one focus group member stated: “People just don’t know what we do.”

There is a psychological toll in sacrificing so much to accomplish critical missions day in and day out, and then having to fight for basic support such as decent sleeping arrangements, proper nutrition, equipment resupply, and compensation for time worked. This toll accumulates during an assignment, is compounded over a season, and can intensify over the course of a career.

Two significant categories for supporting hotshot mental and physical health emerged from the conversations. The first centers around managing fatigue and supporting recovery opportunities for crewmembers. The second addresses improvements to mental and physical healthcare.



A Vandenberg Air Force Base Hotshot looks at his phone during a team lunch break from cutting fire line while helping to battle several fires in Waldo Canyon, CO. U.S. Air Force photo by Master Sgt. Jeremy Lock.

Managing Fatigue



A firefighter sits at a lookout as his team works fires, Mt. Hood National Forest. USDA Forest Service photo by Preston Keres.

Managing fatigue and supporting recovery time while earning a living wage is paradoxical for many hotshots whose cultural values embody the expression “make hay while the sun still shines.” However, as fire seasons lengthen and become more severe, maintaining sustainable work-life balance and **getting quality time off to rest become increasingly difficult for all wildland firefighting resources.**

Though annual leave is accrued, most hotshots do not have opportunities to use this time, especially during the fire season. In fact, hotshots surveyed during this review indicated that the inability to take time off combined with time away from family were the next most impactful challenges behind pay. There are three primary timeframes where opportunities to support fatigue management and recovery opportunities generally fall: during an assignment, between assignments, and between seasons.

During assignments, working extended hours on the fire line day in and day out, while simultaneously struggling to maintain sufficient hydration, nutrition, and rest requires constant management of tradeoffs. Opportunity for quality rest is often not available at large fire camps due to constant noise and activity, often forcing crews to look elsewhere for sleeping areas, such as camping near the fire line to maximize rest, which comes with the tradeoff of sacrificing decent food and access to hygiene facilities.

Sleeping conditions did improve during the 2020 fire season due to reliance on more dispersed large fire camp setups (e.g., spike camps and forward operating bases) to mitigate the spread of COVID-19. This change also improved crews’ operational efficiency, providing them with additional time on the fire line. However, crews have seen indications that camps may be returning to prepandemic setups, which again has them sleeping in the noisy, busy, large fire camp.

As discussed earlier in the pay section, reliance on overtime hours and hazard pay to earn a living wage incentivizes hotshots to maximize hours worked while still meeting the 2:1 work-rest ratio required in policy. What if hotshots knew that they would bring home the maximum amount of pay from a fire assignment? How might this impact the ways fatigue is managed during assignments?

The concept of paying a daily rate for each day worked, equal to or greater than what they currently make in a day, regardless of the number of hours that are put in during each day, may give crews additional flexibility to manage daily fatigue and support crew decisions to provide more opportunities for rest and down time when operational conditions allow.

The second critical timeframe for managing fatigue comes between fire assignments. This time period offers several opportunities for improving the quality of recovery: continuing to implement 3 days of paid rest and recuperation (R&R), supporting an at-station day, removing the 2-hour mobilization

requirement for crews when off duty, and logistically supporting crewmember travel when important life events occur while on assignment.

One example of the paradoxical relationship between rest and earning a living wage is the recently implemented Forest Service policy to require 3 days R&R following a 14-day assignment. According to the survey, 89 percent of respondents agree that 3 mandatory days off (a practice instituted in 2021) were beneficial to their well-being, and 86 percent agree that they would like to see this continue in the future (fig. 2). However, 77 percent agree that the superintendent needs more flexibility to manage days off between assignments.

Survey question:

What does work-life balance for a hotshot crew look like to you?

Response:

“To be able to take time off without becoming a financial burden to the rest of the crew.”

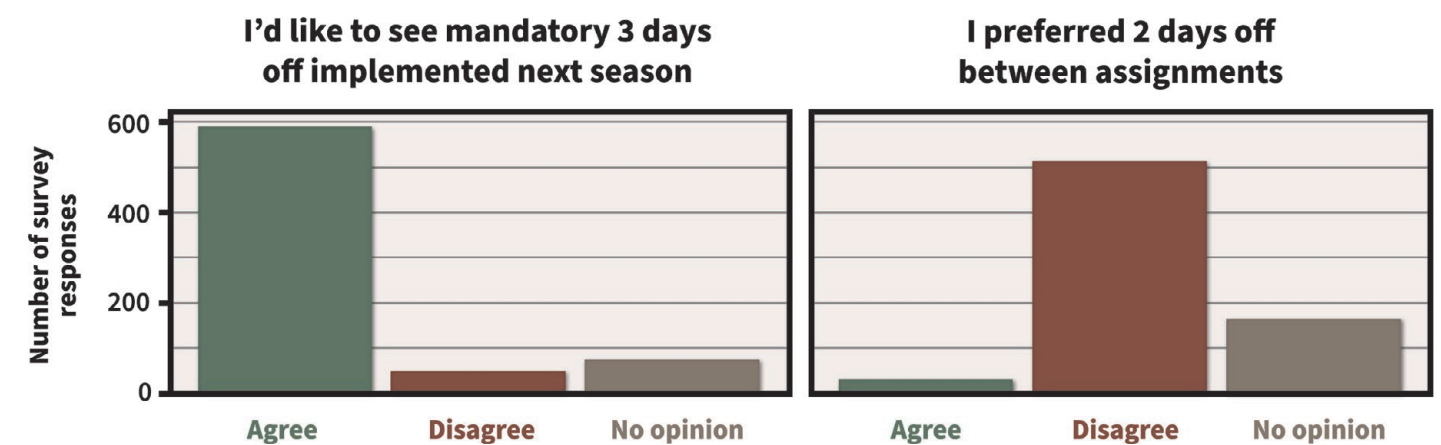


Figure 2. Responses to a survey question about the policy for days off between fire assignments. Almost 90 percent of respondents agree there should be a mandatory 3 days off.

Flexibility and management discretion is desired to respond to the needs of the crew based on conditions. Not having to fight for an additional day off when needed was a positive change; however, being forced to take a third day off when it wasn't needed (or desired) was not. IHC superintendents see it as their role to ensure their crew is getting the rest needed between assignments and **prefer flexibility over rigid policy** due to the wide range of assignments and conditions they experience.

Another factor impeding recovery is **that time is often not available to attend to the workload that arises between fire assignments.**

Superintendents and crew overhead⁴ very often spend mandatory R&R completing administrative and logistical requirements for the crew such as time, travel, purchasing, hiring actions, vehicle maintenance, training nominations, and purchase card reconciliation, among others. These duties are not only essential work functions but can also require an enormous amount of time; for example, reconciling purchases for a 14-day assignment for 20+ people with hotels can take 2 to 3 full days of work.

R&R time spent working hardly meets the intention of providing time for physical and mental recovery. Official time must be allotted for this workload and crewmembers should be compensated for their time worked. Administrative support from local units (recommended in the "Crew Organization and Staffing" section), combined with backing for at-station days when needed, would give superintendents the flexibility to manage this workload during duty hours while benefiting from the recovery time intended by days off.

⁴ "Crew overhead" refers to crew leadership personnel (e.g., squad leaders and captains), below the superintendent level but above a standard crewmember.

IHCs are currently expected to "mobilize within 2 hours of receipt of orders during their availability period" (NIFC 2016). **This 2-hour mobilization requirement negatively impacts quality time off,** particularly on regular days off during the season. There is great value, however, in the requirement



Recommendations: Managing Fatigue

- ▶ Evaluate the tradeoffs of paying firefighters on assignment a daily rate rather than paying overtime, considering fatigue management and firefighter compensation outcomes.
- ▶ Modify the Red Book to provide a minimum of 3 days of paid rest and recuperation after 14-day assignments for Forest Service employees. Collaborate with interagency partners, using data from the focus groups and survey, to determine if changing the Incident Business Management handbook to 3 days of rest after a 14-day assignment would be appropriate for all Federal land management agencies.
- ▶ Forest Service host units provide space and equipment for an at-station day between assignments, if requested by a crew superintendent, to accomplish administrative duties. Such days should be considered normal workdays and not constitute R&R.
- ▶ Remove the 2-hour mobilization requirement in the SIHCO, leaving discretion for mobilization to be predetermined between the crew superintendent, local unit, and Geographic Area Coordination Center (GACC). If 2 hours or shorter mobilization time is requested, it must be compensated with support codes by the requesting unit or GACC.
- ▶ Agencies, coordinating groups, and incident management teams should provide financial and logistical support for crewmembers on assignment to travel for preplanned days off and return to crew. Examples of such support include plane tickets and rental vehicles.

for quick mobilization, as crews typically do not want to miss an assignment. A quick mobilization is logical for initial attack or when fire conditions warrant, but the tradeoff is that the obligation impacts personal lives, greatly hindering crewmembers' ability to live freely during their time off, such as for traveling more than an hour from the station or daring to go out of cell service. This type of availability makes experiencing quality rest extremely difficult as the call to mobilize could come at any minute of any day.



“When we're at high [preparedness levels], I carry my cell phone and a radio on my days off to ensure I don't miss a call. What kind of time off is that?”

Interagency Hotshot Crew Superintendent and Focus Group Member

Is there room for reconsideration of or improvements to the 2-hour callback because of its detrimental impact to firefighter well-being? Support codes for pre-positioning or staging can **provide fair compensation for employees who are asked to put their lives on hold in service to the public.** Any modifications will likely cause friction within a culture that prefers to sacrifice personal time for the greater good. The objective of any change must be the long-term vision of supporting hotshots now so that they continue to function at high levels as healthy, resilient, and eager employees throughout their careers.

Historically, leaving an assignment for personal reasons on IHCs has typically been reserved for family emergencies. Accommodations are made without question for a death in the family, while requests to attend a wedding or family reunion may not be supported or may even be discouraged. There is a certain amount of freedom given up during the fire season when one commits to an IHC; however, increasing the flexibility and support to allow individuals the opportunity to participate in meaningful personal events that are important to them could substantially improve mental health and well-being.

Agencies, coordinating groups, dispatch, and incident management teams should provide employees with logistical support to secure transportation if a crew superintendent approves of a crewmember leaving a fire assignment for a period of time. The same logistical support should be employed to get them back to the crew, wherever they may be at the time.

Sacrifices during the height of fire season are often made with the belief it will result in an opportunity for more flexibility in the off-season. Whether continuing to work or being laid-off for the season, **IHC crewmembers rely on the operational tempo slowing after their primary fire season** for several important and interdependent reasons, many of which are directly related to well-being. As further discussed in the "Mission" section, end-of-season fatigue creates hesitancy that IHCs should be expected to be a primary resource to meet increased fuels mitigation targets across the Nation. This concern of end-of-season fatigue is becoming more acute with the increasing length of the core fire year and expectations that it will continue to lengthen. Primary to this conversation is the fear of losing this important downtime between seasons for recovery.

