U.S. Department of the Interior

Wildland Fire Management

Fiscal Year 2020 ANNUAL REPORT AND LARGE FIRE REVIEW

The Department of the Interior's Wildland Fire Management Program works collaboratively with Federal, State, and Tribal partners to ensure firefighter and public safety while reducing wildfire risk across the country. The program includes the Office of Wildland Fire and four bureaus that manage wildland fire—the Bureau of Indian Affairs, the Bureau of Land Management, the National Park Service, and the U.S. Fish and Wildlife Service.

This document addresses reporting requirements for fiscal year 2020, as described in Division O of the Consolidated Appropriations Act, 2018 (Public Law 115-141, 132 STAT. 1061).

www.doi.gov/wildlandfire

Executive Summary

Division O of the Consolidated Appropriations Act, 2018, (P.L. 115-141), amended the Balanced Budget and Emergency Deficit Control Act to provide additional new budget authority for Fiscal Years 2020 through 2027. Under this provision, otherwise known as the Stephen Sepp Wildfire Suppression Funding and Forest Management Activities Act, the Department of the Interior (DOI) and the Department of Agriculture (USDA) are provided $2.25 billion in additional new budget authority for wildfire suppression operations in FY 2020. The Further Consolidated Appropriations Act, 2020 authorized $300 million for DOI and $1.95 billion for USDA Forest in the Wildfire Suppression Operations Reserve Fund.

The Department of the Interior Wildland Fire Management (WFM) budget is coordinated by the Office of Wildland Fire, which develops budget guidance and allocates funding to the Bureau of Indian Affairs, the Bureau of Land Management, the National Park Service, and the U.S. Fish and Wildlife Service. The bureaus use this funding to carry out work in accordance with established WFM policies, program direction and guidance. In fiscal year (FY) 2020, due to significant suppression expenses from fires in 2018 and 2019, including reimbursements made to the State of California and State of Alaska, and high wildfire activity in August and September 2020, DOI spent a total of $1.081 billion on all wildland fire management operations. DOI obligated nearly $444 million in Suppression Operations funding available in the WFM appropriation, and in September, DOI requested and obligated an additional $67 million of the new budget authority from the Wildfire Suppression Operations Reserve Fund to meet emergency wildfire suppression needs.

The Act requires the Secretary of Agriculture and Secretary of the Interior (as applicable) to submit to Congress and make available to the public a report within 90 days after the end of the fiscal year if the Secretary used the additional budget authority provided in that FY. This report addresses the requirement included in P.L. 115-141, with review and analyses of: (1) risk management; (2) suppression management; (3) landscape considerations; (4) fire summaries; (5) financial reporting; (6) lessons learned; and (7) recommended enhancements. To complete the analysis, six large wildfires were selected representing wildfires from a wide range of geographic areas with varying incident objectives, strategic courses of action and differing costs. Because wildfires are unique events subject to incident-specific conditions, risks, and management decisions, sampled fire information is supplemented with general program analysis information.

Although this report focuses on DOI, it should be noted that wildfires cannot be managed independently by a single agency. The backbone of wildland fire management in the United States is partnership, collaboration and assistance across boundaries--among Federal, Tribal, State, and local agencies, with public engagement. Wildfire outcomes vary considerably and are influenced by fire management plans; community and resource preparedness; and on-incident conditions, options, and decision-making.

The evaluation undertaken to prepare this report highlighted the criticality of the wildland fire workforce, partnerships, coordination, and information sharing to effective wildland fire management and the need to continually review and adjust, as necessary, investments in the workforce and data and information management to ensure the wildland fire management program can meet the demands and challenges of the future. In that sense, this evaluation further validated the rationale for Interior's 2021 budget initiative "DOI's Plan to Transform the Firefighting Workforce."

Fiscal Year 2020 Overview

The 2020 fire year was active and notable. The number of wildfires reported for all jurisdictions, as of early November was 8.5 percent below the 10-year annual average. In total, all agencies reported over 47,000 wildfires nationally. Across the United States, more than 8.5 million acres burned, representing 133 percent of the national 10-year average.[1] The California and Northwest Geographic Areas experienced historic fire events. The Southwest, Rocky Mountain, and Great Basin Geographic Areas also reported above average fire occurrences in 2020. Alaska and Eastern areas experienced relatively average fire activity while the Southern area experienced below average activity. DOI was jurisdictionally responsible for more than 5,900 fires with more than 2.7 million acres burned.[2] The Nation spent 49 days at the highest level of wildfire preparedness and a record 32,727 firefighters were deployed at one time this summer to support firefighting efforts.

Summary of National Fire Activity

The year began with most of the country at relatively average-to-low fire activity. By spring, there was a slight increase in activity as much of the West received significantly less than normal precipitation and above average temperatures.

Fire activity increased markedly in June as fine fuels became critically dry across most of the southern half of the West. Persistent hot and dry conditions along with periodic wind events coincided with large fires across the Southwest, Colorado, and Southern California. A three-day lighting event led to an increase in fire activity across the Great Basin and California. Fire activity significantly increased in July as fuels continued to dry across much of the West and lightning spread farther north and west into the Great Basin, northern California, Pacific Northwest, and northern Rockies. Fire activity increased in the Rocky Mountain Area, Southwest, and southern Great Basin into mid-July. Monsoonal moisture abated until later in the summer and was not overly persistent which increased the extent and duration of wildfire in multiple geographic areas.

August ushered in a dramatic increase in fire activity across the West as several multi-day lightning events ignited critically dry fuels. Lightening combined with strong winds and high temperatures in California, Oregon, Washington, Colorado and Arizona led to significant wildfire events. The Great Basin remained active as did west Texas. By mid-month, fire activity also increased in the Northern Rockies. Generally, most areas across the West received less than 25% of average precipitation in August. These significant increases in large fire activity contributed to the need for the additional funding made available by the Act.

A heat wave across the West Coast during the first week of September resulted in hot, dry, and unstable conditions with explosive large fire growth. Multiple wind events ushered in significant large fire activity, including a historic wind event off the West coast that began Labor Day and continued for several days. Numerous new and existing large fires in Washington, Oregon, and California reported rapid fire spread and extreme fire behavior. For much of September, air quality and smoke concerns were greatly exacerbated on the West Coast, and eventually throughout most of the West. A series of upper-level

[1] National wildfire data gathered from Incident Management Situation Report from National Interagency Coordination Center.
[2] DOI data from Integrated Reporting of Wildland Fire Information (IRWIN) system.

troughs produced enough rain across portions of the Pacific Northwest and Northern Rockies to reduce fire activity from the extreme levels of early September, however significant wildfire activity continued into October for many areas of the West.

