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Task Force Rattlesnake: A Cost Analysis of Fire Crew Base Pay in California

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by

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Abbreviations and Acronyms Glossary

APZ: Asset Protection Zone

BLM: Bureau of Land Management

CalFire: California Department of Forestry and Fire Protection

CalGuard: California National Guard

CalHR: California Department of Human Resources

CalOES: California Governor's Office of Emergency Services

CCC: California Conservation Corps

CCO: Contract Counties

CDCR: California Department of Corrections and Rehabilitation

CDF: California Department of Forestry and Fire Protection

CHP: California Highway Patrol

CMD: California Military Department

CSP: California State Parks

DFAS: Defense Finance and Accounting Service

DOD: Department of Defense

DOI: Department of the Interior

EMAC: Emergency Management Assistance Compact

ESAD: Emergency State Active Duty

FWS: Fish and Wildlife Service

GAO: Government Accountability Office

GS: General Services

LAO: Legislative Analyst's Office

Abbreviations and Acronyms Glossary (Continued)

LRA: Local Response Area

NASA: National Aeronautics and Space Administration

NEMA: National Emergency Management Association

NICC: National Interagency Coordination Center

NPS: National Park Service

OMB: Office of Management and Budget

OPM: Office of Personnel Management

OT: Overtime

OTH: Other

PVT: Private

SAD: State Active Duty

U.S.C.: United States Code

USDA: United States Department of Agriculture

USFS: United States Forest Service

WUI: Wildland-Urban Interface

BACKGROUND

Wildfires are a part of California's natural ecosystem that clear dense forests and release nutrients back into the plants and wildlife (Peters, Kerstein, Brown, Brown, & Simbol, 2020). Before the significant impact of human society, lightning-sparked wildfires occurred naturally (Buono, 2020). Indigenous peoples in the past managed forests through ritual burns that cleared brush for natural grazing lands and growing food (Buono, 2020). After the "Big Burn" of 1910, that burned over 3 million acres of wildlands, the federal government implemented no-burn policies to protect U.S. natural resources (Busenberg, 2004). Over 100 years later, the nation's wildlands are overgrown and bursting with explosive fuels (PBS, n.d.). Climate change is making the situation worse, as California's climate shifts toward shorter rainy seasons and more extended periods of drought (NASA, 2021).

The California Department of Forestry and Fire Protection (CalFire) emergency fund for fire suppression expenditures on average increased by $356.9 million per year between 2000 and 2020 (California Department of Forestry and Fire Protection, 2021c). The Governor's 2021-2022 budget has allocated $2.9 billion in wildfire expenditures (Peters et al., 2020). Wildfires are a growing threat to California communities, impacting people's health, livelihoods, and the economy (Starrs, Butsic., Stephen, & Stewart, 2018). The responsibility for mitigating extreme wildfires and the overgrowth of forests rests with the state and federal governments. The California National Guard (Cal Guard) has been used for Emergency State Active Duty (ESAD)

to serve as Type II Hand Crews[1] (Housman, 2021). The Cal Guard in 2019 rolled out a new program called Task Force Rattle Snake to clear excess brush in wildlands and serve as Type II Hand Crews when necessary (Sweeney, 2019). The federal and state governments are using service members full-time to manage and fight wildfires in California through various types of activations (Gabbert, 20121). As costs continue to increase, the state and federal governments will need to consider less costly options for wildfire mitigation. How does the base pay costs of CalGuard's Task Force Rattlesnake compare with other options for wildland fire fighting? This project aims to create a benchmark study of the base pay costs associated with wildland fire fighting for selected firefighting organizations compared with the CalGuard.

Wildland Management

California has a long history of wildland management, with the spread of private ownership, increased population in the wildland-urban interface (WUI), and the changing climate. California's division of land ownership is between federal (to include tribal lands), state, local government, and private ownership. The federal government owns 57% of California's forests, while the state and local governments own just 3%. Private landowners own the remaining 39% of forested lands for personal and industrial use (Peters et al., 2020). According to the United States Forest Service (USFS) (2009), most federal lands are open spaces and deserts, national forests, national parks, preserves, and military

[1] According to the U.S. Forest Service, "Type [I] are known as Interagency Hotshots Crews (IHC), faster production, highly skilled, extensive training, advanced qualifications, and arduous physical standards. Type [II] Initial Attack (IA), The U.S. Forest Service has crews that function as a normal Type [II] crews but can form into three or four separate squads of 4 – 6 people capable to initial attack fires separately with a qualified incident commander each. Type [II] [called Type II by CalFire] crews do not have IA capability or do not meet the same standards as an IHC. Each crew, regardless of Type, is responsible to construct fireline" (United States Forest Service, n.d.b., n.p.).

installations and reservations. As shown in Table 1, federally owned lands are under the control

Table 1

Federal Agency Landholding by Acres, 2020

Agency	Bureau of Land Management	Forest Service	Fish and Wildlife	National Park Service	Department of Defense
Acres	15,088,090	20,791,505	296,899	7,612,898	1,703,741

Source: Congressional Research Service, 2020

of the Bureau of Land Management (BLM), United States Forest Service (USFS), United States Fish and Wildlife Service (FWS), United States National Park Service (NPS), and Department of Defense (DOD) (Congressional Research Service, 2020).

A growing threat to human life is the growth of the wildland-urban interface. According to the United States Fire Administration (2021), the wildland-urban interface (WUI) is where the city's urban landscape meets undeveloped rural land. As the population continues to increase, so has the WUI. More than 140 million people live in the WUI, posing a great danger to land, life, and property (Public Broadcasting Service, n.d.). As wildfires are a growing threat to the population, new policies have emerged within communities in the WUI. In 2006, the policy of defensible space was introduced in California, to have home and building owners clear overgrown trees and shrubbery away from their buildings to give firefighters space to defend homes under threat of fire (Gill & Stephens, 2009). California has seen this firsthand in the past thirty years, as wildlands have merged with cities, creating a density of structures and trees.

In 1991, the Oakland Hills firestorm consumed more than 3,000 structures on about 1,500 acres, killing 25 people and injuring thousands more (Mendoza, 2020). In 2003, southern California experienced a fire siege that burned more than 750,000 acres, destroyed over 3,700 homes, and killed 24 people in two weeks (Blackwell & Tuttle, 2003). At the time, this fire siege

was one of the largest fire events in California history, and caused the creation of a Blue Ribbon Commission to see how the state could better prepare for future wildland fire events (Campbell, 2004). It forms a beginning point for the more intense management of California's fire mitigation efforts. The Camp Fire in 2018 is known to be one of the costliest and deadliest fires in California history, as the fire consumed the entire town of Paradise, killing 85 people and destroying over 18,000 structures (Griffin, 2021).

Climate change has exacerbated the wildfire season with longer drier months and shorter wet winter months (Goss et al., 2020). According to the National Aeronautics and Space Administration's (NASA) website, "Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates" (para. 5). Earth's climate continuously changes; however, humans have exacerbated the change, causing global warming due to the use of fossil fuels, emitting greenhouse gasses (NASA, 2021). California's climate continues to warm with more extended and frequent drought periods. All 12 months in California, between 2014 and 2018, have experienced warming and dry conditions (Goss et al., 2020). Low precipitation, windier conditions, and high vegetation levels among California's forests have created the perfect storm for explosive wildfires (Goss et al., 2020).

California's peak wildfire season is in the summer and autumn months when forests have received little to no rainfall for months (Peters et al., 2020). Recently, the USFS has recognized that wildfires impact the United States year-round. Factors linked to this recognition are that snowpack is melting earlier, and rain is coming later in the year (Schweizer et al., 2021). The long-term impact of climate change has created a new reality, requiring California communities to adapt to the high risk of fire throughout the state. As fire season becomes year-round,

government officials will need to continue strategizing on how best to manage resources to battle wildfires.

Wildland Firefighting

Wildfires are a natural part of California's landscape (Peters et al., 2020). Indigenous peoples have been using controlled burns for centuries to clear out dry underbrush while also releasing nutrients back into the soil, creating lusher and more green forests (Sommer, 2020). Indigenous fire rituals have many uses, such as the healthy growth of foods from trees, like acorns and hazel. For most of California's history, fires have shaped its landscapes, either from prescribed burns or natural lightning strikes. Many indigenous tribes in the twentieth century have hit roadblocks to ritual and prescribed burns. Most local fire policy prohibits the use of prescribed or ritual burns. Wildlands are primarily under the ownership of government and private entities where firefighting agencies have looked upon all fires as bad. Today, viewpoints have changed regarding the use of ritual and prescribed burns. Local indigenous tribes have partnered with state and federal agencies to revive the use of ritual burns (Buono, 2020).

The USFS began heavily researching fighting wildfires as early as 1910, after over three million acres had burned in one fire season (Smith, 2017). After the "Big Burn" of 1910, the USFS enacted a policy of extinguishing all forest fires. By the mid-20th century, this policy came under scrutiny, as it did not promote the healthy growth of forests that fire naturally provides. In the first 40 years of record-keeping (1960-2000), wildfires burned 141 million acres of land in the United States. However, between 2000 and 2013, 161 million acres of land had burned, calling into question the fire prevention policies of the early 20th (PBS, n.d.). Many environmental protection policies prohibit the removal of timber and forage on lands owned by the federal and state governments (Starrs et al., 2018). When combined with fire prevention

policies, the overgrowth of the nation's forest created fuel build-up, leading to higher-intensity fires. In some areas, forest density had grown eight-fold from 1883 to 1995 (Busenberg, 2004).