Improving Healthcare

Quantifying the physical and mental health impacts associated with continuous exposure to hazards is difficult, but providing tools to reduce the severity of these impacts is a risk management practice that agencies already recognize. **Access to healthcare is foundational** for reducing the severity and long-term impacts of injury and exposure that hotshots and all firefighters endure. But the process for getting this care, as described by focus group members, is “beyond broken,” and the devastating impacts to personal lives and families cannot be overlooked. This plea has been sounded countless times and recently reached the floor of the U.S. Congress where they asked for a special claims unit for firefighters to be made (S. 1116, H.R. 2499). **Significant barriers to healthcare for work-related injury and illness** include a difficult and confusing system to navigate, lack of timely access to specialized providers, and lack of coverage for conditions commonly known to occur in first responders.

The complexity of the Federal Employees’ Compensation Program presents significant stumbling blocks not only to receiving timely and appropriate healthcare but also to having those costs covered. There are numerous tragic accounts of real-life confusion, hurt, anguish, and financial burden that hotshots experience in the wake of an occupational injury. “Supervisors should not have to worry about ruining a family’s life every time they fill out a CA-1 for an injured crewmember,” said one focus group member. **The capacity of the Forest**

Service Human Resource Management, Worker’s Compensation Program does not meet the need that hotshots have for support when navigating an injury, much less an illness that triggers an even more burdensome process. Recognizing that the agency is actively trying to address these issues, employees (including supervisors) still generally feel like they stumble through this confusing process on their own.

Because of the demanding physical fitness required by hotshots, injuries can have immediate and overwhelming repercussions on their ability to continue working. Their bodies are their livelihood and any delay in medical care or access to specialized providers, particularly orthopedic surgeons, physical therapists, and burn care units, can have lasting implications on recovery. Yet **the worker’s compensation system is set up with significant delays and limitations**, forcing many to pay out of pocket rather than wait in uncertainty.

Post-traumatic stress disorder (PTSD) associated with life-threatening experiences, serious injuries, and line of duty deaths is becoming more commonly diagnosed. Progress has been made through the Work Environment and Performance Office (WEPO) to provide additional resources to employees and further steps are being taken. As fire seasons continue to set new benchmarks for length and severity, **it is critical to recognize the psychological strain these factors have** on the resources that are arguably the most exposed:

hotshots and other wildland firefighters. If an employee needs mental healthcare or other well-being support at the conclusion of a busy fire season, giving that employee a phone number for the Employee Assistance Program (EAP) hardly seems sufficient. Participation by the IHC Steering Committee in further program development and continued improvements will help ensure resources and products reach those that may need them.

As advances in science and data analytics continue to improve, it becomes clear that wildland firefighters are exposed to several other potentially life-threatening hazards beyond the obvious. Carcinogens found in smoke and often deposited on firefighting clothing and gear have been linked to

increased incidences of cancer among firefighters. Presumptive care laws are becoming more common in States for their first responders. These laws give workers’ compensation or other disability benefits to firefighters and other first responders who contract cancer while on the job. However, in most States these laws do not guarantee that every firefighter will receive benefits. Firefighters and first responders bear the burden of proof. Furthermore, these State laws do not apply to Federal firefighters. Tracking hotshot exposure to these health hazards and providing presumptive medical care is recommended.

The Wyoming Hotshots conduct nighttime firing operations on the Pine Gulch Fire. USDA Forest Service photo by Kyle Miller.



Recommendations: Improve Healthcare

Improve healthcare for wildland firefighters by:

1. Improving capacity of the Forest Service Human Resource Management, Office of Worker’s Compensation Program to understand the firefighter profession and more effectively manage firefighter caseload.
2. Improving access to specialized medical care for workplace injuries and mental health clinicians specializing in care for firefighters.
3. Tracking exposure to health hazards such as smoke, soot, and other hazardous conditions.
4. Covering hotshots under presumptive care.

(Note: U.S. Department of Labor, Office of Workers’ Compensation Programs has included firefighters under presumptive care as of April 2022.)

Facilities

The SIHCO requires that each local host unit “provide adequate facilities for the crew,” but there is no definition of “adequate” and thus **there is substantial variation in the level and condition of facilities** provided to crews. There were two main themes the programmatic review revealed around facilities: lack of adequate work facilities and lack of housing.

“ My crew is operating out of a single wide mobile trailer with 1 bathroom for 21 people. This is our office, training room, and gear repair. Our cache for tools, gear, and saws are shipping containers (sea crates).”

Truckee Hotshot Crew Superintendent



Above, clockwise from left: Truckee Hotshot Crew facilities, including water damage in the crew office trailer, chainsaw maintenance shop in a shipping container, and potable water storage in trailers. USDA Forest Service photos by Scott Burghardt.

Key Theme: Facilities

Availability and Condition of Facilities

To efficiently accomplish essential work while at station, crews need access to office space, a training/ready room, a workout facility, a cache, and a saw shop. These facilities allow crews to complete administrative tasks, perform critical preseason and off-season training exercises, keep themselves in top physical condition, and ensure they are adequately prepared and supplied before a fire assignment.

Despite these facilities being essential to hotshot operations, over 81 percent of hotshot crewmembers rated at least one of these facilities as needing improvement, being unacceptable, or noted that they do not have access to such facilities at all. By in large, the result of substandard facilities is inefficient use of crew time, and thus loss of capacity for the agency. Intangible impacts to safety and crew morale can exacerbate retention challenges and make it substantially harder to recruit new talent.



Recommendations: Availability and Condition of Facilities

- ▶ Create a Forest Service IHC facility standard through a coordinated effort between the National IHC Steering Committee and the Forest Service engineering program using the BLM standard as a starting point.
- ▶ Create a 120-day detail to assess current conditions of IHC facilities and develop an implementation plan for bringing all IHC facilities up to a standard created by the National IHC Steering Committee.
- ▶ Analyze the consolidation or relocation of Forest Service IHCs to alternative locations or into centralized, shared facilities to provide adequate accommodations and amenities for three to five crews at a single location.

Housing

As the cost of living continues to rise in communities with hotshot stations, **finding housing is increasingly challenging for crewmembers.** Access to Government housing is particularly important for recruitment and retention of early-career crewmembers. To put this in context, a GS-4 on the Angeles National Forest earns \$2,990.40 a month in base pay, and the average 1-bedroom non-Government rent in nearby communities is \$2,248.

However, barracks or other Government-provided housing options are not available for many crews.



Barracks (shared housing) on the Angeles National Forest, 2021. USDA Forest Service photos.

When they are available, accommodations may be substandard or the rate may be cost-inhibitive with employee wages. For example, a Government-provided house on the Angeles National Forest costs \$57.74 per day (\$1,732.20 per month). A shared dormitory (or barracks) on the same forest costs \$14.08 per day (\$422.40 per month) and a trailer pad costs between \$25.34 and \$31.21 per day (\$760.20–\$936.30 per month).

Given that hotshot crews spend most of their season on assignment with very few nights at home, the tradeoff that early-career crewmembers make is between substandard living conditions for several

nights or paying a substantial portion of their pay to rent housing that they will rarely use. The reality is that of the 554 crewmembers who responded to a survey question about living arrangements, 65 noted that they had lived in their car and 49 camped out for their primary housing while off assignment during the 2021 fire season.

Most crewmembers who responded to the survey (79 percent) said they would not be willing to pay more than \$10 per day for barracks. With regulations requiring Government quarters be priced at a cost comparable to the housing market in their area, this becomes a challenging issue for the agency to solve. A national effort is required to address the lack of affordable employee housing to create fair and consistent direction for providing housing.

Interim housing solutions are needed until long-term strategies can be developed. Creative solutions such as renting local houses, dormitories, or vacation rentals for the season have been successfully accomplished by crews with the support required to maneuver through this unfamiliar process. However, funding and contracting constraints are the limiting factors creating barriers to providing alternative housing for employees. The loss of qualified applicants and entry-level crewmembers is expected now and into the future unless affordable housing becomes available.



Recommendations: Housing

- ▶ Lower daily housing rates for Government employees: explore the ability to provide free housing to seasonal (“1039”) employees or adjust the rate to \$1 per day when crews are on assignment.
- ▶ Provide funding and contract support for short-term solutions to provide employee housing.
- ▶ Nationally, develop a long-term plan to increase access to housing for employees (Government-provided housing, rentals, pathway to home ownership, etc.), ensuring fair costs and consistent rules for who qualifies for housing.

Hiring Process

Hiring is a foundational element to the success or failure of the IHC program. To retain the status of hotshot crew (type 1 hand crew), the Standards for Interagency Hotshot Crew Operations (SIHCO) require the following minimums for staffing:

- ▶ A minimum of 18 fire line qualified personnel.
- ▶ A minimum of one previous season of fire experience for at least 80 percent of crewmembers.
- ▶ Each crew must have a minimum of seven permanent staff as follows:
 - ▷ One superintendent, one assistant superintendent/captain, three squad leaders, and two senior firefighters
 - Or
 - ▷ One superintendent, two assistant superintendents/captains, two squad leaders, and two senior firefighters
- ▶ Each crew must have at least four members that are chainsaw certified as type 2 fallers (FAL2) with 50 percent of the crew certified as type 3 fallers (FAL3) or better.

If these positions cannot be filled with properly qualified crewmembers, a crew cannot be considered an IHC, which has significant implications such as disrupting agency expectations, missed assignments and lost pay, damaged reputations, and setbacks to crew morale. The SIHCO further details the conditions wherein a crew is “duty bound” to reduce status or decertify as a type 1 crew, a situation that further degrades an already limited resource (NIFC 2016). Hiring is thus the key for filling these positions and ensuring that hotshot crews meet minimum staffing levels.

Although agencies have different hiring systems, they share similar issues, with 66 percent of survey respondents indicating that **the hiring process has negatively impacted them** in the past. Impacts include programs not being able to attain type 1 status, individuals not qualifying for promotions, individuals unable to apply for positions due to missed application deadlines, etc. The hiring process is challenging for hotshots to navigate, both as applicants and as hiring managers. A universal concern heard through this review is that the current systems are unsustainable and create barriers to a viable hotshot crew program as discussed below.

Wyoming Hotshots walk into the sunset. USDA Forest Service photo by Kyle Miller.