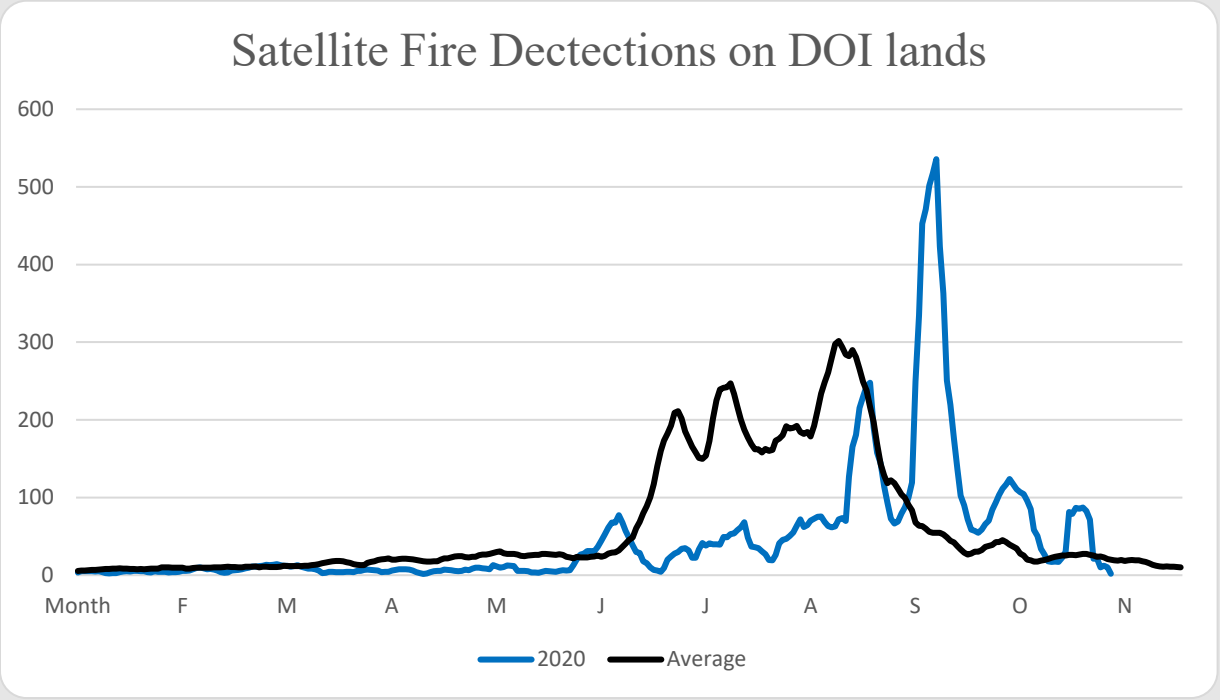

Figure 1 Graph depicting the 7-day running average for satellite heat detection on DOI lands for 2020 illustrating the consequential resulting August-September for DOI lands. Data from Moderate Resolution Imaging Spectroradiometer (MODIS).

This graph shows the 7-day running average of the total number of heat points or fire locations detected by satellite on DOI lands for the past 20 years. The black line is the average and the blue line is 2020. For DOI, the first part of the fire season (except for mid-June) was well below average. In fact, there were 22 days where the 7-day running average was at a 20-year minimum. It wasn't until the end of August that the season went above average. In the first week of September, fires on DOI lands became very active, exceeding the 90th percentile and 20-year maximums. DOI had 24 days where the 7-day running average number of fire locations was higher than the previous 20-year maximum. This exceptional fire activity, for DOI and interagency partners, required a surge in resource response.

COVID-19 Pandemic Response

In close coordination with Tribal, State and local partners, Federal wildland fire agencies developed and maintained Geographic Area Wildland Fire Response Plans (WFRP) to help maintain fire operations and protect firefighters and the public during the COVID-19 pandemic. The Geographic Area WFRPs outlined strategies and adaptations to normal fire operations that helped mitigate and manage the impact of COVID-19. The plans were used at multiple levels to inform development of local level plans and address incident specific issues. The plans were updated as new information and recommendations were made available. The newly established Wildland Fire Medical and Public Health Advisory Team (MPHAT), consisting of Centers for Disease Control and Prevention (CDC), interagency Chief Medical Officers and subject matter experts, provided multi-agency coordination, consistent review and advice on all medical and public health aspects related to COVID-19. MPHAT regularly advised the Fire Management Board and assisted in providing recommendations to national committees, managers and

field personnel to enhance the safety and protection of all wildland fire response personnel. Collectively, all efforts to address COVID-19 helped to promote firefighter health, maintain wildland fire response continuity and sustain the highest degree of fire suppression resource availability.

DOI wildland fire agencies continually evaluated and updated COVID-19 guidance in conjunction with CDC recommendations. MPHAT provided the wildland fire context to apply recommendations for all levels of wildland firefighting operations. Throughout the fire year, information was continually gathered and shared across the country and at multiple levels of organizations. Incident Management Remote Response Teams and the Wildland Fire Lessons Learned Center were key points for sharing information quickly.

International Support

The National Interagency Fire Center (NIFC) mobilized wildland firefighting hand crews from Canada and Mexico to assist with wildfire suppression efforts. The National Multi-Agency Coordinating Group (NMAC) requested the assistance after determining that the U.S. needed additional support for numerous large fires. Canada aided with eight 20-person crews, helicopters, engines and leadership personnel. Mexico supplied five 20-person crews. For over 35 years, the U.S. has maintained reciprocal cooperative agreements for resource sharing during peak fire activity with both Canada and Mexico.

2020 National Preparedness Levels

The NMAC is composed of wildland fire representatives from each wildland fire agency and the US Fire Administration. Based at NIFC, they establish National Preparedness Levels (PLs) throughout the calendar year to ensure suppression resource availability for emerging incidents across the country. PLs are dictated by fuel and weather conditions, fire activity, and fire suppression resource availability throughout the country.

The five PLs range from the lowest (1) to the highest (5). Each PL includes specific management actions and involves increasing levels of resource commitments. As PLs rise, so does the need for Incident Management Teams (IMTs) and suppression resources, which include wildland fire crews, engines, helicopters, airtankers and other aircraft, and specialized heavy equipment, such as bulldozers. In 2020, 71 days were spent at PL 4 or 5, which indicates substantial wildfire activity and deployment of resources. In 2019, there were zero days at PL 5. In 2018, there were 48 days at PL 5. Most of this year's fire activity occurred in August, September and October.