The current approach from the federal government is having a 'let it burn' policy. If a wildfire naturally caused or not on federal lands is not a significant threat to human life or property, is allowed to burn until it is naturally extinguished. Jurisdiction of a fighting wildfires depends on if the fire was ignited on federal, state or local lands (Chabria & Wigglesworth, 2021). USFS views the policy as a resource benefit in managing wildfire to reduce fuel build ups on federally owned lands (Gardiner & DiFeliciantonio, 2021).

Fire has several positive benefits that can help promote the growth of healthy forests (Peters et al., 2020). According to the USFS, prescribed burns can help reduce hazardous fuels, protect human life, reduce disease and pests, provide forage for game, improve habitats for endangered species, replenish nutrients back into the ecosystem, and promote growth among trees and wildflowers (United States Forest Service, n.d.a). Firefighting agencies are looking towards prescribed burns to clear dry underbrush in forested lands that release nutrients into the ecosystem. California was slow to enact policies of prescribed burns due to the growing conservation movements and concerns of destroying the natural environment among state parks (Miller, 2020). The growing wildland-urban interface also faced pushback to prescribed burns and brush clearing due to the natural features of these communities (United States Forest Service, 2018a). Prescribed burns are also risky if they become out of control. Liability for prescribed burns generally falls on the organization or tribe prescribing the burns. The liability costs can include suppression, medical, and investigations (Vera, 2021). Even if California and local governments did manage all of their forested lands, it would only cover 3% of forested

lands within California, leaving the remaining 97% to be managed by the federal government and private entities.

Wildfire seasons place tremendous demands on government resources. Those demands require the use of thousands of personnel and hundreds of fire engines and aircraft (Huber-Sterns et al., 2019). The National Interagency Coordination Center (NICC) is a nationwide coordination center for wildfire resources that receives and fills requests for military assets, hand crews, fire engines, tactical water tenders, helicopters, fixed-wing aircraft mobilizations, and radio and weather equipment (National Interagency Coordination Center, 2020).

Table 2

Resource Requests from 2016 and 2020

Year/Resource	2016	2020
Hand crews	1,731	2,604
Fire engines	1,467	3,906
Water tenders	53	174
Helicopters	797	862
Fixed Wing Aircraft	3,668	4,716
Mobile food service	108	151
Shower units	134	212
Radio and weather equipment	897	939

Source: National Interagency Coordination Center, 2020.
Note: The number of resources reflect the increase in requested resources between 2016 and 2020.

As shown in Table 2, in five years, between 2016 and 2020, the demand for resources increased 50% for Hand crews, 160% for fire engines, 220% for water tenders, 8% for helicopters, 29% for fixed-wing aircraft, 40% for mobile food service, 58% for shower units, and 5% for radio and weather equipment. The demand for personnel and equipment continues to increase as wildfires in the West become more frequent and severe.

Extreme Wildfires

Wildfires in the West have become more extreme and frequent in recent years. California's climate continues to change at alarming rates, where the rainy seasons start later and end earlier in the calendar year. California has short wet winter months and more dry months throughout the year, as climate change and global warming have led to the most extreme wildfire months in the autumn. By autumn, many shrubs and plants are dry and prone to fire. The autumn months

bring high winds to certain regions, creating "red flag[2]" events. Dry and windy conditions can cause powerline transformers to arch and spark fires; and, in return, the wind can fan the flames, creating an extreme and dangerous wildfire condition (Goss et al., 2020).

One contribution to extreme wildfires is the infestation of bark beetles due to the sustained drought that have killed millions of forested trees in North America. According to the United States Department of Agriculture's website (USDA), "Tree mortality caused by bark beetles can rise sharply in a short amount of time… The primary reason for increases in tree mortality have been periods of severe and protracted drought combined with high tree densities" (United States Department of Agriculture, 2015, p. 1). California has 120 million dead trees due to the bark beetle and drought, creating fuel that is ready to burn, leading to more extreme wildfire seasons (Leefeldt, 2018).

The 2003 California Fire Siege was a watershed moment in California. The explosive nature of the fire siege was due to four years of drought, the bark beetle infestation that has killed millions of trees, and the growing wildland-urban interface. At the time, this fire siege was one of the largest fire events in California history killing 24 people, destroying 3,710 homes, and burning over 750,000 acres (Blackwell & Tuttle, 2003). The Cedar Fire in 2003 that burned 273,246 acres, held its top spot as the largest wildfire in California history for 14 years until the Thomas fire in 2017 burned 281,893 acres (California Department of Forestry and Fire Protection, 2022).

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[2] According to CalFire, "The National Weather Service issues Red Flag Warnings & Fire Weather Watches to alert fire departments of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity" (California Department of Forestry and Fire Protection, n.d.a.).

Table 3

10 Largest California Wildland Fires

	Fire	Acreage Burned	Year	Cause
1	August Complex	1,032,648	2020	Lightning
2	Dixie Fire	*963,309	2021	Human-Caused
3	Mendocino Complex	459,123	2018	Human-Caused
4	SCU Lightning Complex	396,624	2020	Lightning
5	Creek Fire	379,895	2020	Undetermined
6	LNU Lightning Complex	363,220	2020	Lightning/Human-Caused
7	North Complex	318,935	2020	Lightning
8	Thomas	281,893	2017	Human-Caused
9	Cedar	273,246	2003	Human-Caused
10	Rush	271,911 CA / 43,666 NV	2012	Human-Caused

Source: California Department of Forestry and Fire Protection, 2022
Note: Data collected in the findings reflect the years 2016-2020. The table above has been updated to reflect the most current data on burned acreage from wildfires. *Subject to change until final season report.

As shown in Table 3, extreme wildfires have increased in frequency in the past decade. Wildfires are measured in size (acres burned), deadliness (lives lost), and costliness (economic impact). According to CalFire, of the state's largest wildfires in recorded history, eight out of ten have occurred between 2017 and 2021. In August 2020, the August Complex fire burned over one million acres (followed closely by the Dixie Fire in 2021 at 963,309 acres burned), a first in the U.S. recorded history. California's deadliest and most destructive wildfire was the Camp Fire in 2018 (California Department of Forestry and Fire Protection, 2021a), which killed 85 people and burned 18,804 structures. CalFire determined that the cause of this fire was from Pacific Gas & Electric powerlines sparking vegetation fires. Due to dry, windy conditions, the fire grew in incredible strength and power. The Camp Fire is also one of the costliest wildfires in the state's

history, totaling between $9 and $13 billion in insurance losses. The California Department of Insurance estimates that the wildfires in 2018 have topped over $13 billion (California Department of Insurance, 2019).

Table 4

Total number of acres burned per year

Year	2016	2017	2018	2019	2020	2021
Acres Burned Fed & State	669,534	1,548,429	1,975,086	277,285	4,304,379	2,568,948*

Source: California Department of Forestry and Fire Protection, 2022.
Note: *Subject to change until final season report.

As shown in Table 4, the total number of acres burned due to wildfire in California has dramatically increased between 2016 – 2021. The largest recorded fire season in California was 2020, which resulted in over 4.3 million acres burned in the state. The 2021 fire season closely followed as the second largest wildfire season, with over 2.5 million acres burned (California Department of Forestry and Fire Protection, 2022).

A Multi-Agency Effort

The California Fire Service and Rescue Emergency Mutual Aid Plan (Mutual Aid Plan) is an agreement between California cities, counties, and regions to provide fire and rescue aid during emergencies (California Governor's Office of Emergency Services, 2019). The Mutual Aid Plan is based on six regions in California to obtain aid. The agreement creates clear definitions and outlines policies on when to give mutual aid. The Mutual Aid Plan can obtain resources from all public and private entities providing fire protective services. A few examples of those resources are local fire departments, the California Governor's Office of Emergency Services (Cal OES), the California Department of Forestry and Fire Protection (CalFire), the State Fire Marshall, the California Military Department (CMD), the California Department of Transportation (Caltrans),

the California Highway Patrol (CHP), and the California Conservation Corps (CCC) (California Governor's Office of Emergency Services, 2019).

Mutual aid allows for the expedient flow of resources to be allocated appropriately across the state when emergencies have overtaken local resources. The Mutual Aid Plan requires cities and counties to create a formal structure for disaster and emergency response, and requires public employees to be disaster service workers (California Governor's Office of Emergency Services, 2019). According to a special report by the federal Department of Homeland Security, "The State of California has developed over the last 40 years an exemplary Statewide Fire and Rescue Mutual Aid System. Designed as part of the State's overall multi-hazard emergency response, the mutual aid system has been used in a wide range of fire and non-fire incidents" (Perroni, 1991, p. 2).

Mutual aid on the national level exists from the Emergency Management Assistance Compact (EMAC) that was ratified by Congress. On October 19th, 1996, Congress passed Public Law 104-321. EMAC is a way for all U.S. states and territories to formally request assistance in emergencies when local resources are exhausted and additional resources are needed to protect life and property. States have the ability to share resources with one another and come to each other's aid. EMAC is administered through the National Emergency Management Association (NEMA) (Emergency Management Assistance Compact, n.d.).