Hiring Limitations

The current hiring process within the Forest Service significantly confines the success of the hotshot program, particularly seen through limited opportunities to fill vacancies and the timing of various hiring steps. Furthermore, the inability to pay transfer of station (TOS) increases the challenges to fill leadership positions on the crews.

Outside of “fire hire” events—the Forest Service’s centralized hiring process used to fill both temporary and permanent positions at the GS-03 through 09 levels—**there are limited opportunities to fill hotshot crew vacancies.** Open continuous roster (OCR) announcements, administratively determined hires, details, and time-limited promotions have been used in the past to fill positions, but use of these solutions is inconsistent across regions and each of these have challenges.

Fire hire events are generally coordinated at a regional level, and because each region’s event occurs independently, **competition for quality applicants between crews can result in unfilled positions:** an individual can accept a position with one crew, then back out of that position when a more desirable position (e.g., at a better location) is offered later. Typically, these vacancies cannot be backfilled because there is no other hiring mechanism available other than waiting for the next annual fire hire event. This can leave hotshot crews with critical vacancies, preventing them from meeting the minimum staffing levels required to qualify as a hotshot crew for that season. **This is evidenced by nearly a quarter of the crews in 2021 not meeting the minimum standards.**



Recommendations: Hiring Limitations

- ▶ Reevaluate the hiring process for hotshots by:
 - ▷ Reducing the timeframe between application and effective dates to 3 months.
 - ▷ Shifting the application period to November–January to allow hotshots to apply for positions outside their core fire season.
 - ▷ Involving the superintendent in selection decisions during all hiring events.
 - ▷ Ensuring the ability to advertise merit positions (to include Land Management Workforce Flexibility Act eligibility).
 - ▷ Allowing applicants to correct mistakes in their application packages.
 - ▷ Streamlining the hiring process.
- ▶ Host a hiring event specific for type 1/hotshot crews.
- ▶ Create a 30-day process to outreach and hire not-to-exceed 1-year details to promptly fill temporary vacancies. This revised process can also be used in the interim until an open continuous roster (OCR) announcement is developed.
- ▶ Use an interagency OCR announcement to allow IHCs to fill permanent and temporary (1039) vacancies when needed throughout the year.
- ▶ Review and simplify the requirements in the online application process using current hotshots as subject matter experts (SMEs).
- ▶ Develop a mechanism to streamline the appeals process to allow applicants to meet the hiring timeframe.
- ▶ Develop relationships between SMEs and HR for reviewing and rating applications.
- ▶ Provide IHCs with all available hiring options to meet staffing needs, including merit announcements.

The inability to advertise and fill positions outside of fire hire events also makes it challenging to keep crews fully staffed when crewmembers leave mid-season for other positions or because of injury. **Mid-season vacancies leave crews understaffed and can lead to the loss of type 1 status,** or if the crew has fewer than 18 people, leads to the crew being unable to be assigned to fires as any type of crew. Quarterly hiring from OCRs and administratively determined (AD) hires can provide some opportunity to fill vacancies, but this temporary solution can negatively impact crew cohesion and may result in a crew with substantially less experience.

Other common hiring practices for filling short-term vacancies include details or time-limited promotions (TLP). Both of these allow for an existing employee to temporarily fill a vacancy for no more than 120 days. Depending on conditions and location, the core fire season can stretch beyond 190 days, well beyond the 120-day limitation, leaving a crew superintendent the option of filling a second 120-day position or asking employees to continue filling the position in an unofficial acting role without being paid or credited for those duties. This happens frequently.

Providing a new hiring mechanism to temporarily fill vacancies for the duration of the fire season would help crews maintain type 1 status for the duration of the fire season. Not-to-exceed (NTE) 1-year details may be a viable short-term solution so that multiple 120-day TLP details are not required; however, the timeframe required to fill NTE appointments simply takes too long and does not meet the need to fill these positions on short notice.

The length of time between applying for a job and starting can take 6 months. This is a remarkable amount of time to be in limbo, especially for applicants of temporary positions that only last 6 months. The timing of the application process very often overlaps with fire season,

requiring applications to be submitted in the fall when many crews are still assigned to fires.

Job openings can be listed for as short as 10 days; with assignments of up to 14 days, crews may be on assignment for the entirety of the job opening.

The period to apply for fire-related jobs has been pushed further and further back over the year. Of the 116 hotshot crews, an average of 87 per year were assigned to a multiday fire assignment at some point during the period of September 15–30, 2016–2020. This time period coincides with the timeframe to apply for next year's temporary positions. In the survey, 56 percent of hotshots noted that they had missed an application deadline because they were on fires. Managing these administrative hiring hurdles generally falls upon the crew superintendents who are responsible and highly motivated to provide quality time and network connectivity for crewmembers to complete the application process.

In addition, the current application timeline means that crewmembers may be required to apply for jobs before they have a chance to complete needed qualifications, even though they will obtain these requirements before the hire date. Out of 506 survey responses, 61 percent indicated that they had problems meeting qualification requirements simply because of the timing of the hiring process. In some regions, for example, if the application deadline is before the end of season, a second-year hotshot may have just under 1 year of experience, which means they cannot apply for a GS-05 position for the next season, despite knowing that they will easily complete the time in grade requirement prior to the next season starting.

Employees that are required to apply for jobs in September do not just have to contend with finding time to complete applications while on fire assignment; **they miss out on operational time that could be used on training assignments.** Also, the hiring timeline often comes before task books

are completed, reviewed, and qualifications granted.

Task books are the official training book of record and provide an observable, measurable, and standardized means to evaluate and document trainee proficiency. To be considered fully qualified to perform a certain job on a fire, personnel must complete all the tasks outlined in the task book and have it reviewed and approved by a committee. Depending on the position, it may take a trainee years to complete a task book.

For example, an employee may finish a task book in September, before a job announcement closes, but the review board does not approve the task book until November since members of the board are also on assignments. There may be additional delays between a task book getting approved and entered into the qualification database so that the employee can get an updated master record which reflects the new qualification (required document for an application). The result is that the employee is not able to apply for the next level position for another year simply because of the timing of the bureaucratic process, not because of skill or qualifications.

The Federal Government aims to hire from a highly qualified and diverse applicant pool, however, challenges to the application process results in a loss of qualified candidates. It is common for new and tenured employees to make small errors within their application, leaving many desirable candidates off the list of certified applicants (cert) as there is no mechanism to correct even very minor errors once the application process has closed.

Common reasons for not making the cert include attaching an incorrect SF-50, having the application period close days or weeks shy of 365 days at current grade level, inadvertently selecting an incorrect multiple-choice response, misunderstanding the questions, inability to attach requested forms, and use of colloquial terms on resumes. While some

of these issues may be reduced by modifying the application timing so that applicants are not distracted while completing the process on phones or tablets in the back of a buggy, other changes are needed to provide the most robust applicant pool possible. Subject matter experts familiar with the IHC profession and terminology should be consulted when modifying application, qualification, and appeals processes. These experts would also be valuable assets to HR staff when reviewing and rating applications.

There are many high-quality individuals who enter the ranks of the hotshots later in life, near or after they have reached the age of 37. Such individuals are unable to apply for permanent jobs due to age requirements unless the announcements are flown merit and they can apply under the Land Management Workforce Flexibility Act (LMWFA). In recent years, the agencies have gone away from advertising merit announcements, and it has limited the ability for these employees to apply under LMWFA and obtain a permanent position. In the current economic climate where crews are struggling to fill critical positions, hotshot crews need every hiring option available to them, including using merit hires.



A Valyermo Hotshot crewmember falls a hazard tree during the Windy Fire, Sequoia National Forest. Bureau of Indian Affairs photo by Laura Scott.

Outreach

Historically, crews have done outreach locally, pulling from hiring events and relying upon word-of-mouth to get a high-quality applicant pool. The extended wildland fire season and administrative requirements on crew leadership have limited the scope of local outreach. Superintendents report a decrease in the quantity and quality of applications every year, resulting in multiple crews competing for only a handful of qualified applicants. Thus, all open positions may not even be able to be filled during annual fire hire events due to the smaller and less-qualified applicant pools. An agencywide or interagency outreach and recruitment campaign targeted specifically to hotshot candidates should be developed in close cooperation with hotshot crew subject matter experts.

Superintendents indicated that there is mounting concern that centralized hiring removes a critical communication step in the hiring process between crew overhead and potential applicants. **Both the crew and the applicants benefit from personal conversations about crew expectations,** understanding the kind of work that they will be involved in, how to prepare, and what it takes to be successful when they show up. When superintendents are left out of making selections for their crews, new hires can show up unprepared and potentially leave the crew, creating vacancies early in the season. This has drastic effects on the efficiency, ability, and cohesion of crews that are expected to operate at peak efficiency and safety.



Recommendations: Outreach

- ▶ Develop an outreach and recruitment campaign targeted specifically for hotshots.
- ▶ Establish dedicated funds for travel to job fairs and career days to outreach to diverse perspective employees.



A wildland firefighter with the Black Mesa Hotshots conducts burnout operations on the Hull Fire, Kaibab National Forest. USDA Forest Service photo by Randi Shaffer.

Mission

Hotshots see themselves as skilled problem solvers during wildfire suppression operations and view their current mission to be relevant now and into the future. Nearly 84 percent of survey respondents agree or strongly agree that the current IHC mission statement is relevant and representative of how IHCs are used today, and 63 percent agree or strongly agree that this mission will remain relevant 10 years from now. The mission of all hotshot crews, inclusive of all sponsoring agencies, is found in the Standards for Interagency Hotshot Crew Operations:

“The primary mission of the IHCs is to provide a safe, professional, mobile and highly skilled hand crew for all phases of fire management and incident operations.”

In addition, based upon IHC’s well-known ability to problem solve, crews are increasingly being used to respond to a variety of all-hazard incidents, including, but not limited to, COVID-19 response, hurricane- and flood-impacted areas, and mass land movements, to name a few.



U.S. Army Corps of Engineers and Flathead Hotshot Crew personnel stage Hurricane Ian disaster relief operations out of Avon Park Air Force Range. The Flathead Hotshots provided roadway clearance of downed trees and debris. U.S. Air Force photo by Staff Sgt. Devin Boyer.

To be considered an interagency hotshot crew, the standards and certification process within the SIHCO must be met. These standards are considered the minimum requirements needed by an IHC to allow them to meet their mission. Among other things, the SIHCO articulates minimum mobilization standards, training, qualification requirements, and required equipment. Supplemental agency policy can provide more restrictive direction. The National IHC Steering Committee facilitates updates to the SIHCO under the direction of the sponsoring agency fire directors (e.g., the director of Forest Service Fire and Aviation Management).