Methodology

As required by the Act, a sample of large fires was analyzed. Fires were selected by evaluating the DOI jurisdictions in order to represent a range of multiple geographic areas, costs and suppression management strategies. This approach was designed to concisely survey the broad variation in circumstances across DOI landscapes and to ensure the availability and sufficiency of data and information for reporting purposes. Using sampling to draw broad conclusions related to large wildfires can be challenging because each wildfire entails a unique combination of environmental conditions, risks, management objectives, resource availability and application, and incident management options, strategies, and decisions.

Table 1 Fires selected for analysis.

Agency	Fire Name	DOI Cost[3]	Size (Acres)	State	Geographic Area
BIA	Lionshead	$1,738,469	204,588	OR	Northwest
BIA	Blue River	$1,348,165	30,408	AZ	Southwest
BLM	Pine Gulch	$10,847121	139,007	CO	Rocky Mountain
FWS	Ingakslugwat Hills	$7,891	54,099	AK	Alaska
NPS	Caldwell	$238,317	80,890	CA	Northern California
NPS	Dome	$799,892	42,515	CA	Southern California

Risk Management

The foundational wildland fire management documents, the "Review and Update of the 1995 Federal Wildland Fire Management Policy (2001)" and the "Guidance for Implementation of Federal Wildland Fire Management Policy (2009)," highlight the concepts of risk and fire consequences by noting that: risk management underlies all fire management activities; those risks must be thoroughly understood; and the consequences of a wildland fire dictate the approach to fire response.

All wildfire presents inherent risks. The Wildland Fire Decision Support System (WFDSS) assists fire managers and agency administrators in making strategic and tactical risk-based decisions for wildfire incidents. WFDSS uses a deliberative risk analysis process to make informed risk-based decisions. Three risk components are analyzed: values, hazard, and probability.

- Values are the things of concern (e.g. social, culture, economic, ecological resources) that could be lost or damaged because of a fire.
- Hazard is measured by intensity, severity and spatial extent of the fire and is influenced by the physical conditions of the fire environment.
- Probability refers to the likelihood of the fire affecting values.

The wildfires analyzed for this report demonstrate several common risk factors that influenced management decisions. Those factors are firefighter and public safety including COVID-19 mitigation; presence of Federal and private infrastructure; stakeholders involvement including Federal, Tribal, private, local, county and State level; socio-political and economic considerations in relation to neighboring communities; and the existence of natural resources.

In addition to the common risk factors, the analysis showed several incident-specific risk factors that also influenced risk management decisions such as geographic location and access (wilderness vs. urban interface); time of year (early season or late season); availability of firefighting resources; condition of the fuels; ownership; threatened & endangered species; smoke emissions and impacts to local communities and public health; and cultural sites.

[3] Costs include DOI obligation for fiscal year 2020 and therefore do not equal the total estimated costs cited in "Sampled Fire Summaries" section below.

The overall suppression strategy of each incident informed the suppression tactics that were employed and aligned with the principles outlined in the Federal fire policy to maximize firefighter and public safety and protect values at risk. Exposure to firefighters was reduced by adjusting specific assignments, their strategic placement, and number of resources such as using indirect and point protection tactics, natural and man-made barriers, monitoring the fire perimeter where there was no threat to values and ensuring the appropriate resources were being used in the right place at the right time to the highest probability of success.

The 2020 fire season brought many challenges. Some of these challenges were familiar (e.g., prioritizing limited resources), while others – notably the COVID-19 pandemic – presented a new set of risk management challenges both before and during the fire season. The dramatic late season increase in wildfire activity across several states required an exceptional volume of resource engagement simultaneously in the form of people and equipment. Regardless of the challenges, the interagency wildland fire community has worked hard over the years developing and refining processes and tools, based on lessons learned, to help guide and inform risk management decisions.

Suppression Management

The six fires analyzed in this report burned more than 552,000 acres with 14 reportable injuries, approximately 300 structures lost, and more than 400 additional structures threatened. Response costs in FY 2020 for these fires totaled more the $14 million. Extreme fire behavior was exhibited in some fires. In certain areas, the fire damaged natural and cultural resources or community infrastructure. In other areas, fire assumed the natural disturbance role resulting in landscape benefits. In 2020, fires on DOI lands threatened a total of 7,785 structures resulting in the loss of 684 structures. Overall, 93% of residences and 88% of all other structures were protected.[4]

Table 2 Depicts residences and other structures threatened and lost in 2020 DOI Wildfires.

	Threatened	**Lost**	**Protection Rate**
Residences	5,660	400	93%
Other Structures	2,125	284	88%
Total	7,785	684	92%

DOI relies on analytical techniques (e.g. fire weather forecasting, fire danger/fuels analysis, and intelligence/resource status information) to help predict what areas might have conditions that support an above-normal occurrence of wildfires. Each geographic area experiences significant variations in the number of acres burned from year to year without a consistent pattern. The Preparedness program provides the resources to manage the complexity and uncertainty of wildfire occurrence by ensuring that a flexible, capable, qualified and mobile workforce is available to respond quickly whenever and wherever wildfires occur. In an average year, significant fire activity occurs in only a couple of geographic areas and typically not at the same time. This normally enables the shifting of resources based on fire response needs. As drought conditions persist across the West and fire seasons become longer with more extreme fire behavior there is increasing strain on resource availability nationally. This was particularly true in

[4] Data derived from Integrated Reporting of Wildland-Fire Information (IRWIN) as reported by SIT-209 Program.

2020, with five different geographic areas in PL 4 or 5 at once, resulting in a demand for resources that significantly outpaced the supply.

The last ten years have demonstrated unprecedented levels of fire activity: longer fire "seasons," increased complexity (urban interface), and more mega fires. An extremely busy fire season only compounds other challenges, including the scarcity of personnel and resources.

Since 2009, DOI has experienced a reduction of 451 Full Time Equivalent (FTE) employees in the Preparedness program and 484 FTEs in Fuels Management program, a loss of personnel that directly translated to the effectiveness of DOI's suppression efforts. This equates to a smaller workforce, fewer personnel available, and reduced response capacity. For instance, DOI is staffing 70 fewer wildland fire engines than in 2009. Preparedness investments are actualized during fire response. In response to these challenges, DOI requested additional funding in FY 2021 to support DOI's Plan to Transform the Firefighting Workforce. This would enable DOI to invest in the development of a stable, professional and permanent wildland fire workforce to better meet the challenges associate with today's wildfire activity.