The National Guard has a unique dual mission to respond to federal and state emergencies when requested by the President of the United States or the governor of a state or territory (Doubler, 2001). In 2019, the CalGuard and CalFire created a new wildland fire fighting force called Task Force Rattlesnake. The task force falls under the direction of CalFire and comprises 100 soldiers and airmen whose primary objective is to reduce fire fuels throughout the

state (Sweeney, 2019). The soldiers are on Title 32 orders, which are state orders funded through the federal government under the direction of the governor of that specific state (Absher, 2022).

The National Guard can be activated and placed on a variety of different orders. The primary differences are whether service members are placed on federal or state orders, the sources of funding and benefits. Title 10 U.S.C. are federal orders by the direction of the President of the United States on active-duty military bases in the U.S. and overseas (to include combat zones). Title 32 U.S.C. are state activations by the direction of the governor (domestically only) that are federally funded (Absher, 2022). The state government pays national guardsmen on State Active Duty (SAD) orders or Emergency State Active Duty (ESAD) activations, as they are considered state employees under the direction of the Governor (Povich, 2020). During the 2020 Fire Siege, the CalGuard activated six force packages on ESAD orders under the direction of CalFire. Each force package consists of approximately four hand crews (10-12 members per crew); a total of approximately 288 members. The force packages were requested through the military crew advisor (MCAD) program (California Department of Forestry and Fire Protection, 2020).

CalFire has spearheaded fire management in California since its founding over 100 years ago. CalFire has 8,000 permanent and seasonal positions responsible for managing the state's nearly 31 million acres of land. CalFire manages the majority of wildfire fighting resources in California, including CalGuard, the California Department of Corrections, the California Conservation Corps, and, when necessary, out of state resources provided by the federal and other state governments, as well as international firefighting teams (California Department of Forestry and Fire Protection, n.d.b).

The California Department of Corrections and Rehabilitation (CDCR) runs an all-inmate fire fighting force managed by CalFire during the fire season. This program was started during World War II (Escalante, 2019). The CDCR has over 3,500 inmates in 35 different conservation camps throughout the state (Weill, 2020). The approximately nine hundred qualified inmates on the fire lines must do the same heavy-lifting work as CalFire, while only being paid $2 - $5 per day, with a $1 differential for hazard pay. The CDCR firefighting program is estimated to save the state up to $100 million per year over the cost of full-time CalFire personnel (Singh, 2020). Although low paid for the same work as a full-time firefighter, the State of California has cleared the pathway for non-violent formerly incarcerated inmates who previously served in the conservation camps to apply to CalFire positions (California Department of Corrections and Rehabilitation, 2021). A new records clearance program also allows some CDCR firefighters to qualify for emergency medical technician licenses, which is a first step in working for local government fire agencies (Lozano, 2021).

In 2009, the state prison population was near 160,000, nearly double the capacity of the state's 33 prisons. Conditions in state prisons were becoming unsafe due to overcrowding. In *Brown v. Plata,* the Supreme Court ordered the state to reduce its prison population by 33,000 prisoners, reducing it to 137% of capacity (Totenberg, 2011). In 2011, following the Supreme Court decision, California Governor Jerry Brown signed into law AB 109: Criminal Justice Realignment. The bill's purpose was to reduce the state prison population by allowing non-violent, low-level offenders to serve time in county jails rather than state prisons (Totenberg, 2011). The declining prison population among low-level offenders led to the consolidation and closure of eight conservation camps in 2020. There are now 35 prisoner firefighter camps in operation as of 2021 (California Department of Corrections and Rehabilitation, 2021).

The California Conservation Corps (CCC) comprises young adults between the ages of 18 and 25 who can gain experience and education in California's natural resources. Modeled by the federal Conservation Corps, the CCC is a state agency that assists in various state emergencies, such as fires, floods, and earthquakes. The CCC has 17 wildland firefighting crews under the direction of CalFire (California Conservation Corps, n.d.).

Private property owners and their insurance companies have begun hiring private fire protection companies to engage in just-in-time property mitigation activities. The 2017 Thomas Fire in Santa Barbara County highlighted the increasing use of private firefighters by Chubb and AIG Insurance companies and private property owners (Brugger, 2017).

When resources are limited, California will also request assistance from other states, the federal government, and the international community during state emergencies. During the 2020 California Fire Siege, the USFS requested assistance from the international community to combat wildfires in the West. Canada, Australia, Mexico and Israel responded by sending fire crew teams to serve as hand crews (California Department of Forestry and Fire Protection, n.d.).

Wildfire management in California is an expensive program totaling over $3 billion in 2020, where the state provides two-thirds of the budget from the general fund (Peters et al., 2020). California has consistently used the state military to assist in wildland fire mitigation efforts; however, for the first time it has created a year-round team to reduce fuels to clean up the state's forests. Further analysis would determine if Task Force Rattlesnake is an effective use of the state's budget for wildfire mitigation.

LITERATURE REVIEW

California Wildfires

The number of acres burned by wildland fires in California in the last 20 years has continued to grow at alarming rates due to the changing climate, mismanagement of forests, and growth of the wildland-urban interface. Rubin, Cutter & Traci (2020) discussed the social, economic, and ecological impacts of wildfires in California. Human activity causes over 80% of wildfires in the United States. As more people move into the wildland-urban interface, spending on fighting wildfires will also rise. The federal government expects to contribute nearly $3 billion in suppression expenses by the fiscal year 2027 (Rubin et al., 2020).

In their study, Rubin, Cutter, and Traci (2020) examined the growing struggles of the wildland-urban interface. The period in which homes and whole neighborhoods are likely to burn is during the first several hours after the start of the fire. The authors back this theory up with the most recent wildfires that destroyed neighborhoods in the cities of Redding, Santa Rosa, and Oakland, and, in some cases, whole towns, such as Paradise.

Starrs, Butsic, Stephen & Stewart (2018) examined wildlands in California. The study examined the ownership of wildlands, firefighting responsibility, wildlands' reserve status, and the type of vegetation in each area. The ownership of California's wildlands is crucial because it determines the responsibility of fighting wildfires and in extension, the fiscal impacts of how different agencies allocate their budgets.

The Government Accountability Office (GAO) (2007) reported a lack of clear goals that hindered any federal response to combating wildfires. The overall recommendation was for the Department of Agriculture and Department of Interior (DOI) secretaries to develop clear and achievable goals in wildfire mitigation and suppression efforts.

Wildfire Management

Wildfire management techniques are multi-layered from local, state, and federal agencies. Gill and Stephens (2009) discussed different fire management policies among the rural and urban-wildland interface. Risk management is one of the key policies for preventing structure fires within fire-prone areas. Creating an asset protection zone (APZ), also known as defensible space, clears out fuels close to structures and provides space for firefighters to protect the structures during wildfire events (Gill & Stephens, 2009).

Fischer and Charnely (2012) examined fuel management in fire-prone areas. They examined the different perspectives of fuel reduction on private properties and how landowners feel about fuel reduction efforts on their own and other public and private lands. Due to the increasing frequency of wildfires, landowners are more willing to cooperate to clean up their privately-owned lands (Fischer & Charnley, 2012).

Other studies examined the costs associated with clearing fuels from properties. Busby and Albers (2010) studied different states that require private landowners to reduce fuels on properties in the wildland-urban interface to relieve the burden on state public land managers. Rising fire suppression costs and strained budgets are barriers to cleaning up forested lands.

Busenberg (2004) examined the origin of wildfire fighting policies and where those policies have failed in decades past. Wildfire fighting policy dates back to the early 1900s. After the Big Burn of 1910 across the Western United States, the federal government took an aggressive firefighting approach to extinguish any fire as it ignites, including natural fire sparked by lightning. The century-old policy of all fire being bad comes from when conservation of the nation's natural resources was a policy priority (Busenberg, 2004). Firefighting policy has led to

the present-day predicament of soaring costs for fighting wildland fires. Fighting wildfires is now a multi-agency effort from local, state, federal, private, and international agencies.

Firefighting Resources

CalFire spearheads the state's wildfire fighting missions on state and locally owned lands. When wildfires start on federally owned land (roughly 50% of wildlands in California) (Starrs et al., 2018), the U.S. Forest Service manages the incident (Quinton, 2021a). Quinton (2021b) explained that there is a shortage of federal firefighters serving in California. Only 50% of federal firefighter positions are filled, leading to a strained system in a state that can use every firefighter it can get. Many federal firefighters are low-paid and deployed for months to battle wildfires during the fire season (Quinton, 2021a). According to Quinton (2021b), some federal firefighters are paid less than $13 per hour (Quinton, 2021a). The void of federal firefighters has led to the state and federal governments requesting resources from other sources, such as the CalGuard, the private sector, or the international community.

I am the guard: A history of the Army National Guard, 1636-2000 focuses on the National Guards' role in modern-day domestic issues, such as serving a role in natural disaster mitigation (Doubler, 2001). Published in 2003, Doubler is unable to include the current wars in the Middle East or the explosive wildfire seasons that the west now experiences. The CalGuard has been activated several times to battle wildfires in California over the past decade on emergency state active duty (ESAD), and now with the formation of Task Force Rattlesnake (Sweeney, 2019).