Last updated in 2016, the SIHCO informs relevant chapters of the Interagency Standards for Fire and Fire Aviation Operations (Red Book). **To most hotshots, the SIHCO is policy, but it is often interpreted inconsistently by host units.** These inconsistencies hinder some IHCs in their ability to meet their mission; references to the SIHCO should be included in each supporting agency’s policy to ensure clear expectations across the board. An annual charter and program of work signed by agency fire directors and directed to the Interagency Hotshot Crew Steering Committee would also help minimize gaps between leadership and the field.



Burning slash piles, as seen here on the Idaho Panhandle National Forest, is a common example of fuels mitigation work. USDA Forest Service photo.

One of the main themes that emerged from the focus group conversations is the perception that crews see themselves in a mounting tug of war between fire suppression and fuels mitigation expectations, especially as Federal agencies seek to build capacity for fuels mitigation and prescribed fire as recently highlighted by the Bipartisan Infrastructure Law and Forest Service Wildfire Crisis Strategy. The scope of this review does not include strategies to build this additional capacity, but it can be used to understand how that effort may overlap with the hotshot program. **Hotshots expressed concern about taking on additional fuels mitigation work because of fatigue felt at the end of the season.**



Recommendations: Mission

- ▶ In agencies where the SIHCO is not already referenced by policy, reference it as policy. For the Forest Service, reference the SIHCO as policy in the handbook and recommend the signatory be the director of Fire and Aviation Management (FAM).
- ▶ Have the FAM director sign an annual charter and program of work for the National Interagency Hotshot Crew Steering Committee.

Organizational Structure

In this section, organizational structure refers to the way hotshot crews fit into the supervisory structure of their hosting organizations and who has authority for the way crews are tracked and used. Also included in this section are recommendations for program management and budget allocation.

Key Theme: Organizational Structure

Supervision

Most crews are currently supervised by the lowest organizational level: the ranger district on a national forest (Forest Service), the field office of a BLM unit, or another local unit. Overall, satisfaction with supervision at this level is good and local relationships are highly valued. But conversations revealed that **a major tradeoff to local supervision is the variability seen between crews in terms of budget allocation, availability, and use.**

Depending upon the priorities of local leadership, the budgets that crews receive and their availability for assignments may be drastically different from another crew. Generally, supervision at the Geographic Area Coordination Center (GACC) or national level is seen to provide better strategic use of crews in alignment with the priority for use found in the SIHCO: wildland fire incident operations, all-hazard incident operations, resource management objectives, and training cadres.



Firefighters with the Vale Hotshot Crew monitor a fire. Bureau of Land Management photo.

Hotshots also voiced concerns with the potential ripple effect through the supervisory chain that may occur if position descriptions, grade levels, and pay are updated (e.g., because of the Bipartisan Infrastructure Law). What impacts would these updates have on how a hotshot crew fits into the local organization? For example, if new PDs are classified at a higher grade level, could crews still be supervised by their current supervisor? Although there was not a consensus regarding what organizational level should supervise IHCs, the forest level seemed to balance the tradeoffs between standardization and relationships the best.

Recommendation: Supervision

- Forest Service IHCs should be supervised at the forest level or higher.

National Coordination

Hotshot crews consider themselves to be national resources, which is supported by the SIHCO. However, there is not a consensus around whether IHCs are nationally shared or obligated. Currently, season start/stop dates and days off for crews are determined at the local level with coordination by some GACCs to maintain crew availability in their geographic areas.

Discussions generally found agreement that **season start/stop dates should be set with the good of the Nation in mind**, considering national-level needs, not simply the GACC needs. Coordination within and between GACCs is imperative to strategically utilize crews to meet national needs and maintain coverage for the duration of the fire season.

Not only is centralized coordination of crew season start/stop dates critical, but it is also equally important **to coordinate crew work schedules and days off at the GACC/national level.** This coordination of days off should be a negotiation between crews, local units, and the region/GACC to maintain flexibility while providing regional and national coverage. Some GACC operations groups already fill this function, while others have not made it a priority. The intent is not that days off or work schedules change throughout the season, just that they are coordinated to avoid regional or national gaps in coverage. This is especially important with the recommended removal of the 2-hour mobilization requirement in the SIHCO and many crews moving to a 4/10 schedule (i.e., four 10-hour workdays per week) with 3 days off in a normal workweek.

A spreadsheet from the Pacific Southwest Region is included in appendix 2 as an example of how to schedule crews with input from local units to the GACC to develop the schedule. Local fire seasons, locations, and weather are all considered when developing the schedule.

Recommendation: National Coordination

- GACC operations groups coordinate IHC start/stop dates and days off to ensure regional and national coverage.



A firefighter with the Wolf Creek Hotshot Crew uses a pistol-style flare launcher during a firing operation on the Bear Fire. Bureau of Land Management photo.

Strategic Usage

Knowing where hotshot crews are or what they are doing is not straightforward. Although the technology exists, **no national-level database or report gives an overview of how the crews are being used across the Nation.** A handful of different reports must be consolidated to get the big picture. Questions that could be answered through improved strategic usage include:

- ▶ Are IHCs doing mop-up when they could be better employed on more complex fire assignments?
- ▶ Are IHCs prepositioned in one region awaiting initial attack while large fires in another region are unable to fill all the crew requests?
- ▶ Do organizational and supervisory layers unintentionally add barriers to crew availability? Are local and GACC drawdown levels holding crews while fires are unable to fill IHC orders?

Because the data does not exist, it is impossible to transparently understand how crews are used during the season, if there are improvements that can be made, and what the implications are to efficiently managing fires across the country.

The Southern California Geographic Coordination Center (OSCC) Intelligence Section successfully uses their SIT 500 database to track crews. Information is updated daily by the superintendents and daily reports are created that show a wealth of information such as days off, availability status, mobilization (start) date, and projected 14th (end)

date. All GACCs have the capability to use this type of tool, and most do, but inaccurate reports and inconsistency in report information hamper routine usage of these systems given that they are dependent upon current and accurate data entry by the crews on the ground or the GACC.

According to the National Interagency Coordination Center's (NICC) website: "Wildfire suppression is built on a three-tiered system of support—the local area, 1 of the 10 geographic areas, and finally, the national level. When a fire is reported, the local agency and its firefighting partners respond. If the fire continues to grow, the agency can ask for help from its geographic area. When a geographic area has exhausted all its resources, it can turn to the National Interagency Coordination Center at the National Interagency Fire Center (NIFC) for help in locating what is needed, from air tankers to radios to firefighting crews to incident management teams."

As fire season ramps up and demand outweighs supply of specialized fire suppression resources, such as hotshot crews, the National Multi-Agency Coordination Group (NMAC) takes over prioritization and allocation of these resources. The NMAC is comprised of representatives from the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, Forest Service, U.S. Fish and Wildlife Service, Federal Emergency Management Administration, and the National Association of State Foresters.

NMAC has the authority to move hotshot crews at preparedness level (PL) 4 and above, but 2021 was the first time that this group officially invoked

control to redirect crews to GACCs that had priority fires. Though this occurs with NMAC at PL4, the data shows that nearly all hotshot crews are committed in one way or another at PL3 (prior to reaching PL4). Thus, many incidents are not able to fill requests for hotshot crews.

Default ordering of hotshot crews, as well as large numbers on incident management team (IMT) preorders, further complicates strategic use. For good reason, operations section chiefs and initial attack incident commanders nearly always default to ordering IHCs until they cannot get any more. There are many times when a type 2 IA (initial attack) or even a standard type 2 crew can meet their needs.

Although nationwide tracking was not explicitly discussed in the focus groups or the survey, it is reasonable to come to this recommendation given the conversations about national-level crew coordination, best use of crew skills, and competition for scarce crew resources.



Recommendations: Strategic Usage

- ▶ Before investing in additional crews, ensure current crews have what they need to be successful (budgets, personnel, qualifications, vehicles, and facilities).
- ▶ Collaborate with interagency partners to standardize tracking of national hotshot crew availability by:
 - ▷ NICC creating a national tracking situation report for IHCs.
 - ▷ At PL3 and above, require GACCs and IMTs to submit a justification to NMAC for requesting or holding IHCs outside of initial attack or emerging incidents.

A member of the Bitterroot Hotshot Crew speaks into a handheld portable radio during the Brian Head Fire. USDA Forest Service photo by Kari Greer.



Regional Hotshot Crew Program Manager

To make the IHC program more sustainable across the Nation, a hotshot crew program manager supervised at the regional or GACC level was widely supported in the focus groups. This position would manage consistency for funding, equipment, and hiring. Mobilization and resource allocation would continue to be coordinated through the NICC.

The intent behind these new positions is to give hotshots a voice that advocates for crews year-round at the national and regional level and a liaison for crews to help resolve issues. Regional hotshot crew program managers would set the bar for standardization and would be involved in tracking where and how crews are assigned.

Currently, participation in the IHC Steering Committee is a collateral duty, and committee members cannot always sufficiently advocate for individual crew needs. This proposed position does not replace the steering committee, but rather provides additional capacity to identify and resolve concerns and improve coordination of these national resources.

Some equivalent positions are currently filled in different locations. An interagency task group should develop the roles and responsibilities associated with this position and determine how it would best fit into agency organizational structures. This type of position supports building the IHC program for the future.



Shasta Lake Hotshots strategize during the North Complex Fire. USDA Forest Service photo by Kai Funk.



Recommendation: Regional Hotshot Crew Program Managers

- ▶ Build an interagency working group comprised of different organizational levels to develop and assign interagency IHC program manager positions to represent and support crews at the GACC level. The number of positions and their GS level will be determined during development (based on number of crews).

Budget Allocation

Hotshots see inconsistencies in how supply and training funds are allocated to crews nationwide. Radios, medical equipment, vehicle repairs, chainsaws, hand tools, fire shelters, and crewmember gear are the main items included in annual supply or discretionary budgets, while employee training and travel costs are allocated in the nondiscretionary costs associated with each employee.

All crews need consistent funding to purchase the supplies they need to meet their mission effectively and safely throughout the year. Nationally, allocated crew supply budgets range from \$5,000 to over \$40,000, creating clear winners and losers. Many supplies can be replaced on large incidents using a supply number (S#), and crews rely on this method to replace broken or worn-out equipment.

According to 71 percent of survey respondents, budget limitations negatively impact crews, specifically by limiting the ability to acquire appropriate equipment and supplies. Discretionary budgets decidedly did not meet crew needs; over 70 percent agreed or strongly agreed that if discretionary funding was increased it would minimize reliance on obtaining supply numbers to replace supplies on large fires, which is an administratively heavy process that requires a lot of crew time. With direction to increase crew size, additional supply needs will have to be considered such as vehicles, radios, and personal gear.