Additionally, high fire activity in one-year impacts suppression expenditures in subsequent years, as fire expenditures may cross fiscal years. For instance, in 2020, DOI obligated $23 million for cooperative wildfire response activities and resources provided by the State of California for the 2018 Carr fire.

Overall, while roughly 98% of initial response strategies for wildfires succeed on DOI-managed landscapes. Reduced capacity coupled with increasing and prolonged wildfire workload is likely to erode mission performance over time and have significant impacts on response capabilities. Increasing and maintaining an adequate workforce would provide capability at critical moments throughout the year, such as the large resource needs in 2020, for DOI and the interagency wildland fire community.

Learning and adapting to challenges (even new and novel) was greatly aided through the existing collaborative framework, such as operational sharing of COVID-19 mitigation information and recommendations through the WFLC, NMAC, NWCG and FMB and new recommendations from MPHAT. DOI adapted to challenges by leveraging previous investments (e.g. remote sensing capability, IT applications and other technology) and modifying processes or approaches (e.g. performing traditional on-incident administration fire support from other virtual locations, increasing the availability of decision support groups assisting multiple incidents, and modifying response strategies). This additional support produced efficiencies in many cases, for example by leveraging automated and integrated applications to share data or reducing personnel travel costs.

Landscape Considerations

Fire behavior is determined by three primary factors: weather, vegetation (fuels) and topography. However, numerous variables influence a wildfire's effects at broader, landscape scales. Vegetation treatment history and frequency play a vital role in a fire's broad scale impact. The 2020 fire season witnessed most of the western United States in severe to extreme drought conditions according to the National Integrated Drought Information System. The intensity of drought conditions created dangerously dry fuel that contributed to extremely active and uncontrollable wildfires.[5]

[5] Information provided by National Significant Wildland Fire Potential Outlook, Predictive Services, National Interagency Fire Center.

DOI has committed to significant investment in Fuels Management and Fuels Treatment Effectiveness Monitoring (FTEM). From 2015 to 2020, DOI's Fuels Management budget increased $30 million, from $164 million to $194 million, or a nearly 20% increase in funding. DOI has made substantial investments in FTEM, which assesses effectiveness of fuels treatment with wildfire interaction. Thorough monitoring takes time to complete, especially during a busy or prolonged fire year, such as the circumstance in 2020. Monitoring assessments are on-going for 2020 fires with 534 assessments completed out of the 1,036 identified possible interactions with wildfire and treatments. Completed assessments indicate that in approximately 80% of the interactions, fuels treatments changed the fire behavior and in 85% of interactions, treatments helped control wildfire. Nearly 90% of fuels treatments were identified as strategically located to facilitate control of the fire.

Often, the ecological outcomes are dependent upon complex interactions, response factors and subsequent conditions that may not be readily apparent for some time. In FY 2020, DOI managed approximately 585,000 acres of wildfire that achieved land management objectives.

Sampled Fire Summaries

Six large wildfires were selected representing wildfires from a wide range of geographic areas with varying incident objectives, strategic courses of actions and differing costs. As noted previously, each wildfire is a unique event that is situationally dependent. Suppression response and costs[6] are influenced by a multitude of factors, including location, vegetation, values at risk, socio-political setting, hazards, and availability of resources. To address this variability during sampling, wildfires were selected to illustrate diverse situations and responses as well as outcomes. Additional information is provided from general program data analysis. Looking at individual events and general program information helps to determine common themes that can be used to enhance programs.

Blue River Fire was started by lightning on June 5, 2020, on the San Carlos Apache Reservation in Arizona. The wildfire was managed under a full suppression strategy due to the threat to commercial timber and historic structures. The fire was contained on June 25, 2020, at 30,408 acres at an estimated cost of $1.43 million. No structures were reported lost and no significant injuries were reported. Values at risk were cultural sites, Threatened and Endangered (T&E) fish species, livestock and range improvements. The wildfire's benefit to the landscape was the reduction of encroaching woody species and improving grassland conditions by restoring native plant communities for both livestock and wildlife. The Blue River fire had minimal impacts to important riparian zones along the Blue River. Locations where the fire encroached benefitted by the cooler backing fire. Grazing practices within the fire footprint prior to the incident also provided an effective fuels treatment in the grassland areas to reduce fire behavior.

Caldwell Fire was started by lightning on July 22, 2020, in Lava Beds National Monument (NM) in California. The wildfire was managed under a full suppression strategy due to the immediate threat to the NM headquarters and housing. The fire was contained on September 1, 2020, at 80,890 acres with a total cost of $255,000. Values at risk were private residences and businesses, commercial timberland, agricultural lands, cultural sites, and infrastructure for communications and electricity, as well as habitat for sage-grouse, northern spotted owl and short-nose sucker and lost river sucker on the Modoc National Wildlife Refuge. Management objectives supported the reintroduction of fire so that it could assume its natural role and minimize resource damage on the land. Ponderosa pine forests in the NM that were previously treated with prescribed burns had positive impacts on fire severity. Mechanical thinning of

[6] Costs provided in individual fire summaries are estimated total and may include costs beyond DOI obligation.

juniper coupled with prescribed fire provided for firefighter safety and allowed operational options that would not have been available if previous work had not occurred. To protect cultural and natural resources from erosion and sedimentation resulting from suppression activities, the NM is working on site stabilization over nine acres. A total of 313 acres where a planned fuels treatment was scheduled was partially burned helping to meet management objectives. Six structures were lost with no reported significant injuries or fatalities.

Dome Fire was started by lightning on August 15, 2020, in Mojave National Preserve in California. Due to the remoteness of the fire, it was originally managed under a confine and contain strategy. However, due to extreme fire conditions, threat to residential and commercial properties, transportation and infrastructure, and tortoise habitat, a full suppression strategy was adopted. The fire was contained on August 24, 2020, at 42,515 acres at a total estimated cost of $799,892. Ten structures were reported lost out of approximately 30 that were threatened. No significant injuries were reported. Values at risk were the unique Joshua tree forest, one of the largest in the world and critical habitat for the desert tortoise, and a main power line providing electricity to Los Angeles operated by Southern California Edison. Fire severity fluctuated on this wind driven fire depending on fire position (i.e., head or flank), causing occasional torching of individual or dense clusters of Joshua trees (including increased fire severity impacting half of the Mojave National Preserve's wilderness area). Approximately 1,000 acres may require nursery stock planting to promote vegetation regeneration.