A National Guard service member's pay can vary from state to state. Povich (2020) examined various scenarios in which guardsmen from around the country doing the same work are paid vastly different sums. A California National Guardsman activated on ESAD orders can

be paid between $336 - $405 per day, whereas guardsmen of the same rank and experience in Montana are paid $206 per day. In certain circumstances, guard members from different states can be activated to assist other states with emergencies, creating pay inequities when guard members are doing the same work side-by-side on the same mission (Povich, 2020).

One of California's more cost-effective firefighting resources uses the California Department of Corrections and Rehabilitation (CDCR) inmates on hand crews. Weill (2020) researched the ethical principles of using inmates on fire lines. Inmates are paid low wages, generally between $2 and $5 per day based on experience, but perform the same work as fire crews (Weill, 2020). According to the CDCR, the state saves an estimated $80 - $100 million per year using inmates as a wildfire fighting resource (Polick-Kirkpatrick, 2019).

Polick-Kirkpatrick (2019) examined the historical use of California Conservation Camps. She explored the use of prison labor to save the state money while also examining the ethical issues in the use of prison labor. The program's history has seen expansion and budgetary cutbacks through many different governors. The use of prison labor for fighting wildfires is a question of ethics, pay, and fiscal impacts. Since the implementation of AB 109 in 2011, the number of prisoners in conservation camps has dropped 25%, from 3,980 to 2,980 (Polick-Kirkpatrick, 2019).

Another cost-saving state wildfire-fighting resource is the use of the California Conservation Corps (CCC). The CCC is a youth program for young adults who recently graduated from high school, gaining real-world job experience, from state-building energy audits to planting. Stanley (2002) gives insight into California's conservation efforts using the CCC for physically demanding labor. The need for firefighting resources continues to increase year after year. Anderson (2021) discussed the use of the CCC as a firefighting resource, with participants

paid $2,400 per month. CCC fire crews are paid at a rate of $26.00/hour while on the fire lines and $22.00/hour for non-fire support (United States Forest Service, 2018b). The cost-effectiveness of an all-volunteer force to mitigate and fight wildfires is enhanced by its direct benefit to the participants, giving youth educational and career opportunities as future firefighters (Anderson, 2021).

Green (2020) discussed the need for more international cooperation in the fight against wildfires, noting the service by Mexican firefighters. California, in years past, has also requested assistance from the international community in fighting wildfires. The 2020 wildfire season was exceptionally large, with most firefighting resources across the nation being exhausted (Green, 2020). The Voice of America has also reported on the call for firefighters from Canada and Australia, where those countries are known to have more extreme wildfires (VOA, 2021). The international community's use is a growing trend, as wildfires across the globe have become more extreme.

Another consideration that does not directly impact the state's budget is the use of private firefighters by private entities. As noted above, insurance companies have been hiring private companies to provide fire mitigation activities for expensive homes (Brugger, 2017). According to Ulmer (2021), businesses also seek private firefighters to protect their assets, such as vineyards in Napa County. Government firefighters now need to factor in the presence of private firefighters when responding to emergencies (Ulmer, 2021), even though private companies say that their firefighters leave before wildfires arrive (Brugger, 2017).

Overall, the literature shows wildfires as a multi-layered issue across several different agencies. California has budgeted nearly $3 billion in firefighting resources to combat the growing threat (LAO, 2021). Those funds are spread among different agency budgets, such as

CalFire, CDCR, CCC, and CalGuard. The primary focus of this research is to examine the use of the CalGuard in mitigating wildfires, and to analyze whether it is a good use of resources compared to other organizations available to the state.

METHODOLOGY

This research compares the cost of different wildland fire fighting agencies to determine the lowest cost entity on base pay salary for hand crews. Task Force Rattlesnake is the benchmark comparison for other wildfire-fighting entities. Along with the lowest cost entity, the research considers productivity among each measured entity. Productivity is measured in the total acres of prescribed burns by different agencies. This evaluation has only considered active fire mitigation and firefighting, not fire camp support or administration.

Data Collection

Data was collected from each of the entities listed below for entry-level base salary, not including locality and housing differential allowances. Most of the data is publicly available through online resources, which have been confirmed directly with each agency.

Wildland Fire Fighting Agencies

- California National Guard (Benchmark)
- Cal Fire
- US Forest Service
- CDCR Prisoner crews
- Local government fire department mutual aid
- Mexican firefighters
- Canadian firefighters
- Other foreign firefighters
- Private sector fire protection

Productivity Measurement

- Acres of prescribed burns

IRB EXCLUSION

This research qualifies for an IRB exclusion. No human subjects were involved in the conduct of this research. The IRB exclusion was submitted on November 6th, 2021.

FINDINGS

This project aims to identify the base pay costs associated with wildland firefighting for hand crews that serve on the fire lines. The data for prescribed burns were collected by CalFire and distributed on the California State GeoPortal public database. The 2003 and 2020 fire siege years were both the largest in California history at the time they occurred. The data collected were the number of hand crews assigned on the five largest fires during the 2003 and 2020 fire sieges, salaries for wildfire fighting entities, number of acres of prescribed burns per agency, number of acres of prescribed burn per level of government, and timeline of the total acreage of prescribed burns 2016-2020. The pay data was collected from various sources such as CalHire, DFAS, OPM, CCC, CDCR, and Ember Wildfire Defense Solutions (Private). The findings in this section are the salary of entry-level wildland firefighter positions in California. Note that positions for wildland firefighters differ in name, but all serve on Type I and II Hand Crews. This research attempted to collect data on pay and reimbursements for international wildland firefighting crews during the 2020 fire season. CalFire directed the request to the State Department, which did not respond in time for the final submission of this research.

Table 5

Hand Crew Personnel/Acreage on 5 Largest Wildfires During the 2003 California Fire Siege

	Cedar	Old	Simi	Grand Prix	Piru
Hand Crews	90	88	31	48	44
Acreage Burned	273,246	91,281	108,204	69,894	63,991

Source: Blackwell & Tuttle, 2003.

Table 6

Hand Crew Personnel/Acreage on 5 Largest Wildfires During the 2020 California Fire Siege

	August Complex	SCU Lightning Complex	Creek	LNU Lightning Complex	North Complex
Hand Crews Personnel	*1440	*264	*720	*468	*1080
Acreage Burned	1,032,648	396,624	379,895	363,220	318,935
Fire Crew % Increase	1,600%	300%	2,323%	975%	2,455%
Acreage % Increase	378%	435%	351%	520%	498%

Source: California Department of Forestry and Fire Protection, 2020.
Note: Cells containing an * are the approximate number of Hand Crew personnel. Data given is on the number of hand crews, where one hand crew equals 12-15 personnel.

The Findings in Tables 5 and 6 represent the acreage burned and the number of hand crew personnel committed to the top five fires during the 2003 and 2020 fire siege years. The data collected is from the 2003 and 2020 Fire Siege Reports that offer the most specific data on hand crew personnel. Table 5 is the last year in which hand crew data is publicly available for a fire siege in California and represents the increases in resources needed for such events. The last two rows in Table 6 show the percent increase in acreage burned and fire crew increase from 2003 to 2020 fire siege years. The average percentage increase in fire crews of the five largest wildfires between 2003 and 2020 is 1040%. The average percentage increase in acreage burned of the five largest wildfires between 2003 and 2020 is 436%.

Table 7

Hand Crew Salary: Hourly, Daily, Weekly, Monthly, Yearly

Least Costly → Most Costly

	CDCR	CalGuard (Benchmark)	CCC	CalFire	USFS	BLM	FWS	BIA	NPS	Private
Hourly	N/A	*$13.50	*$13.84	**$14.62**	**$16.24**	**$16.24**	**$16.24**	**$16.24**	*$20.06	*$21.30
Daily	**$1.45**	*$108	*$111	*$117	*$130	*$130	*$130	*$130	*$160	*$170
Weekly	*$7.25	*$540	*$554	*$585	*$652	*$652	*$652	*$652	*$802	*$852
Monthly	*$29	**$2,160**	**$2,400**	*2,534	*$2,825	*$2,825	*$2,825	*$2,825	*$3,476	*$3,692
Yearly	N/A	*$25,920	*$28,800	*$30,409	**$33,903**	**$33,903**	**$33,903**	**$33,903**	**$41,723**	*44,304
12-Hour Period (no OT)	$1.45	$162	$166.08	$175.44	$194.88	$194.88	$194.88	$194.88	$240.72	$255.60
24-Hour Period (no OT)	$1.45	$324	$332.16	$350.88	$389.76	$389.76	$389.76	$389.76	$481.44	$511.20

Source: Defense Finance and Accounting Service, 2021; California Department of Human Resources, 2022; California Department of Corrections and Rehabilitation, 2020; California Conservation Corps, n.d.; Office of Personnel Management, 2021; National Park Service, 2019; Ember Wildfire Defense Solutions, n.d.; Miller Timber Services, n.d.; Wildfire Defense Systems, n.d.