Vehicles and hand-held radios are essential parts of firefighter equipment. They supply a critical function to safe and effective firefighting: communication. In the past, crews could operate with a limited number of radios; today, individuals frequently perform tasks independently and a radio is required for each crewmember. However, crews are unable to purchase the number of radios required.

The current system for radio purchase, funding allocation, and distribution must change; there should not be limitations on the most critical piece of communication equipment crews carry. Even if crews provide the necessary number of radios, the cost to keep them operational is staggering. From rechargeable batteries, to antennas, to charging stations, radio maintenance quickly diminishes supply budgets.

Training and development are critical to expand capacity, competency, and qualifications within the hotshot program. However, the travel costs associated with training and development are particularly challenging for many crews due to budget modernization. Attendance at out-of-area training and development opportunities requires approval from host units and is not consistently received due to interpretation of budget modernization. Since there is no budget line item for training and associated travel, host units may not approve training that requires travel.

“ [My crew experiences] very serious issues getting S#s to replace broken items on fires (and often times even getting an S# for fuel can be challenging). This puts a huge burden on discretionary funding. It costs approximately \$3,000 to fully outfit one hotshot (this does not account for consumables such as MREs, batteries, etc.). Our [total] average funding for the past 8 years has been about \$10,000 [for a crew of 20] (excluding 2021 where we saw a significant increase). We are reissuing gear that in any other profession would be absolutely unacceptable (sleeping bags see four different people in the course of 4 years and are slept in an average of 100 days per year). We don't have enough in travel/training to send more than two people to a week of training (per diem and tuition costs); monetary awards typically amount to about \$75 per person (that is such an insult that it isn't even worth giving the award).” (IHC Review Team 2022).

Regardless, units and regions have historically allocated these funds that hotshot crews depend upon for necessary training. Opportunities for training and development are negatively impacted by the interpretation of new budget structures.

Additionally, new technologies provide valuable fire suppression tools and will continue to supplement and expand fire suppression abilities into the future. Providing crewmembers access to and the opportunity and support for training on state-of-the-art technology for wildland fire operations is critical to adapt to the ever-changing fire environment. Examples of these tools include unmanned aircraft systems (UAS), night vision/infrared equipment, iPads, and mapping technologies such as Avenza or Collector.

Detailed calculations and estimates have been created by various crews and an overall costs summary is included in appendix 3. On average, an estimated minimum annual supply budget of \$65,000 (adjusted yearly for inflation) for each crew is sufficient for outfitting new and returning crewmembers with supplies. Recognizing the challenges faced to properly equip personnel, the Forest Service introduced an additional ability to acquire some of these necessary supplies within the national fire budget toolbox in 2022. A review of how that new tool was used is ongoing with the aim of ensuring all fire personnel have the proper communications equipment, personal protective equipment (PPE), and other necessary supplies to do their jobs effectively.



Recommendations: Budget Allocation

- ▶ Supply IHCs with the necessary number of radios to ensure lack of sufficient equipment is not a barrier to communication.
- ▶ In the Washington Office program direction, include a training and travel allocation per firefighter with language encouraging support for training opportunities that support the future of the IHC organization, such as leadership training opportunities, staff rides, etc.
- ▶ Ensure hotshot crewmembers have the opportunity and support to keep current with advancing technology and the UAS program.
- ▶ Allocate a minimum annual supply budget of \$40,000 to each hotshot crew. Optimally, a minimum of \$65,000 should be allocated to reduce or remove the need of supply numbers on fire assignments.

Identification of Key Themes

Crew Organization and Staffing

This section details the design of hotshot crews, including position appointment type, crew size, and season length, as well as the administrative support needed to run a crew.

Key Theme: Crew Organization and Staffing

Is Temporary Professional?

Permanent seasonal appointments are permanent, so employees do not have to be rehired each year, but during a portion of the year they do not work and subsequently are unpaid. Temporary appointments are typically limited to 1,039 hours of duty and 6 months in pay status per year, excluding overtime and eligible training.⁵ Employees in this type of appointment may be noncompetitively rehired in the same position each year.

Pay, health benefits, retirement, work-life balance, and time off were the most influential factors in determining what type of appointment hotshots would rather be hired in. Many survey respondents (44 percent) preferred a permanent full-time position, followed by 30 percent who preferred permanent seasonal (18 weeks of work and 8 weeks of unpaid status, known as 18/8), and 22 percent who preferred permanent seasonal (13 weeks of work and 13 weeks of unpaid status, known as 13/13). **Only 2 percent indicated that they would rather be hired in a 1039 temporary appointment.**

To provide an anchor point for keeping employees within the agency, wildland firefighter positions must have competitive pay rates. The issues of pay associated with being a seasonal or temporary employee are previously addressed in the “Pay” section. In addition, the challenges and inefficiencies

associated with temporary employees being rehired each year are addressed in the “Hiring” section.

Focus group members noted that having a substantial proportion of an elite workforce as temporary employees creates a perception that the organization is unprofessional and contributes to low retention within the program. However, the current system relies upon the flexibility that the temporary workforce provides. It takes time and experience to gain the qualifications required of a hotshot. Every year, an insufficient number of qualified applicants for permanent positions results in many unfilled vacancies at the GS-05 level. With a long-term vision of all hotshot crewmember positions being permanent, temporary appointments will likely continue to be necessary for bridging the gap as crew size increases.



Recommendation: Permanent Appointments

- ▶ Establish a minimum 80/20 ratio of permanent to temporary Forest Service employees for hotshot crews, with a long-term vision of primarily all crewmembers as being permanent seasonal (18/8 or 13/13) or full-time employees.

⁵ A temporary position is commonly referred to as a “1039.”

Syncing Availability with Work-Life Balance

The focus groups and survey clearly supported a 6-month operational season for hotshots (fig. 3).

Longer seasons raised cause for concern primarily due to fatigue, retention, and safety reasons. Hotshots must be all-in during their fire season, often pushing personal obligations to the side during this time, which has significant known impacts to family relationships, marriages, and hotshot mental health. The 6-month season provides opportunity for mental and physical recuperation for the firefighters who have the highest mental and physical demands during the season.

However, providing adequate resources during shoulder seasons as the fire season grows longer is more complex than the survey question. Is there a need for IHCs beyond the typical 6-month season, and are there large-scale organizational changes that could address this need? Are there other models for crew availability that provide a resilient fire suppression workforce while supporting

employee's lives outside of work? This paradigm is being questioned. Coordinated staggered start dates, increased pay and career opportunities, and better supported work-life balance would alter the tenor of this conversation.

The Ground Based Firefighting Resource Modernization letter issued to regional foresters on November 9, 2021, attempts to address some of these issues (Hall-Rivera 2021). In particular, the letter supports the 6-month season, calling for the standard tour for crews to be assembled for a minimum of 13 pay periods and available for a minimum of 11 pay periods. This letter also attempts to address the issue of vacancies negatively impacting crew-level qualifications by increasing the total number of people on the crew to 25, building margin around a crew's ability to be fully staffed and qualified with a minimum of 18 people even with vacancies from turnover, injuries, training assignments, or midseason outside-of-work events.

Furthermore, in 2022 the Forest Service piloted several new crew structure models with report-outs for evaluation and consideration by the Fire and Aviation Management leadership at the Washington Office. These pilots include two 30-person crews, a 40-person crew, and several crews with augmented leadership structures. Another pilot being considered by several crews in one geographic area (not approved at the time of writing this report) is a change in IHC scheduling using availability blocks.

Currently, IHCs typically spend 14 days plus travel on assignment, followed by mandatory days off. This pattern repeats six to eight times during their 6-month season. As discussed in the "Well-Being" section, this makes it impossible for employees to plan personal life events and has negative effects on recruitment and retention. The pilot proposes 35-day blocks of availability during which time they would complete 14-day assignments (usually 16 total with travel days) followed by 3 mandatory days off. Regardless of days on assignments, they would return home on their 35th day of availability, beginning a prescheduled 7-day period of unavailability. In this 7-day period of unavailability, 40 hours would be administrative leave. This would allow for the entire crew to plan personal time off and get quality rest and recuperation. Another potential benefit of this proposal, beyond employee well-being, recruitment, and retention, is that their crew assembled time could be extended from the current 6 months to 8 months, providing for this highly sought-after resource for longer periods of their traditional use, as well as fuels work.

An inherent benefit of working on an IHC is the significant amount of wildland fire experience one can receive in a relatively short amount of time. It could take several seasons working for other resource types to gain the incident experience one could receive in a single season on a hotshot crew. The tradeoff for gaining invaluable large fire management experience is that there is little opportunity for

training and development in other wildland fire areas.

Hotshot crews have historically been less flexible than other resources because to meet SIHCO standards they must have specific crew numbers and meet minimum qualifications to maintain their type 1 status. Managing opportunities for training and development outside the crew while ensuring appropriate overhead and supervision are maintained can be challenging.

In recent years, demand for hotshot crews has resulted in assignments starting as soon as crews are available and finishing at or near the end of appointments for many of the temporary and 13/13 crewmembers. **This leaves little to no time for additional training and development.**

Crewmembers are often forced to volunteer time and travel to complete coursework required for their individual development and to qualify for future positions. Creating capacity for crewmember training—whether by allocating time, adding personnel, or both—would improve crewmembers' work-life balance, as well as their sense of participation, fulfillment, and value. These changes will help retain quality employees by offering them more than just a paycheck.