Ingakslugwat Hills Fire was started by lightning on May 30, 2020, on the Yukon Delta National Wildlife Refuge in Alaska. Due to the location of the fire and no immediate threat to values at risk the fire was managed under a point protection and monitor strategy. The fire was contained on July 15, 2020, at 54,099 acres with an estimated total cost of $43,600. No structure loss or injuries were reported. Values at risk were sensitive tundra vegetation. The fire burned in a limited management area where no structures or other significant resources were threatened; therefore, no suppression actions were taken. The low intensity fire provided opportunities to reduce some brush and rejuvenate grasses and forbs within the fire area for wildlife benefits. The lower fire intensity exhibited during this event provided good fire effects on 54,025 acres and is not expected to cause significantly long-lasting damage to sensitive tundra vegetation.

Lionshead Fire was started by lightning on August 16, 2020, on the Warm Springs Agency in Oregon. Due to the time of the year, topography, extreme fire behavior, values at risk (including private residences, commercial timberlands, natural and cultural resources of the Confederated Tribes of Warm Springs, State Highways, and powerlines) the fire was managed under a full suppression strategy using indirect tactics to minimize risk to firefighters. 280 structures were reported lost during this incident with over 400 more threatened. Ten injuries were reported. The fire was contained on November 13, 2020, at 204,588 acres at an estimated cost of $11.6 million. High value commercial timber and carbon sequestrations stores, hydro-electric facilities, and T&E species across multiple watersheds were in the fire footprint. The Lionshead Fire's intensity increased when topography and winds were aligned to create extreme fire behavior conditions enhanced by 97th percentile dry fuel conditions. When situations such as this generational event occur in steep, remote terrain, there are very limited incident management suppression strategies available to reduce burn severity. However, pre-fire fuels treatments in the form of commercial thinning on the Warm Springs Reservation helped mitigate some of the fire severity effects on the landscape. In addition, mosaic burning—a practice that creates burnt and unburnt areas intended to mimic natural ecological conditions across a landscape that changes over time—occurred along the flanks

of the fire and in areas where the fire backed down mountain slopes from ridgelines, acting similarly to a prescribed fire.

Pine Gulch Fire was started by lightning on July 31, 2020, on public lands managed by the BLM Grand Junction Field Office in western Colorado. Due to rugged terrain, limited access, and hot and windy conditions, the fire was managed under a full suppression strategy. Direct and indirect tactics minimized risk to firefighters and protected values at risk including private structures, oil and gas infrastructure, sage-grouse habitat and pre-historic and historic sites. Six structures were reported lost and 4 injuries were reported. The fire was contained on September 22, 2020, at 139,007 acres at an estimated cost of $13.7 million. The fire grew to 250 acres within three hours of detection and on its highest spread day grew 37,000 acres overnight. Low fuel moistures and fire indices above the 97th percentile resulted in undesirable fire effects on the landscape, prompting quick action to seed approximately 22,000 acres for ecosystem restoration. There were 247 acres of the wildfire footprint that received ecosystem benefits from the fire.

Table 3 Cost driver by incident. Suppression costs for incidents by cost driver as a percentage. As previously mentioned, the driving factors for each incident are unique.

Incident Names	Labor, Benefits, Travel	Contract Services	Aviation Contract	Supplies, Materials, Goods	Rent, Communication, Utilities, Equipment Rental	Other, Grants, and Cooperative Agreements
Blue River	21.7%	1.5%	7.2%	0.3%	50.4%[2]	18.8%
Caldwell	87.2%	2.2%	0.0%	10.3%	0.0%	0.2%
Dome	48.3%	45.7%[1]	1.7%	3.9%	0.3%	0.2%
Ingakslugwat Hills[3]	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lionshead	30.7%	9.8%	0.0%	2.8%	56.6%[2]	0.1%
Pine Gulch	31.3%	54.1%[1]	0.4%	11.6%	2.5%	0.1%

1 Includes firefighting contractors, base camp services, excavation services
2 Includes heavy and excavation equipment rental
3 Fire costs only reflect DOI direct expenditure; fire was managed under agreement with Alaska Division of Forestry.

Financial Reporting

The complex and dynamic nature of wildland fire management is reflected in DOI's WFM program structure. The DOI WFM appropriation is comprised of budget line items for Fuels Management, Preparedness, Suppression, Burned Area Rehabilitation, Facilities Construction and Maintenance and Joint Fire Science. Additionally, in FY 2020 DOI had access to $300 million in the Wildfire Suppression Operations Reserve Fund that was authorized in the Further Consolidated Appropriations Act, 2020. Total fiscal year 2020 WFM costs for DOI were $1.081 billion.

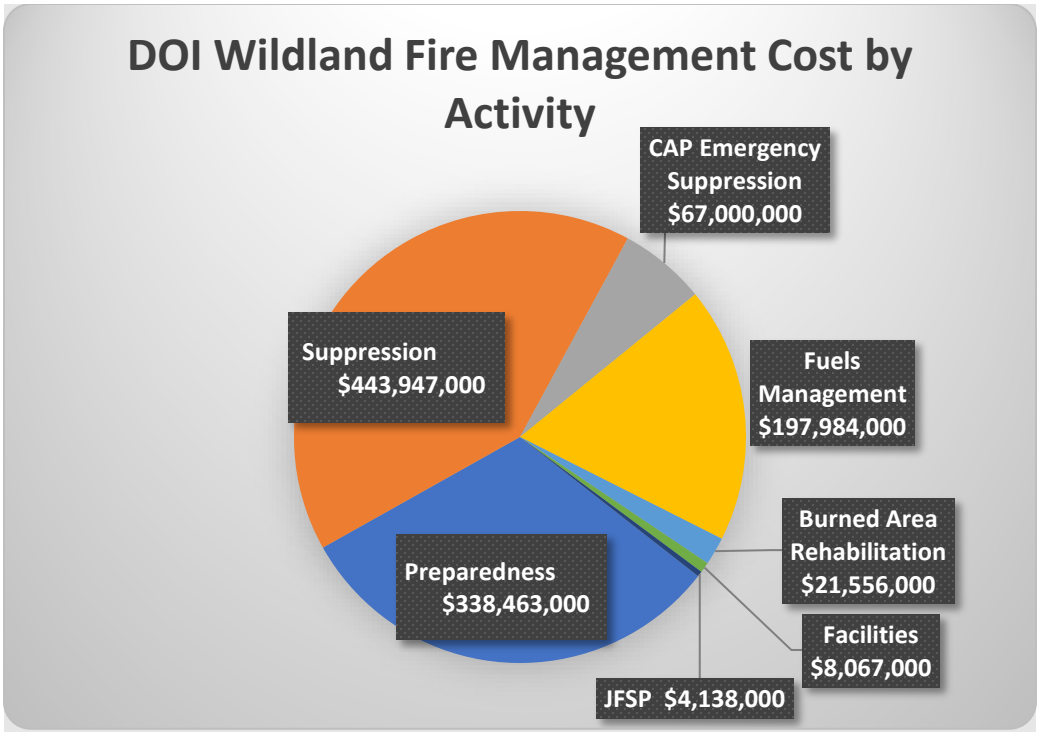

Figure 2 Total Wildland Fire Management program costs for fiscal year 2020.