The findings in Table 7 present hourly, daily, weekly, yearly, 12-hour period (no OT), and 24-hour period (no OT) salaries of hand crews of the ten different wildland firefighting agencies examined in this research. Hand crew salary is based on each agency's specific base salary (in bold). Pay rates in Table 7 are calculated based on 8-hour workdays, 40 hours per week, five days per week, and 52 weeks per year. The Private column data is an average of three different wildland fire fighting companies. The data collected are from publicly available positions and salary tables that each agency provides. The salary rates vary based on how each agency pays its employees (in bold font). For example, CalGuard pays its employees at a monthly rate, whereas CDCR pays prison crews an hourly rate. CalFire and federal agencies have hourly and monthly rates. Salaries not in bold with an * have been recalculated for this

research to reflect a comparison with other agencies. The salaries in Table 7 are based on entry-level positions from each agency. Actual rates will vary based on the level of experience and seniority within the organization. Many agencies will include locality/housing and subsistence rates on top of their base pay due to California's high cost of living. For this research paper, locality and subsistence rates will not be included.

Table 8

2022 CalGuard Basic Allowance Housing (BAH) Rates in California

City	Yreka	Bakersfield	Redding	Stockton	Sacramento	San Diego	Los Angeles	San Jose	San Francisco
BAH Rates	$1,050-$1,344	$1,173-$1,506	$1,440-$1,854	$1,521-$1,917	$1,947-$2,439	$2,016-$2,676	$2,349-$3,021	$2,697-$3,456	$3,261-$4,347

Source: Defense Finance and Accounting Service, 2021

Calculating housing rates for the CalGuard is based on the location of each member's home of record, rank, and dependency status. As seen in Table 8 above, rates can vastly differ and would not be as accurate to calculate the total cost per guardsman. For example, a CalGuard member with the rank of E-4 without dependents from San Francisco, CA, 2022 housing rate would add $3,261 to base pay, whereas the same member from Yreka, CA, would receive an additional $1,051. If that same guardsman has dependents, the rates would $4,347 in San Francisco or $1,344 in Yreka on top of base pay (DFAS, 2021). These rates are subject to change on a yearly basis. Task Force Rattlesnake BAH rates are based on a guardsman home of record, not their place of work due to full quarters not being provided to their families (Absher, 2021).

The CalGuard is the benchmark study for this research project to analyze base salaries compared to other wildland firefighting agencies. In comparing basic salary rates, out of ten organizations, CalGuard is the second least expensive organization in this study. As expected, the CDCR prison crews are the least costly crew to have, serving as hand crews. The more costly

crews, ranking at one and two, are privately contracted wildland firefighters and NPS. The Private column's calculation is the average of three different wildland firefighting companies with positions in California. CalFire is the third least expensive entity, while USFS, BLM, FWS, and BIA tied for fourth place, as they are all paid the same. USFS, BLM, FWS, and BIA work based on the federal GS pay scale. These agencies pay GS 6/7 in California. A 24-hour period without overtime (OT) was added to show the expected daily costs of wildland firefighting before OT.

Table 9

Emergency Pay Rates Daily

Least Costly → Most Costly

	CDCR	CalFire (Starts after Hour 72)	USFS (Starts after Hour 8)	BLM (Starts after Hour 8)	FWS (Starts after Hour 8)	BIA (Starts after Hour 8)	CCC (Starts after Hour 8)	NPS (Starts after Hour 8)	Private(Starts after Hour 8)	CalGuard
Hourly	$1	$21.96	$24.36	$24.36	$24.36	$24.36	$26	$30.09	$31.95	N/A
Daily	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$403
Daily (w/ OT)	$24	$263.52	$292.32	$292.32	$292.32	$292.32	$312	$361.08	$383.40	N/A

Source: Defense Finance and Accounting Service, 2021; California Department of Human Resources, 2022; California Department of Corrections and Rehabilitation, 2020; California Conservation Corps, n.d.; Office of Personnel Management, 2021; National Park Service, 2019; Ember Wildfire Defense Solutions, n.d.; Miller Timber Services, n.d.; Wildfire Defense Systems, n.d.

The findings in Table 8 above are the Emergency Pay Rates calculated hourly, daily, and a Daily (w/ OT). The CalGuard is the only organization in this study with a daily pay rate in emergencies for activated members. The CDCR prison crew's emergency work rate is $1/hr on top of their daily base pay (see appendix A3). The CCC has a flat rate of $26/hr when working on fire lines. CalFire has an overtime rate of 1.5x of hourly wage after 72 hours worked in a work week according to CalHR. Federal wildland firefighters employed by USFS, BLM, NPS,

FWS, and BIA are paid an overtime rate of 1.5x of hourly wage after eight hours of work in a work day. Private organizations are subject to state employment laws and all three companies in this research have an overtime rate of 1.5x of their hourly wage. All fire emergencies are different and can require different levels of resources at various points. The daily rate with overtime (OT) was added to examine how quickly the suppression costs of wildland firefighting can increase with the labor of hand crews.

Table 10

Total Acres of Prescribed Burns by Agency 2016-2020

Agency	USF	CDF	CCO	NPS	OTH	PVT	FWS	BLM	CSP	LRA
Acres	155,476	55,739	7,954	7,723	6,887	4,235	2,351	1,328	771	234
Percent Performed	64.1%	22.97%	3.28%	3.18%	2.84%	1.74%	.97%	.55%	.32%	.1%
Overall Area to Burn Ratio	.75%	9.2%	N/A	.1%	N/A	N/A	.79%	.009%	N/A	N/A

Source: California Department of Forestry and Fire Protection, 2019b.
Note: USF: United States Forest Service, CDF: California Department of Forestry and Fire Protection, CCO: Contract Counties, NPS: National Park Service, OTH: Other, PVT: Private, FWS: Fish and Wildlife Service, BLM: Bureau of Land Management, CSP: California State Parks, and LRA: Local Response Area.

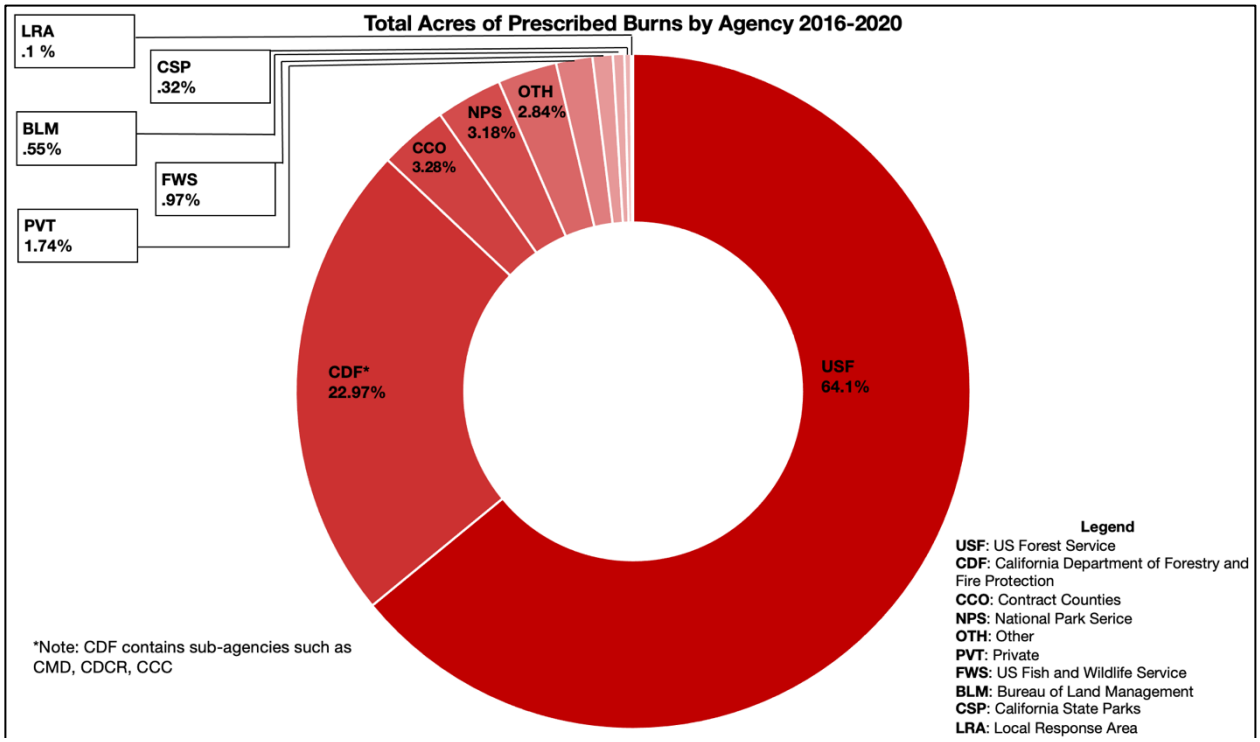
The findings in Table 9 represent a productivity measurement of the total acres of prescribed burns by different agencies between 2016 and 2020. The productivity measurement measures how much output agencies are producing that will be compared to their associated costs (Table 7). The United States Forest Service represents an overwhelming 64.1% percent of prescribed burns. CalFire[3] is the second-highest agency for prescribed burns, with 22.97% in the state of California. All other federal agencies account for 4.5%. Prescribed burns are also

[3] Note: CalFire prescribed burns data accumulates from multiple agencies that they oversee such as the CDCR, CalGuard, and CCC.

contracted out to local fire departments (CCO) and private companies specializing in prescribed burns (PVT/OTH).