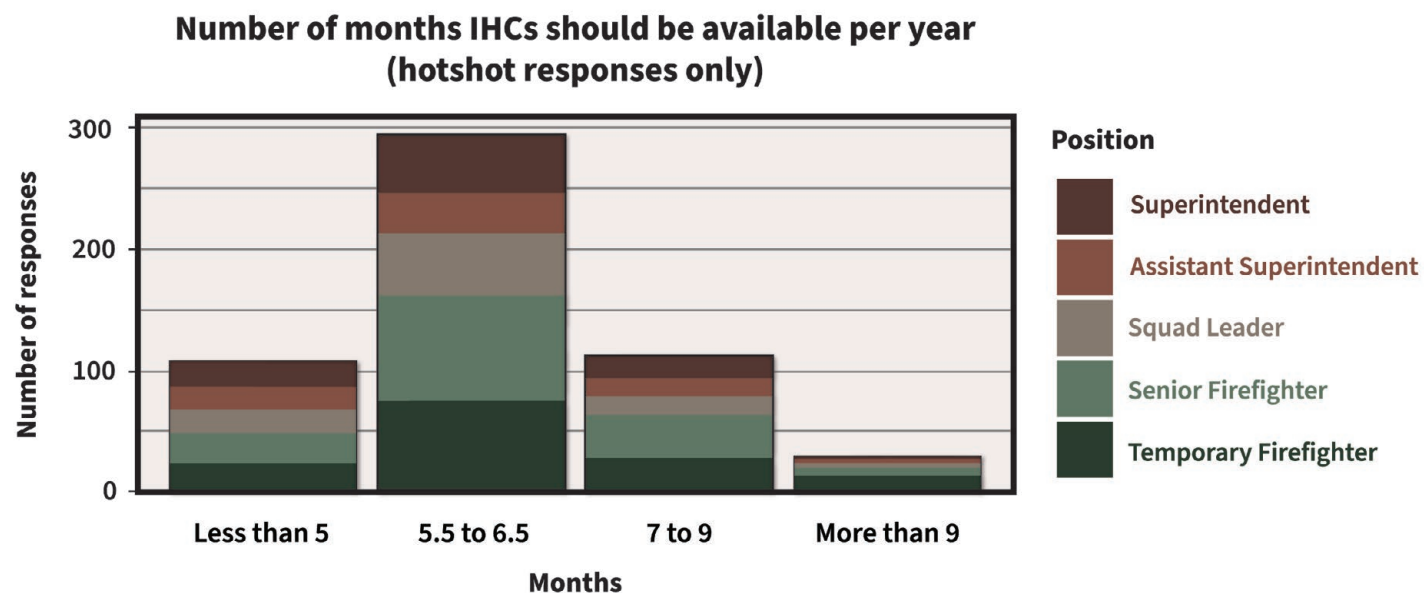


Figure 3. Responses to a survey question about optimal season length for interagency hotshot crews, grouped by position of respondent.

Recommendations: Syncing Availability with Work-Life Balance

- ▶ In the SIHCO, adopt the standard tour for crews to be assembled for a minimum of 13 pay periods and available for a minimum of 11 pay periods.
- ▶ In the SIHCO, adopt the 20- to 25-person standard crew size and retain the minimum crew size of 18 fire line-qualified personnel for mobilization.
- ▶ Update the Red Book and mobilization guides for consistency based on changes made in response to this review.

Administrative Support

The administrative responsibilities of running a large crew continue to increase and become more specialized over time. Hotshot crews often use days off for shuttling vehicles for service, refurbishing tools and trucks, ordering supplies, completing timesheets, processing hiring actions, filing travel reimbursements, and reconciling Government credit cards, among other duties. This workload generally falls to the superintendent and other crew leadership, taking time away from their focus on operational assignments and risk management and preventing quality rest between assignments. In the SIHCO, host units are responsible for providing administrative support to hotshot crews, support that is essential to the crews. Where not already in place, providing administrative positions to support IHCs will improve efficiency, morale, and overall professionalism of the crews.



A Ruby Mountain Hotshot monitors the fire line during the Dixie Fire. Bureau of Land Management photo by Joe Bradshaw.



Recommendation: Administrative Support

- ▶ Reinstate, establish, or continue support for administrative positions with primary duties of providing firefighter support for tasks such as travel, time, hiring, purchasing, etc.

Identification of Key Themes

Vehicles

Hotshots rely on their vehicles for travel to and from fire assignments and more critically, to perform at high levels while on fire incidents. These vehicles also become home for their crews, who spent an average of 116 days per year on assignment or in travel status between 2014 and 2021. The day-to-day operations and tempo of hotshot crews continue to increase, emphasizing the need for safe, reliable, and functional transportation to meet the ever-growing demands placed on them.

However, the lack of consistency in approvals for repairs and the inability to replace vehicles in a timely manner has created a vehicle crisis—often leaving crews without vehicles for months at a time. Survey respondents listed repairs, replacement life cycle, contracting, and design as recommended changes to the current Forest Service fleet process (IHC Review Team 2022).

Repairs

The Forest Service timeframe and approval process for repairs is lengthy and cumbersome. Regional office approval is required for repairs over \$2,500, and everything greater than \$10,000 must go through a contract bidding process. A tow bill for the larger crew vehicles can cost upwards of \$4,000, repairs can often be over \$10,000, and the cost of tires for some vehicles requires crews to submit requests to the forest or regional fleet manager. **Nearly all repairs result in lengthy time periods when the crew is left without an operable vehicle**, impeding their ability to function at the high level expected from them.

Hotshot crews wait several weeks to months for repair orders to be approved, with most survey respondents indicating that vehicles were down for repair on average for more than 1 month during

their previous season. Significant additional costs are often incurred when renting from a Government contract or national chain. A half-ton truck can cost between \$900 and \$1,600 per month, plus “damages,” depending upon the contract. When one crew carrier is out of service, generally three trucks are needed as replacement. Additionally, these rentals can be difficult to find and the types of vehicles available may not meet crew needs.

Some repairs are deemed too expensive to fix and simply not approved. This leaves crews without a vehicle and unable to appropriately meet the demands of the job until their replacement arrives, which could be months to years later. There must be a change in the repair process to allow crews to quickly get vehicles repaired so they can continue to meet the mission and expectations placed on them.



The Tallac Hotshot Crew superintendent's truck getting towed after an engine failure during the 2018 Hirz Fire, Shasta-Trinity National Forest. The breakdown required an estimated \$12,000 in repairs, which were never completed. The crew used a holdover from another unit for the following 3 ½ years before a replacement arrived. USDA Forest Service photo by Kyle Betty.

Replacement

The current Forest Service model of a 10-year timeframe for replacement vehicles hampers the effectiveness and efficiency of its hotshot crews. These vehicles endure harsh conditions and tens of thousands of miles each year, calling for a shorter turnaround time than currently in place. **Hotshot vehicles are failing well before the 10-year lifespan**, leading to safety concerns and expensive repairs year after year to keep them road worthy.

Repair costs of 10-person crew carriers (also called buggies) between the 7th and 10th year of ownership are believed to exceed the purchase cost of the vehicle. Crew vehicles may be unusable or unapproved for repair long before they reach their replacement schedule. This leads to crews constantly searching for available vehicles just to be able to operate while on assignment or on days off. When a vehicle is eligible for replacement **it takes an average of 3 years for the replacement**

to arrive after ordering. Crews are left without vehicles, or limping them along hoping that they will last until the replacements arrive. Hotshot crews cannot successfully operate under this scenario. Crews need to be able to place orders for replacement vehicles to ensure the new vehicles arrive before the old ones are out of service.



Recommendations: Replacement

- ▶ Adjust the Forest Service vehicle replacement timeline to reduce the mileage to 80,000 or reduce the number of years for replacement to a 6-year timeframe.
- ▶ Modify the Forest Service replacement timeline to ensure crews are ordering vehicles before the end of the current vehicle's service term to eliminate the gap from ordering to replacement.

demand and need of the hotshot crews. There are numerous corporations throughout the country who make specialty fire apparatus for non-Federal fire departments and cooperators. Hotshot crews need purpose-built vehicles that can withstand the wear and tear from the rugged environment they operate in and will meet the needs of the hotshot organization into the future.

When factoring in repair costs and replacement rentals, the least price technically available (LPTA) contract may not be the right tool for purchasing

these specialized vehicles. **Best value contracts may ultimately save the Government money over time.** The quality and durability of the current vehicles the crews are receiving has also compounded the issue. Contracting needs to be accountable to the specifications and ensure the builders of these vehicles are held to the high standard and produce the quality required of this fleet.

Standard Configuration

Hotshots face great pressure to serve the public in a wildland fire environment that increasingly includes the urban interface, an ever-accelerating pace, and constantly evolving fire dynamics. To be successful, crews need reliable and effective vehicles. Additionally, to effectively transport larger sized crews as directed in the Ground Based Firefighting Modernization letter, more vehicles will be needed. Enough vehicles must be allocated to all crews to meet the intent of this letter.

National direction to reduce fleet size is in direct opposition to this need, creating a significant barrier for crews. Further compounding this issue is that crews spend a substantial amount of time and funding to retrofit vehicles with winches, lights, fuel tanks, storage racks, and other essential components that are not included in the standard vehicle packages. By including a representative from the National IHC Steering Committee on the National Equipment Committee, IHCs would have a voice in the creation of national fleet standards.

Almost 74 percent of survey respondents preferred a standardized configuration that includes a superintendent truck, two 10-person crew carriers, a 6-pack truck (i.e., a 4x4 truck capable of carrying at least six people, ¾–1 ton, and includes a utility bed and towing package) or multi-mission crew



Recommendation: Procurement

- ▶ Change vehicle procurement contracts to best value tradeoff process contracts for emergency vehicles.



Example of a side-by-side. USDA Forest Service photo.

vehicle (MMCV), a side-by-side, and trailer. Ninety percent think that it would be useful for each crew to have a side-by-side. Including a 6-pack truck or MMCV as part of the IHC fleet provides the ability to scout line, saves wear and tear on people and other vehicles by shuttling crewmembers, and is invaluable in medical situations to assist in transport of hurt or injured crewmembers to urgent medical care.

Specifications for MMCVs are available from the Forest Service's National Technology and Development Program (USDA Forest Service 2018b and 2020). A standardized vehicle configuration that includes a chase truck (6-pack or MMCV), trailer, and side-by-side will help crews meet the needs they encounter in the field.

Procurement

Most often, the vehicles provided to hotshot crews are not built for the extreme conditions the crews face daily and are often unreliable and untrustworthy. All available tools need to be considered when building the fleet of emergency vehicles, including best value contracts and purpose-built vehicles. Vehicles need to be durable enough to handle uneven, unpaved, steep roads in high-impact, high-danger situations. Time, effort, and energy are needed to develop vehicles for the future that can reliably meet the

demand and need of the hotshot crews. There are numerous corporations throughout the country who make specialty fire apparatus for non-Federal fire departments and cooperators. Hotshot crews need purpose-built vehicles that can withstand the wear and tear from the rugged environment they operate in and will meet the needs of the hotshot organization into the future.

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Example of a multi-mission crew carrier. USDA Forest Service photo by Brandon Oberhardt.



Firefighter with the Ruby Mountain Hotshot Crew. Bureau of Land Management photo.

Conclusion

This review is a starting place for continual improvements to the interagency hotshot crew (IHC) program to ensure the program's success and sustainability. Varying degrees of investment and collaboration will be necessary to complete the suggested recommendations. Some recommendations will require system changes, such as improving fleet procurement, repair, and replacement processes or addressing the monumental constraints posed by the current hiring process. Others will likely require cultural changes, like supporting quality recovery time and valuing employee well-being.