Total Suppression activity costs were approximately $511 million, which consists of $444 million funded from the WFM appropriation and an additional $67 million of new budget authority that was transferred from the Wildfire Suppression Operations Reserve Fund to DOI for emergency wildfire suppression operations. Wildfire outlays include direct wildfire incident accounts as well as non-incident-specific wildfire support accounts (e.g. an aviation contract servicing multiple fires). Note that fires not only span FYs, but also costs associated with a wildfire incident may take multiple fiscal years to resolve as items like cost-share agreements, cost-recovery efforts, and invoice submissions are reconciled.

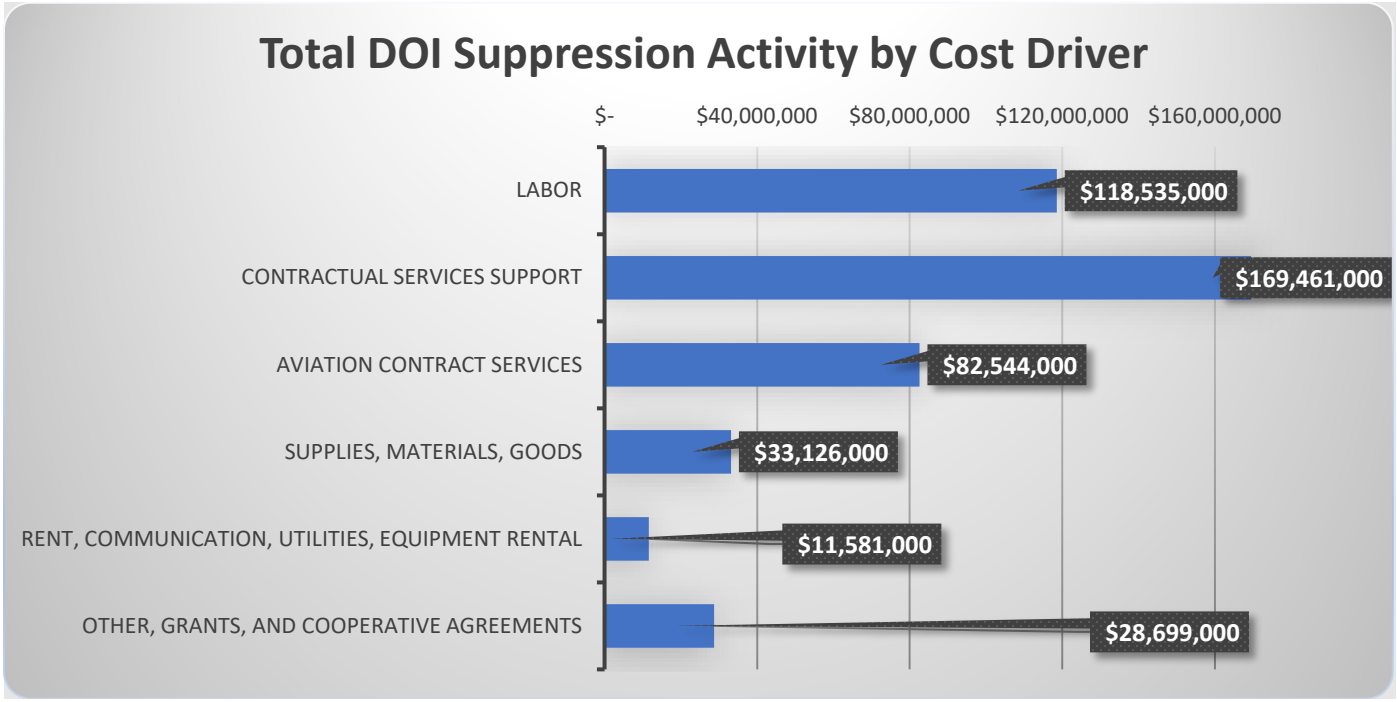

Figure 3 Suppression activity costs by cost driver for fiscal year 2020. Labor expenses include personnel compensation, benefits and transportation of people. This represents a national perspective, as cost drivers vary by incident specific situations.