Figure 1

Total Acres of Prescribed Burns by Agency 2016-2020

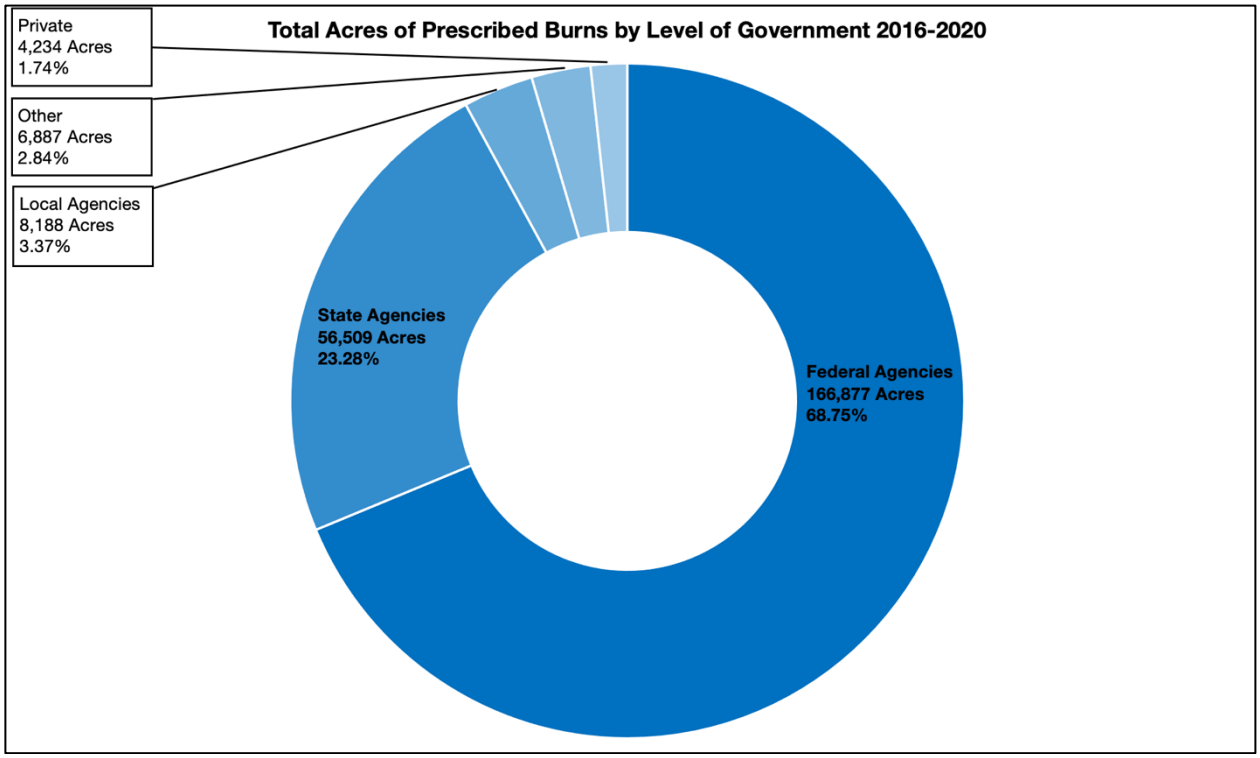


Source: California Department of Forestry and Fire Protection, 2019b.

Figure 1 above is a visual representation of Table 8 by agency and prescribed burns performed in California between 2016 and 2020. In Table 8, a row was added to compare the overall responsibility of each agency compared to the percentage prescribed burns acres by responsible area for example federal, state, local and private lands. In a comparison of the overall area responsibility for USFS, USFS has only prescribed burns for .75% of the land they are responsible for. In its own comparison, CDF has only prescribed burns for 9.2% of the land they are responsible for. NPS has performed prescribed burns for .1%, FWS .79%, and BLM .001% of the land they are responsible for.

Figure 2

Total Acres of Prescribed Burns by the level of Government 2016-2020



Source: California Department of Forestry and Fire Protection, 2019b.

Figure 2 is a visual representation of Table 9 by the level of government for example federal, state, local, and private entities. It demonstrates how each level of government has taken responsibility for performing prescribed burns in California in 2016-2020. Overall, the federal government has performed 68.75% of all prescribed burns in California, state agencies have performed 23.28% of prescribed burns, and local agencies have performed 3.37%.

Table 11

Total Acres of Prescribed Burns by Year and Agency

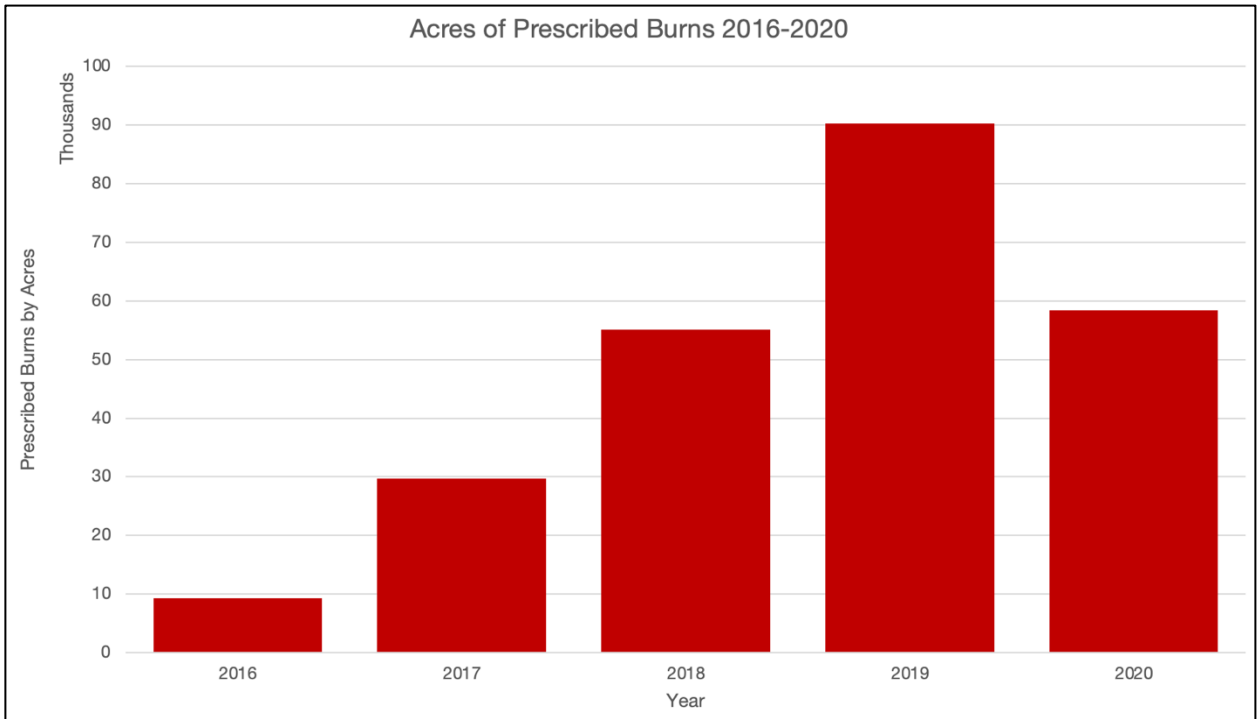
	CDF	USF	BLM	NPS	FWS	CCO	LRA	PVT	OTH	CSP
2016	5280	N/A	240	3776	N/A	N/A	N/A	N/A	N/A	N/A
2017	15915	11500	566	1655	N/A	N/A	N/A	N/A	N/A	N/A
2018	9585	44211	N/A	1320	N/A	N/A	N/A	N/A	N/A	N/A
2019	17868	55198	249	N/A	2091	7006	206	3500	4147	N/A
2020	7008	44565	272	971	260	948	27	735	2739	770

Source: California Department of Forestry and Fire Protection, 2019b.
Note: USF: United States Forest Service, CDF: California Department of Forestry and Fire Protection, CCO: Contract Counties, NPS: National Park Service, OTH: Other, PVT: Private, FWS: Fish and Wildlife Service, BLM: Bureau of Land Management, CSP: California State Parks, and LRA: Local Response Area.

Table 10 above presents the number of acres of prescribed burns by year and agency. The table shows the increases and decreases of different agencies of prescribed burns. Both CDF and USF have noticeable increases in the number of acres of prescribed burns. Additionally, since 2016 both agencies have increased their efforts of prescribed burns three and four-fold. By 2019 and 2020, all other agencies have joined the battle in prescribing burns across California, including private entities.

Figure 3

Total Acres of Prescribed Burns by the Year 2016-2020



Source: California Department of Forestry and Fire Protection, 2019b.

Figure 3 shows the increase in prescribed burns in California between 2016 and 2020 from all agencies. In 2016, between private, local, state, and federal agencies, California performed 9,297 acres of prescribed burns. By 2019, California fire agencies had completed 90,267 acres of prescribed burns. That number drops sharply in 2020 to 58,378. It should be noted that California wildfires burned a historic 4.2 million acres in 2020 (CalFire, 2021).

ANALYSIS

The number of fire crews needed to battle wildfires in California has drastically increased over the last 18 years, as has the number of acres burned during extreme wildfire seasons. The average percentage increase of acreage burned from the 2003 and 2020 fire sieges is 436%. The average increase in hand crew personnel is 1040%. The need for more personnel as fire season becomes more extreme is evident in the data. Even with the dramatic increases in hiring personnel by CalFire, the CalGuard activated six force packages (or over 288 National Guardsmen) on ESAD to fulfill state resource requests.