The impact of pay on the recruitment and retention of crewmembers is particularly important given the concern that agencies may no longer be able to provide the number of crews needed without significant and immediate changes. While the scope and applicability of many of these recommendations reach beyond hotshot crews to additional wildland fire and emergency response resources as well as other program areas, caution is advised. To limit unintended consequences, similar reviews or discussions with other program managers should occur before broadly applying these recommendations.

It is critical to recognize that IHC superintendents fundamentally operate as IHC program managers, specializing in building and maintaining highly functioning teams capable of making complex decisions in high-risk environments. While the recommendations generally focus on steps that can be taken by national, regional, and local management to support IHCs, superintendents are

uniquely positioned to understand their program and people better than anyone.

Throughout the review process, superintendents clearly articulated a preference for freedom and flexibility to make decisions to best support their crews. Furthermore, the National IHC Steering Committee is committed to the continuous improvement of IHC programs and successful mission delivery to their respective agencies. To ensure any changes meet the intent outlined in this review, the National IHC Steering Committee (or a representative) should be included in discussions and decisions as recommendations move forward. A strong model for ongoing discussions could be an annually signed charter for the National IHC Steering Committee with a corresponding program of work to allow for continual dialogue around what is important and challenging, while providing a shared pathway to resolving issues.

Interagency hotshot crews are a critical component to wildland fire management and incident operations. It is important to acknowledge that while the fundamental reasons hotshot crews exist have not changed, the environment they operate in has. Unprecedented environmental challenges and increased social and political expectations contribute to IHCs finding themselves in high demand and short supply. The recommendations from this programmatic review provide opportunities for agency leaders to work collaboratively with IHCs to gain consistency and modernize the program to successfully meet challenges faced today and into the future.



Recommendations: Standard Configuration

- ▶ Include a representative from the National IHC Steering Committee on the National Equipment Committee.
- ▶ Modify the SIHCO to include a minimum vehicle standard that offers two configurations:
 1. (a) superintendent truck, (b) two crew carriers, (c) 6-pack or MMCV, and (d) utility terrain vehicle (UTV)/trailer
 2. (a) superintendent truck, and (b) up to five 6-packs or MMCVs and (c) UTV/trailer
- ▶ Collaborate with engineering and fleet management staff to analyze IHC needs for purpose-built chassis for superintendent trucks and crew carriers.



A Redding Hotshot uses a drip torch to burn lower vegetation to help contain the oncoming fire, Mendocino National Forest. USDA Forest Service photo by Cecilio Ricardo.

Review Team



A member of the Zigzag Hotshots serves as a lookout during a burnout operation in Los Alamos Canyon. USDA Forest Service photo by Kristen Honig.

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The Ruby Mountain Hotshot Crew during night operations. Bureau of Land Management photo.

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Appendixes

Appendix 1: Methodology

Forming the Team – October 2021

Once the delegation of authority was given, the intent was to build a review team that represented all aspects of the interagency hotshot crew (IHC) program. The team consisted of hotshots, fire managers, fire directors, forest supervisors, risk management, incident management team members, and representation from the Washington Office. These team members represented all Forest Service regions and other wildland fire organizations, including Bureau of Land Management (BLM), National Park Service (NPS), Bureau of Indian Affairs, (BIA), and State and county IHCs.

Focus Groups – November 2021

During the weeks of November 8th and 15th, a series of six 8-hour focus group discussions were held to gather perspectives critical for understanding current challenges facing the IHC program, envisioning what the program might look like in the future, and considering short- and long-term opportunities to overcome these challenges while pointing the IHC program toward a shared vision. Approximately 75 individuals, plus learning programmatic review team members, were involved in these conversations.

Three focus groups included only current or former hotshots separated into specific sessions for superintendents, crew overhead, and crewmembers. Approximately 10 people were invited to each focus group with representation from hotshot crews across the country. Most participants worked for the Forest Service, but State and Department of the Interior crews were also represented.

Three of these focus groups included a diverse mix of approximately 15 participants representing national leadership, regional fire directors/deputies, line officers, fire management officers, incident management team members, superintendents, and retired superintendents. Agency diversity was greater in these mixed groups with participants from NPS, BLM, and BIA in addition to the Forest Service.

Survey – December 2021

The review team designed a survey to collect concerns, preferences, and opinions from the hotshot community, wildland fire managers, line officers, and incident personnel who are most closely connected to the mission delivery of the program. Survey development began in October 2021. Scoping of questions occurred throughout the fall and was partially informed by the content of the focus groups. The survey was implemented using Microsoft Forms. A link to the survey was emailed out to all current (2021) hotshot superintendents, as well as those who were superintendents in 2020. In the email, superintendents were asked to forward the survey on to all their crewmembers. The survey was also emailed to the entire review team, as well as a selection of agency administrators and fire managers. The first email went out December 8, 2021. Reminder emails were sent out on December 15, 2021, with additional outreach to hotshot crews that were completely unrepresented in the survey data as of December 15, 2021. The survey remained open until December 31, 2021. A total of 707 responses were captured and analyzed by the review team.

Responses to close-ended questions were initially examined using the graphs provided by Microsoft Forms. Additional graphs were created for questions where further exploration was needed to compare between subgroups of respondents and for responses to open-ended questions that were categorized by members of the review team.

Seasonal Summary Data

At the end of every season, the superintendent of each IHC aggregates information about their season and submits it to the chair of the IHC Steering Committee in a standardized form. The data reported on this form has been consistent since the early 2000s, and the archived data from each individual crew is available since 2011. While occasionally crews do not submit their reports, most crews are represented each year in this data. Data collected include details on crew availability, training, transportation, personnel, accidents and injuries, project work, incident support, and operational impacts from the coronavirus pandemic (2020 and 2021 only). This additional data source allowed the review committee to supplement the findings from the focus groups and survey. Many of the statistics in this report were pulled from this data source; for example, the crews' average number of days on assignment per year was calculated using this report, and the data from this report provided the basis for the estimation of retirement income.

Sensemaking – January 2022

Review team members held sensemaking sessions in January to develop problem and objective diagrams from the data gathered through the focus groups and survey. The team created an influence diagram to articulate the challenges and symptoms facing the hotshot program. To build the influence diagrams, three interactive sessions were held with members of the IHC programmatic review team. Prior to the sessions, review team members were asked to carefully review recordings from a specific focus group. During these sessions, members of the team were asked to participate in creating an influence diagram using issues identified in the focus groups as well as their own knowledge of the IHC operating environment.

Recommendations – February 2022

Over the course of 2 weeks in February, recommendations were developed and refined by review team members using an announced decision-making strategy. Draft recommendations were presented to the team with the goal of arriving at consensus within the group based on their experience with the focus groups, survey results, and professional expertise. Dialogue surrounding disagreement with recommendations was used to modify or remove language until the team was generally in alignment. When consensus could not be met, the team lead made the final decision based on what was heard.

Jackson Hotshots during the Brian Head Fire. USDA Forest Service photo by Kari Greer.

Appendix 2: Example Crew Schedule

South Ops IHC's	PP 07	PP 08	PP 09	PP 10	PP 11	PP 12	PP 13 thru PP 19	PP 20	PP 21	PP 22	PP 23	PP 24	PP 25
	28-Mar	11-Apr	25-Apr	9-May	23-May	6-Jun	20-Jun thru 25-Sep	LWD: 9-Oct	LWD: 23-Oct	LWD: 6-Nov	LWD: 20-Nov	LWD: 4-Dec	LWD: 18-Dec
Dalton IHC			80-hour T	Avail	On	On	On	On	On	LPP			
Valyermo IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Texas Canyon IHC					80-hour T	Avail	On	On	On	On	On	LPP	
Little Tujunga IHC						80-hour T	Avail PP 13	On	On	On	On	On	LPP
Bear Divide IHC						80-hour T	Avail PP 13	On	On	On	On	On	LPP
Big Bear IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Del Rosa IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Mill Creek IHC					80-hour T	Avail	On	On	On	On	On	LPP	
Vista Grande IHC					80-hour T	Avail	On	On	On	On	On	LPP	
El Cariso IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Laguna IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Palomar IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Inyo IHC			80-hour T	Avail	On	On	On	On	On	LPP			
Ventana IHC			80-hour T	Avail	On	On	On	On	On	LPP			
Arroyo Grande IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Los Padres IHC					80-hour T	Avail	On	On	On	On	On	LPP	
Sierra IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Kings River IHC					80-hour T	Avail	On	On	On	On	On	LPP	
Crane Valley IHC						80-hour T	Avail PP 13	On	On	On	On	On	LPP
Horseshoe IHC			80-hour T	Avail	On	On	On	On	On	LPP			
Breckenridge IHC				80-hour T	Avail	On	On	On	On	On	LPP		
Fulton IHC					80-hour T	Avail	On	On	On	On	On	LPP	
Springville IHC					80-hour T	Avail	On	On	On	On	On	LPP	
Groveland IHC			80-hour T	Avail	On	On	On	On	On	LPP			
Stanislaus IHC				80-hour T	Avail	On	On	On	On	On	LPP		
IHC Totals	0	0	0	6	14	22	25	25	25	25	19	11	3

Figure A2-1. An example crew schedule from the California Department of Forestry and Fire Prevention (CAL FIRE).

Appendix 3: Supply Budget Analysis

IHC Supply Budget Analysis Proposal FY 2022	
Returnee position gear cost per EACH crewmember <i>(cost to equip 1 IHC crewmember with planned cycling):</i>	\$1,291.27
\$1,291.27 multiplied by 25 crewmembers:	\$32,281.75
MEDICAL:	\$2,323.13
CHAINSAWS:	\$16,064.50
TOOLS:	\$590.00
RADIOS:	\$3,624.86
VEHICLES:	\$3,500.00
FACILITIES:	\$3,700.00
MISC. PURCHASES :	\$3,000.00
TOTAL SUPPLY BUDGET ANNUAL NEEDS FY 22 <i>(based on outfitting 25 positions and funding other areas of program while being self sufficient):</i>	\$65,084.24
Cost per firefighter per year:	\$2,603.37
<i>Note: Budgeting is based on 25 positions, planned cycling of equipment, eliminating S# replacement, and the ability of still obtaining general cache items such as food, water, fuel, batteries, fiber tape, gloves, 12" flat files, nomex, etc. needing to be replaced or exchanged on incident from supply.</i>	

Appendix 4: Implementation Plan

Because this review is sponsored by the Forest Service, recommendations are categorized as internal or external to the agency. Additional collaboration will be necessary to implement external recommendations.