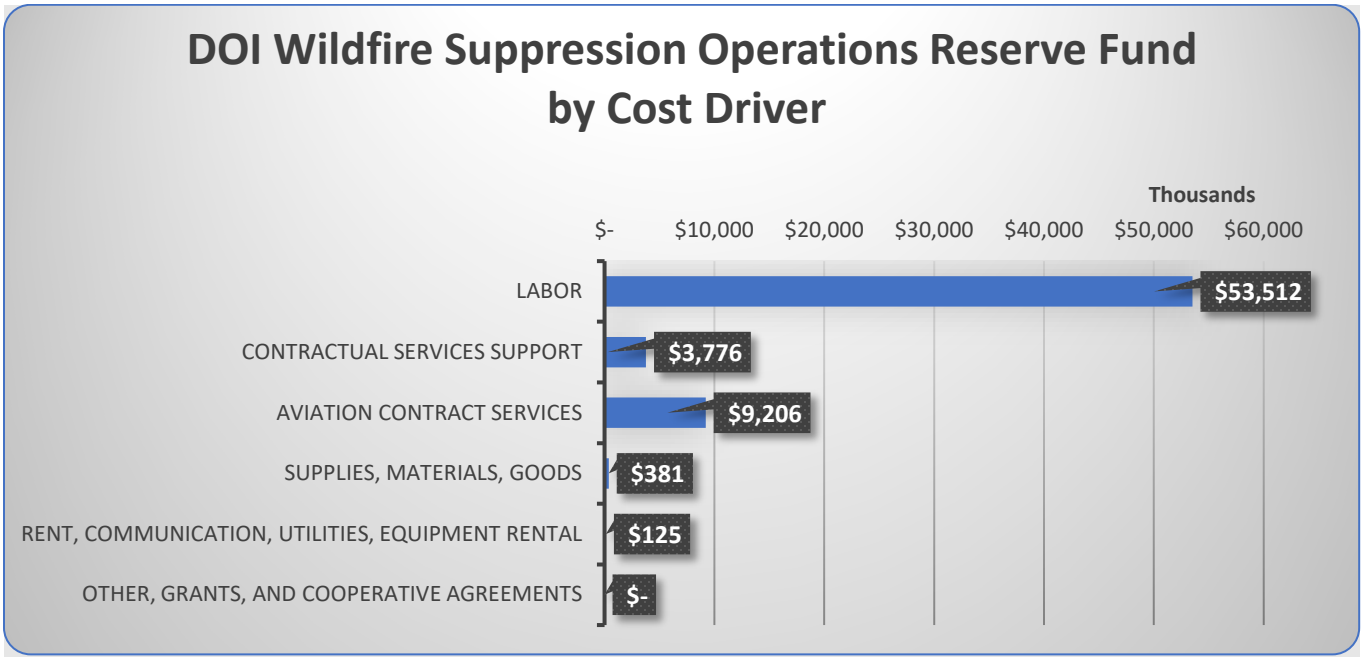

Figure 4 DOI CAP Emergency Suppression shown by Cost Driver showing labor by far as the most significant cost.

Two funding transfers from the Wildfire Suppression Operations Reserve Fund totaling $67.0 million were necessary late in the FY as suppression funds were exhausted. The transfers were needed primarily for labor costs in order to provide for the necessary resources for DOI fires and to assist wildland fire partners. As previously mentioned, DOI provides a significant amount of support in wildfire response to

our Federal, Tribal, state, and local partners for fires that occur outside DOI-administered lands, and DOI receives similar reciprocal support for DOI jurisdictional fires. As demonstrated in the graph below, funding transferred to DOI from the Wildfire Suppression Operations Reserve Fund supported wildfire response activity on various jurisdictions. While $29.2 million of the funding supported wildfires on DOI-administered lands, the funding also supported USDA Forest Service fires ($26.7 million) and state and local cooperators ($9.7 million).

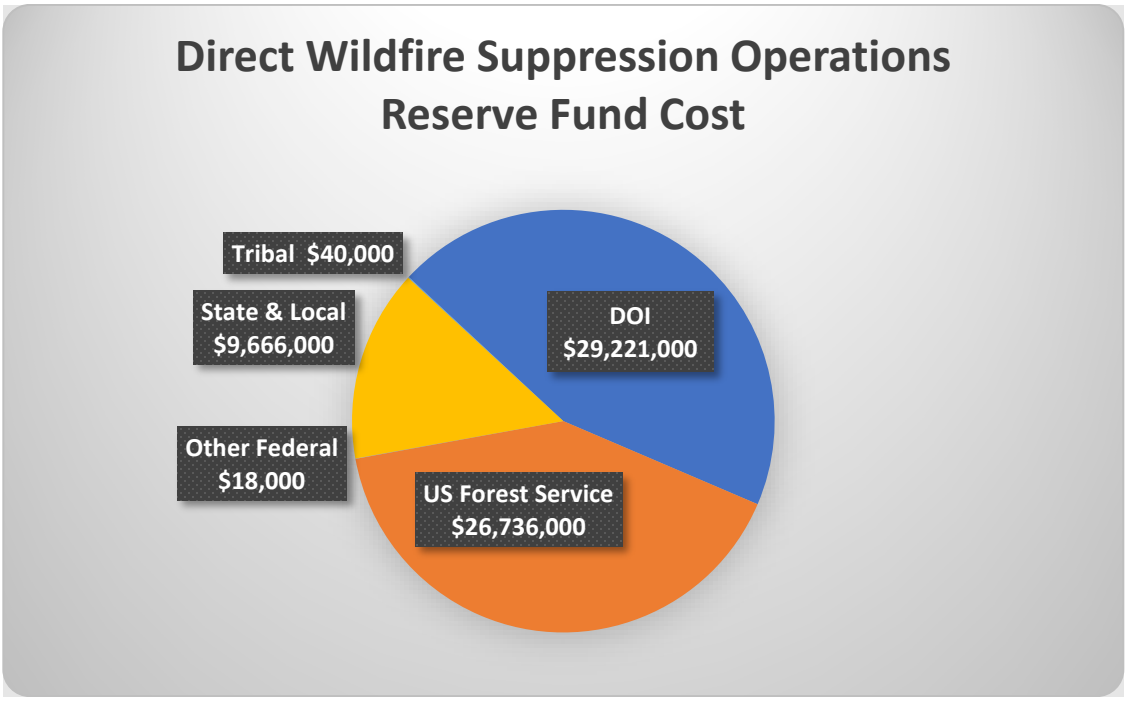

Figure 5 DOI 2020 CAP Emergency Suppression cost shown by partner (i.e. the jurisdictional fires on which the DOI funds were expended). DOI contributed significant effort to partners.