Calculating hand crew base salaries can be complex due to how agencies pay their fire crews on different pay periods, such as hourly, daily, monthly, or yearly. The bold numbers in Table 7 above are the posted salaries from their respective agency/company. The numbers with an asterisk * have been recalculated to give an estimate to fit in that wage category. The measurement category used in calculating the least and most expensive agencies was calculated in a 24-hour period before overtime. It is no surprise in the Findings that the use of prison crews from the CDCR in a 24-hour period is the least costly, at $1.45 per day for the least experienced (entry-level) crew members. The benchmark for this study is the use of the CalGuard for hand crews on the fire line, as well as year-round for prescribed burns. The approximate rate for CalGuard's 24-hour rate is $324 for base salary alone. The federal agencies' base rates are about $389.76 in a 24-hour period based on a GS 6 level salary. The most expensive would be a privately contracted company at approximately $511.20 in a 24-hour period. These rates will vary in cost and range based on an individual fire crewman's experience and time in service. Based on Table 7, CDCR remains the cheapest option for the state to deploy fire crews on the fire line.

Wildland firefighters generally work on a 72-hour schedule per week (CalHR, 2017). Over-time kicks in when firefighters go over 72-hours per week. In 2018, California firefighters' overtime surged to 28% over the base pay rate (Stiles, 2019). Table 9 tabulates emergency base pay rates in daily and hourly overtime in a 24-hour period. The CalGuard ESAD daily hazard pay rate is $403. The hourly rate for CalGuard members on Task Force Rattlesnake remains the same at $324/hour. CDCR prison crews remain the cheapest option. Emergency pay rates for prison crews are $1/hour on top of their daily base pay. CalFire and federal agencies are paid at higher rates for a 24-hour overtime period, between $527.04 and $722.16 per day. Overtime pay can quickly overwhelm budgets when a state of emergency has been declared.

In justifying hand crews year-round, such as CalGuard or the CCC, a productivity measurement was added to this research that measures the number of acreages of prescribed burns. According to Captain Jason Sweeney (2019), "Task Force Rattlesnake's mission supports California Gov. Gavin Newsom's executive order to prepare a plan that will have the greatest impact on preventing the effects of deadly wildfires" (para. 3). Indeed, part of Task Force Rattlesnake's overall mission is to prevent deadly wildfires by performing prescribed burns throughout the state under the control of CalFire. "CDF" in the prescribed burns measurements represents CalFire, CalGuard, CDCF, and CCC, since all fall under the jurisdiction of CalFire. There were considerable increases in prescribed burns between 2016 and 2020 with all agencies. While there are significant increases under CalFire, USFS has made considerable progress in increasing its wildfire prevention tactics using prescribed burns. The state has made a 300% increase in prescribed burns, and the federal government has increased by more than 400% from 2016 to 2020.

Task Force Rattlesnake is neither the least nor most expensive firefighting entity when only calculating base pay. However, once Basic Allowance for Housing (BAH) is included into the costs, between $1,050 -$4,347 can be added to guardsmen's salaries based on their home of record. These costs are paid by the federal government under the state run program. The primary purpose of the task force is to be used for fuel reduction and as a reliable resource to use during fire emergencies. The use of the CalGuard as a firefighting entity has increased due to several factors, such as the severity of wildfires due to climate change and the COVID-19 pandemic that forced the closure of eight CDCR conservation camps in California. The state Legislative Analyst's Office has recognized the critical use of the CalGuard in wildfire mitigation, while also recognizing that it is not as low cost compared to the CDCR crews. While prison crews are the cheapest option, there are critical studies on the ethical use of cheap prison labor in dangerous and sometimes deadly environments.

The federal government should consider increasing salaries for federal wildfire firefighters to be more competitive with both state and private entities. The federal government operates on a large budget with the ability to raise salaries for federal wildland firefighters. Only half of the USFS wildland firefighting positions have been filled in California, and filling those vacancies would be a more cost-effective route for the federal government to begin managing its forests. The USFS already leads all other agencies in prescribed burns throughout the state. Lowering the number of vacancies of wildland firefighters with the USFS would increase the number of professional fire fighters available for forest management and wildfire fighting. Having these additional federal assets within the state could reduce the amount of outsourcing from other states and countries that California – and the federal Fire Grant - would have to pay

for during the wildfire season, in turn refucing the number of CalGuard members needed on ESAD and BAH during the most extreme wildfire seasons.

The federal government's 'let it burn' policy poses risks to both local and state lands that can potentially fall in the path of a wildfire. Filling federal wildland firefighter vacancies would support the management of wildfires across the state in preventing wildfires from burning from federal responsibility areas into state responsibility areas or local responsibility areas, destroying communities. CalFire will only intervene when wildfires cross onto state and local lands. If the federal government can fill the allocated slots of wildland firefighters (an increase of roughly 1,200 firefighters), then wildfires on federal lands can be better managed and controlled solely by federal authorities, reducing the risks to state and local lands. The CalGuard is only activated on ESAD when state and local authorities' resources are overwhelmed. If threats to communities are mitigated by filling federal wildland firefighter positions, the state will spend less on emergency expenditures, saving taxpayer dollars.

The state can explore other options that would not directly require the hiring of state wildland firefighters. One option is to increase the use of the CCC in fuel reduction and prescribed burning across the state. The CCC fire crew members are not full-time employees, which saves the state a significant amount of money on pay and benefits. The CCC program is a natural path for many participants to fill both state and federal wildland firefighting positions. Increasing CCC participation now can give the state a long-term pipeline for continuing to fill wildland firefighter vacancies.

The state can also explore ideas of using CalGuard reservists on 29-day or fewer SAD orders, rather than extended activations of parttime CalGuard members. This strategy means that those guardsmen would not be eligible to receive BAH from the state due to their shortened

activations, thus reducing overall costs of state-funded fire crews. They could perform similar work as the CCC, such as fuel reduction across the state, during the short-term activations, lwering the overall fire risk.

CONCLUSION

The frequency of extreme wildfires in California continues to increase with climate change and the impact of human activity. Historically, governments have been responsible for their mitigation and suppression to protect life and property. However, in recent years, due to the increase in frequency and intensity of wildfires, many individuals and businesses have begun turning towards private wildfire-fighting companies for protection. The increasing firefighting demands have caused increases in wildfire fighting resources. California alone has budgeted nearly $3 billion for FY 2021 – 2022, while the federal government has budgeted over $30 billion (nationwide) (Office of Management and Budget, 2021). The use of CalGuard members in Task Force Rattlesnake is much more costly than CDCR crews, but not nearly as expensive as outsourcing to private contractors. Increasing CCC crew support can mitigate the overall cost of providing firefighting personnel, when locality and housing costs associated with other agencies are considered. As discussed above, locality and housing costs can almost double the total compensation of a CalGuard soldier from the Bay Area, raising it above the CCC personnel, who are more expensive on an hourly basis at pay only, but less expensive when the whole CalGuard compensation package is considered.

Local, state, and federal governments will need to continue looking at new and innovative ways to increase prescribed burns throughout the state to mitigate extreme wildfires while balancing the associated costs. Filling federal wildland firefighting vacancies is one of the first steps that the federal government can take to contain costs, along with an increase in pay for USFS personnel that is competitive across the state. Wildfires will continue to be a part of California's natural environment, and governments must continue to find innovative and cost-effective ways to deliver wildfire mitigation and suppression.

Future Research

The cost of wildfire mitigation should be subjected to future research. The costs of hand crews will continue to change with the increase in wages from different agencies. As the state legislature continues to change sentencing laws for state prisoners, the ratio of prison crews will also change. Wildfire season from year to year produces different highs and lows based on the climate and the causes of wildfires. As the state and federal government pursues the use of prescribed burns, future research will be necessary to determine its overall effectiveness and associated costs. Future research could involve investigating best practices in recruitment techniques for wildland firefighting and outsourcing from other states, the international community, or the private sector. The state and federal governments can consider exploring ways to use the CalGuard for dual training events that can act as a wildland fuel reduction effort.