Short-Term Recommendations				
To be completed in 6–12 months				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
1	Fire and Aviation Management workforce development and line leadership should reevaluate and update all hotshot position descriptions, and Human Resources Management should reevaluate classification of the new position descriptions following the development of the wildland firefighter job series.	Pay	x	
2	Continue to apply long-term pay adjustments as broadly as possible across locations, recognizing that, nationally, pay is a constraining factor in the agency’s ability to hire and retain firefighters.	Pay		x – other agencies
3	Evaluate the tradeoffs of paying firefighters on assignment a daily rate rather than paying overtime, considering fatigue management and firefighter compensation outcomes.	Well-Being		x
4	Allocate a minimum annual supply budget of \$40,000 to each hotshot crew. Optimally, a minimum of \$65,000 should be allocated to reduce or remove the need of supply numbers on fire assignments.	Organizational Structure		x – other agencies
5	Before investing in additional crews, ensure current crews have what they need to be successful (budgets, personnel, qualifications, vehicles, and facilities).	Organizational Structure	x	

Short-Term Recommendations (continued)				
To be completed in 6–12 months				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
6	Expand the use of hazard pay for prescribed fire.	Pay		x – other agencies
7	Use an interagency open continuous roster announcement to allow IHCs to fill permanent and temporary (1039) vacancies when needed throughout the year.	Hiring Process	x	
8	Create a 30-day process to outreach and hire not to exceed 1-year details to promptly fill temporary vacancies. This revised process can also be used in the interim until an open continuous roster announcement is developed.	Hiring Process	x	
9	Reevaluate the hiring process for hotshots by: <ol style="list-style-type: none"> 1. Reducing the timeframe between application and effective dates to 3 months. 2. Shifting the application period to November–January to allow hotshots to apply for positions outside their core fire season. Involving the superintendent in selection decisions during all hiring events. 3. Ensure ability to advertise merit positions (to include Land Management Workforce Flexibility Act eligibility). 4. Allowing applicants to correct mistakes in their application packages. 5. Streamlining the hiring process. 	Hiring Process	x	
10	Develop an outreach and recruitment campaign targeted specifically for hotshots.	Hiring Process		x – other agencies
11	Review and simplify the requirements in the online application process using current hotshots as subject matter experts.	Hiring Process	x	
12	Develop a mechanism to streamline the appeals process to allow applicants to meet the hiring timeframe.	Hiring Process	x	

Short-Term Recommendations (continued)				
To be completed in 6–12 months				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
13	Develop relationships between subject matter experts and human resources to ensure consistency in reviewing and rating applications.	Hiring Process	x	
14	Provide IHCs with all available hiring options to meet staffing needs, including merit announcements.	Hiring Process	x	
15	Modify the Red Book to provide a minimum of 3 days of paid rest and recuperation after 14-day assignments for Forest Service employees. Collaborate with interagency partners, using data from the focus groups and survey, to determine if changing the Incident Business Management handbook to 3 days of rest after a 14-day assignment would be appropriate for all Federal land management agencies.	Well-Being		x - other agencies and National Wildfire Coordinating Group
16	Forest Service host units provide space and equipment for an at-station day between assignments, if requested by a crew superintendent, to accomplish administrative duties. Such days should be considered normal workdays and not constitute rest and recuperation.	Well-Being	x	
17	Agencies, coordinating groups, and incident management teams should provide financial and logistical support for crewmembers on assignment to travel for preplanned days off and return to crew. Examples of such support include plane tickets and rental vehicles.	Well-Being		x – other agencies
18	Build an interagency working group comprised of different organizational levels to develop and assign interagency IHC program manager positions to represent and support crews at the Geographic Area Coordination Center level. The number of positions and their GS level will be determined during development (based on number of crews).	Organizational Structure		x – other agencies

Short-Term Recommendations (continued)				
To be completed in 6–12 months				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
19	Improve the efficiency of the Forest Service vehicle repair process for crew carriers and superintendent trucks by: <ol style="list-style-type: none"> 1. Collaborating with USDA to increase the Forest Service WEX card limits to \$10,000 without approval. 2. Establish a repair approval timeframe of no more than 5 days for all emergency vehicles. 3. Streamlining the approval process through coordination between the fire program and fleet managers. 	Vehicles	x	
20	Modify the SIHCO to include a minimum vehicle standard that offers two configurations: <ol style="list-style-type: none"> (1) (a) superintendent truck, (b) two crew carriers, (c) 6-pack or multi-mission crew vehicle (MMCV), and (d) utility terrain vehicle (UTV)/trailer (2) (a) superintendent truck, and (b) up to five 6-packs or MMCVs and (c) UTV/trailer 	Vehicles		x – other agencies
21	Include a representative from the National IHC Steering Committee on the National Equipment Committee.	Vehicles	x	
22	Create a 120-day detail to assess current conditions of IHC facilities and develop an implementation plan for bringing all IHC facilities up to a standard created by the National IHC Steering Committee.	Facilities	x	
23	Lower daily housing rates for Government employees: explore the ability to provide free housing to seasonal (“1039”) employees or adjust the rate to \$1 per day when crews are on assignment. Provide funding and contract support for short-term solutions to provide employee housing.	Facilities		x – Office of Management and Budget

Short-Term Recommendations (continued)				
To be completed in 6–12 months				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
24	Provide funding and contract support for short-term solutions to provide employee housing	Facilities	x	
25	In agencies where the SIHCO is not already referenced by policy, reference it as policy. For the Forest Service, reference the SIHCO as policy in the handbook and recommend the signatory be the director of Fire and Aviation Management.	Mission		x
26	In the SIHCO, adopt the standard tour for crews to be assembled for a minimum of 13 pay periods and available for a minimum of 11 pay periods.	Crew Organization and Staffing		x – other agencies
27	In the SIHCO, adopt the 20- to 25-person standard crew size and retain the minimum crew size of 18 fire line-qualified personnel for mobilization.	Crew Organization and Staffing		x – other agencies
28	Update the Red Book and mobilization guides for consistency based on changes made in response to this review.	Crew Organization and Staffing		x – other agencies
29	Remove the 2-hour mobilization requirement in the SIHCO, leaving discretion for mobilization to be predetermined between the crew superintendent, local unit, and Geographic Area Coordination Center (GACC). If 2 hours or shorter mobilization time is requested, it must be compensated with support codes by the requesting unit or GACC.	Well-Being		x – other agencies
30	Forest Service IHCs should be supervised at the forest level or higher.	Organizational Structure	x	

Short-Term Recommendations (continued)				
To be completed in 6–12 months				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
31	Within the Forest Service, increase allocation of wildfire salary and expenses to units for implementing critical hazardous fuels work and provide intent that compensatory time off or credit hours are not to be used widely for hazardous fuels reduction.	Pay	x	
32	Ensure hotshot crewmembers have the opportunity and support to keep current with advancing technology and the unmanned aircraft systems program.	Organizational Structure	x	
33	Supply IHCs with the necessary number of radios to ensure lack of sufficient equipment is not a barrier to communication.	Organizational Structure	x	

Mid-Term Recommendations				
To be completed in 1-2 years				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
1	Host a hiring event specific for type 1/hotshot crews.	Hiring Process	x	
2	Geographic Area Coordination Center operations groups coordinate IHC start/stop dates and days off to ensure regional and national coverage.	Organizational Structure		x – other agencies
3	Collaborate with interagency partners to standardize tracking of national hotshot crew availability by: <ul style="list-style-type: none"> 1. National Interagency Coordination Center creating a national tracking situation report for IHCs. 2. At preparedness level 3 and above, require Geographic Area Coordination Centers (GACCs) and incident management teams to submit a justification to the National Multi-Agency Coordinating Group for requesting or holding IHCs outside of initial attack or emerging incidents. 	Organizational Structure		x – other agencies
4	Modify the Forest Service replacement timeline to ensure crews are ordering vehicles before the end of the current vehicle's service term to eliminate the gap from ordering to replacement.	Vehicles	x	
5	Adjust the Forest Service vehicle replacement timeline to reduce the mileage to 80,000 or reduce the number of years for replacement to a 6-year timeframe.	Vehicles	x	
6	Change vehicle procurement contracts to best value tradeoff process contracts for emergency vehicles.	Vehicles	x	

Mid-Term Recommendations (continued)				
To be completed in 1-2 years				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
7	Collaborate with engineering and fleet management staff to analyze IHC needs for purpose-built chassis for superintendent trucks and crew carriers.	Vehicles	x	
8	Create a Forest Service IHC facility standard through a coordinated effort between the National IHC Steering Committee and the Forest Service engineering program using the Bureau of Land Management standard as a starting point.	Facilities	x	
9	Reinstate, establish, or continue support for administrative positions with primary duties of providing firefighter support for tasks such as travel, time, hiring, purchasing, etc.	Crew Organization and Staffing	x	
10	Analyze the consolidation or relocation of Forest Service IHCs to alternative locations or into centralized, shared facilities to provide adequate accommodations and amenities for three to five crews at a single location.	Facilities	x	
11	Have the Fire & Aviation Management director sign an annual charter and program of work for the National IHC Steering Committee.	Mission		x – other agencies
12	In the Washington Office program direction, include a training and travel allocation per firefighter with language encouraging training opportunities that support the future of the IHC organization, such as leadership training opportunities, staff rides, etc.	Organizational Structure	x	
13	Establish dedicated funds for travel to job fairs and career days to outreach to diverse prospective employees.	Hiring Process	x	

Long-Term Recommendations				
To be completed in 2-3 years				
Priority	Recommendation	Key Theme	Internal to Forest Service	Requires external collaboration
1	<p>Improve healthcare for wildland firefighters by:</p> <ol style="list-style-type: none"> 1. Improving capacity of the Forest Service Human Resource Management, Office of Worker's Compensation Program to understand the firefighter profession and more effectively manage firefighter caseload. 2. Improving access to specialized medical care for workplace injuries and mental health clinicians specializing in care for firefighters. 3. Tracking exposure to health hazards such as smoke, soot, and other hazardous conditions. 4. Covering hotshots under presumptive care. <i>(Note: U.S. Department of Labor, Office of Workers' Compensation Programs has included firefighters under presumptive care as of April 2022.)</i> 	Well-Being		x - Department of Labor
2	Modify the policy on retirement calculations to account for overtime and hazard pay income.	Pay		x
3	Nationally, develop a long-term plan to increase access to housing for employees (Government-provided housing, rentals, pathway to home ownership, etc.), ensuring fair costs and consistent rules for who qualifies for housing.	Facilities		x
4	Establish a minimum 80/20 ratio of permanent to temporary Forest Service employees for hotshot crews, with a long-term vision of primarily all crewmembers as being permanent seasonal (18/8 or 13/13) or full-time employees.	Crew Organization and Staffing	x	



A captain on the Eldorado Hotshot Crew conducts wet-mop duties during the Caldor Fire, Eldorado National Forest. USDA Forest Service photo by Cecilio Ricardo.



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