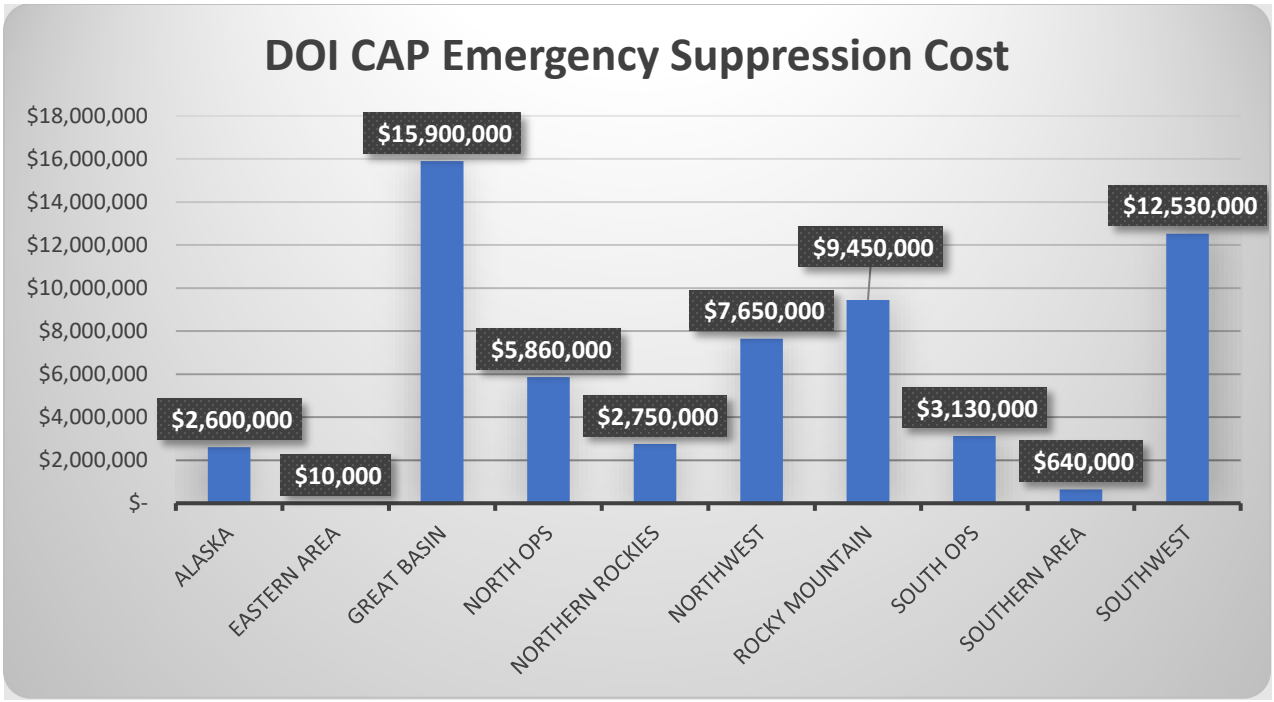

Figure 6 DOI CAP Emergency Suppression cost shown by geographic area. These correlate well with incident activity and DOI lands in the West. [1] *(North OPS and South OPS refer to Northern California and Southern California Geographic Area Coordination Centers).* [2] *(Costs do not include national-level costs benefiting more than one geographic area)*

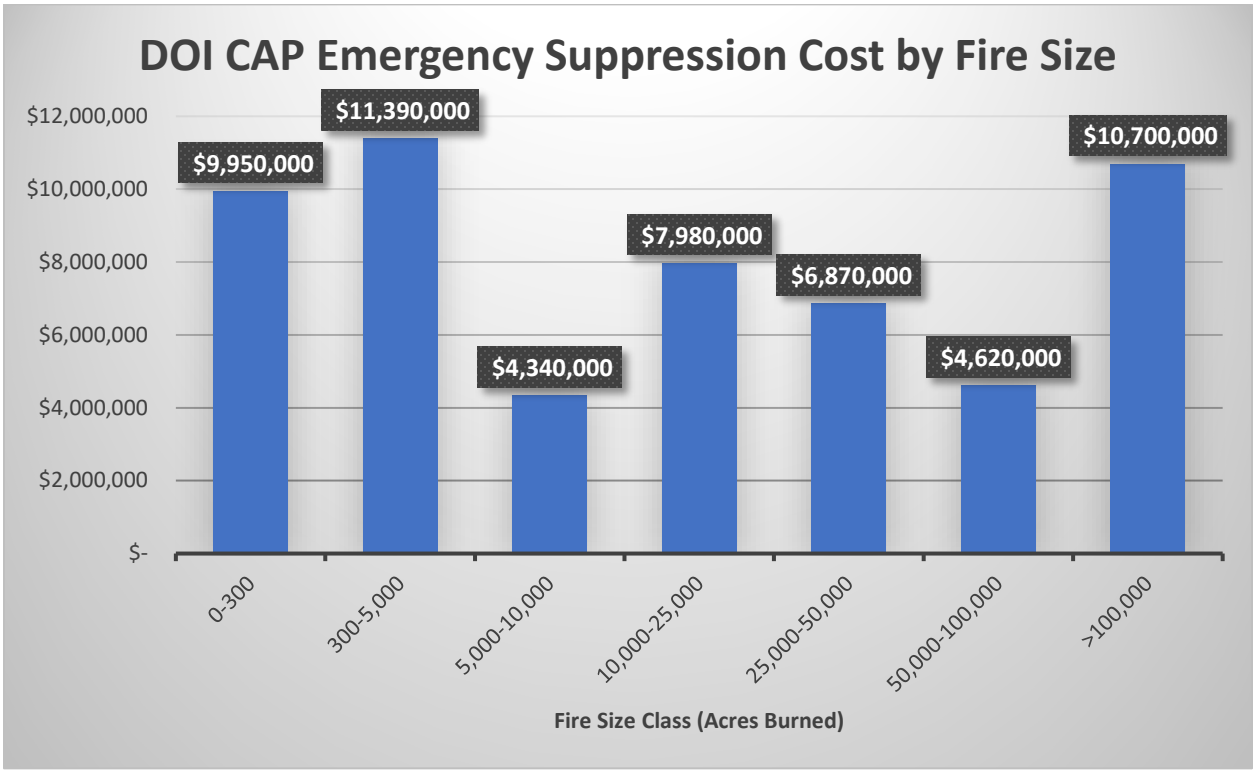

Figure 7 DOI CAP Emergency Suppression costs by fire size. No size-range of fires accounted for a significantly disproportionate amount of total cost. [3] *(Reflects only direct incident specific costs)*

Lessons Learned

Throughout this analysis several themes emerged:

- The DOI WFM program can adapt quickly to challenging situations. As 2020 brought numerous challenges, adaptative solutions were implemented.
- Timely collection of accurate and useful data that is integrated from multiple sources acts as significant leverage in decision making, knowledge building, and accountability. Integration of applications and improved data management could bring more connection, utility and efficiency.
- Efficiencies can be gained in many areas, but a reliably available, highly skilled workforce is the solid foundation of wildland fire management and necessary to achieve desired outcomes.

Recommended Enhancements

Additional workforce investments, as proposed in DOI's Plan to Transform the Firefighting Workforce, would provide more capacity to meet critical mission functions and provide improved service to partners, stakeholders and the public on a year-round basis. A more permanent workforce would better sustain wildfire response during peak periods while addressing vegetation management during times of lower wildfire activity. It would also provide additional recruitment and retention opportunities to ensure a highly skilled and professional workforce into the future to meet the increasing demands of wildland fire management, further improving the effective and efficient management of the WFM program.

DOI continues to work towards the development of new fuels program measures that better evaluate the DOI's progress towards reducing risk and that align with risk mitigation targets. DOI continues to engage with other Federal agencies, as well as Tribal, state, local and partners, to identify collaborative opportunities to evaluate, prioritize and implement wildfire risk mitigation efforts across ownership boundaries. Ultimately, such outcome-based performance measures critically depend upon related improvements in interagency systems and data, and major efforts to support this are ongoing.
The DOI WFM program has made significant investments in information technology. However, additional benefits would be gained from enhancement of systems integration and data management for rapid information exchange and increased knowledge and shared perspective.

DOI will continue to collaborate with Tribal, state and local partners to ensure payments for reciprocal wildfire response and assistance are addressed in a timely manner.