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APPENDIX A

Agency Pay Tables

Figure A1: CalGuard Pay Table

FY22 NDAA 2.7% increase

MONTHLY BASIC PAY TABLE
EFFECTIVE 1 JANUARY 2022

PAY GRADE	YEARS OF SERVICE																					
	<2	2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
COMMISSIONED OFFICERS																						
O-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90
O-9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16444.80	16682.40	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90	16974.90
O-8	11635.50	12017.10	12270.00	12340.50	12656.10	13183.20	13306.20	13806.60	13950.90	14382.00	15006.30	15581.40	15965.70	15965.70	15965.70	15965.70	16365.60	16365.60	16774.20	16774.20	16774.20	16774.20
O-7	9668.40	10117.50	10325.40	10490.70	10789.80	11085.30	11427.00	11767.50	12109.50	13183.20	14089.80	14089.80	14089.80	14089.80	14162.10	14162.10	14445.60	14445.60	14445.60	14445.60	14445.60	14445.60
O-6	7332.00	8054.70	8583.30	8583.30	8616.30	8985.30	9034.50	9034.50	9547.80	10455.30	10988.10	11520.60	11823.60	12130.80	12725.40	12725.40	12979.50	12979.50	12979.50	12979.50	12979.50	12979.50
O-5	6112.20	6885.30	7361.70	7451.40	7749.30	7926.90	8318.10	8605.80	8976.90	9543.90	9813.90	10080.90	10384.20	10384.20	10384.20	10384.20	10384.20	10384.20	10384.20	10384.20	10384.20	10384.20
O-4	5273.70	6104.40	6512.40	6602.70	6980.70	7386.30	7891.80	8284.50	8557.50	8714.70	8805.30	8805.30	8805.30	8805.30	8805.30	8805.30	8805.30	8805.30	8805.30	8805.30	8805.30	8805.30
O-3	4636.50	5256.00	5672.40	6185.40	6482.10	6807.30	7017.30	7362.90	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50	7543.50
O-2	4006.50	4562.70	5255.10	5432.70	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30	5544.30
O-1	3477.30	3619.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50	4375.50
COMMISSIONED OFFICERS WITH OVER 4 YEARS ACTIVE DUTY SERVICE AS AN ENLISTED MEMBER OR WARRANT OFFICER																						
O-3E	0.00	0.00	0.00	6185.40	6482.10	6807.30	7017.30	7362.90	7654.80	7822.80	8050.80	8050.80	8050.80	8050.80	8050.80	8050.80	8050.80	8050.80	8050.80	8050.80	8050.80	8050.80
O-2E	0.00	0.00	0.00	5432.70	5544.30	5720.70	6018.60	6249.30	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60	6420.60
O-1E	0.00	0.00	0.00	4375.50	4672.20	4845.00	5021.70	5194.80	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70	5432.70
WARRANT OFFICERS																						
W-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8520.30	8952.30	9274.50	9630.30	9630.30	10112.70	10112.70	10617.60	10617.60	11149.50	11149.50
W-4	4791.90	5154.30	5302.20	5447.70	5698.50	5946.60	6198.00	6575.40	6906.60	7221.90	7480.20	7731.90	8101.20	8404.80	8751.00	8751.00	8925.60	8925.60	8925.60	8925.60	8925.60	8925.60
W-3	4376.40	4558.20	4745.70	4806.60	5002.20	5388.00	5789.40	5978.70	6197.70	6422.70	6828.30	7101.60	7265.40	7439.10	7676.40	7676.40	7676.40	7676.40	7676.40	7676.40	7676.40	7676.40
W-2	3872.10	4238.40	4350.90	4428.60	4679.40	5069.70	5263.50	5453.70	5686.50	5868.60	6033.30	6230.70	6360.30	6462.90	6462.90	6462.90	6462.90	6462.90	6462.90	6462.90	6462.90	6462.90
W-1	3398.70	3765.00	3863.10	4071.00	4316.40	4678.80	4847.70	5084.70	5317.20	5500.20	5668.50	5873.10	5873.10	5873.10	5873.10	5873.10	5873.10	5873.10	5873.10	5873.10	5873.10	5873.10
ENLISTED MEMBERS																						
E-9	0.00	0.00	0.00	0.00	0.00	0.00	5789.10	5920.50	6085.80	6279.90	6477.00	6790.50	7056.90	7336.20	7764.30	7764.30	8151.90	8151.90	8559.90	8559.90	8988.90	8988.90
E-8	0.00	0.00	0.00	0.00	0.00	4739.10	4948.80	5078.40	5233.80	5402.40	5706.30	5860.50	6122.70	6268.20	6626.10	6626.10	6759.00	6759.00	6759.00	6759.00	6759.00	6759.00
E-7	3294.30	3595.50	3733.50	3915.30	4058.10	4302.60	4440.60	4685.10	4888.50	5027.40	5175.30	5232.60	5424.90	5528.10	5921.10	5921.10	5921.10	5921.10	5921.10	5921.10	5921.10	5921.10
E-6	2849.40	3135.60	3274.20	3408.60	3548.70	3864.30	3987.60	4225.50	4298.40	4351.20	4413.30	4413.30	4413.30	4413.30	4413.30	4413.30	4413.30	4413.30	4413.30	4413.30	4413.30	4413.30
E-5	2610.30	2786.10	2920.80	3058.50	3273.30	3497.70	3682.20	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40	3704.40
E-4	2393.40	2515.80	2652.00	2786.70	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50	2905.50
E-3	2160.60	2296.50	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70	2435.70
E-2	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70	2054.70
E-1 >4 Mon	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30	1833.30
E-1 <4 Mon	1695.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C/S 16974.90 **M/S** 9355.50
Cadet 1217.10

NOTE--BASIC PAY FOR O7-O10 IS LIMITED TO LEVEL II OF THE EXECUTIVE SCHEDULE DURING 2022 ($16,974.90)
NOTE--BASIC PAY FOR O6 AND BELOW IS LIMITED TO LEVEL V OF THE EXECUTIVE SCHEDULE IN EFFECT DURING 2022 ($13,775.10)

Source: Defense Finance and Accounting Service, 2022.

Figure A2: Cal Fire Pay Table

Schem Code	Class Code	Full Class Title	Compensation	Pay Period *	SISA	Footnotes	AR Crit	MCR	Prob. Mo.	WWG	NT	CBID
VZ30	8979	FIRE FIGHTER										
			$4,354.00 - $5,581.00			34 R3		1	6	2		R07
BZ90	1083	FIRE FIGHTER I										
			$3,355.00 - $4,240.00		SISA	34 35 R4		1	0	2D	NT	R08
			$14.62 - $18.48	HR	SISA	34 35 R4		1	0	2D	NT	R08
BZ70	1082	FIRE FIGHTER II										
			$3,728.00 - $4,711.00			01 34 R4		1	12	2E		R08
BZ75	1755	FIRE FIGHTER II (PARAMEDIC)										
			$3,990.00 - $5,040.00			01 34 R4		1	12	2E		R08
BZ80	1080	FIRE LOOKOUT -SEASONAL-										
			$14.62 - $17.93		SISA	34 36		1	0	2E	NT	R08
			$3,355.00 - $4,115.00		SISA	34 36		1	0	2E	NT	R08
BZ83	1067	FIRE PREVENTION SPECIALIST I										
			$3,498.00 - $4,463.00			01 34		1	12	2		R08
BZ84	1069	FIRE PREVENTION SPECIALIST II										
			$4,002.00 - $5,107.00			01 34		1	12	2		R08
VZ70	9090	FIRE SERVICE TRAINING SPECIALIST III										
			$6,603.00 - $8,539.00			19 34 R3		1	6	2		R07
VZ35	8990	FIREFIGHTER/SECURITY OFFICER										
			$4,655.00 - $5,967.00			01 R3		1	12	2		R07
JM50	4541	FISCAL OFFICER I										
			$6,403.00 - $7,954.00			01 19		1	12	E		S01
VB20	8405	FISH AND GAME ASSISTANT CHIEF										
			$9,430.00 - $12,847.00			01 19 34 R3		1	12	E		S07
VB50	8412	FISH AND GAME CAPTAIN										
			$8,412.00 - $11,470.00			01 19 34 R3		1	12	E		S07
VB80	8005	FISH AND GAME LIEUTENANT (SPECIALIST)										
			$6,572.00 - $9,087.00			01 19 34 R3		1	12	2		R07
VB75	8418	FISH AND GAME LIEUTENANT (SUPERVISOR)										
			$7,346.00 - $9,996.00			01 19 34 R3		1	12	2		S07
VB90	8421	FISH AND GAME WARDEN										
		A	$5,003.00 - $6,134.00			01 19 34 21 R3	143	1	12	2		R07
		B	$5,702.00 - $7,330.00			01 19 34 21 R3	143	1	12	2		R07
VB94	8486	FISH AND GAME WARDEN CADET										
			$3,930.00 - $5,300.00			01 19 34 R1		1	12	2		R07
BP25	1917	FISH AND WILDLIFE INTERPRETER I										
		A	$3,796.00 - $4,432.00			01 19 21	272	1	12	2		R10
		B	$4,683.00 - $5,806.00			01 19 21	272	1	12	2		R10
BP30	1918	FISH AND WILDLIFE INTERPRETER II										
			$5,943.00 - $7,381.00			19		1	6	2		R10
BP40	1919	FISH AND WILDLIFE INTERPRETER III										
			$6,772.00 - $8,421.00			01 19		1	12	E		S10
BQ75	0835	FISH AND WILDLIFE SCIENTIFIC AID										
			$15.68 - $18.60	HR				1	0	2	NT	R11
BO90	0790	FISH AND WILDLIFE SEASONAL AID										
			$15.68 - $17.11	HR		36		1	0	2	NT	R11
BQ80	0916	FISH AND WILDLIFE TECHNICIAN										
		A	$3,571.00 - $4,254.00			01 19 21	413	1	12	2		R11
		B	$3,706.00 - $4,639.00			01 19 21	413	1	12	2		R11
BO40	0780	FISH HABITAT ASSISTANT										
			$4,029.00 - $5,039.00					1	6	2		R11
BO30	0777	FISH HABITAT SPECIALIST										
			$4,609.00 - $5,770.00					1	6	2		R11
BO35	0776	FISH HABITAT SUPERVISOR										
			$5,706.00 - $7,141.00			01 19		1	12	E		S11
BO60	0782	FISH HATCHERY MANAGER I										
			$4,752.00 - $5,947.00			01 19		1	12	2		S11
BO50	0781	FISH HATCHERY MANAGER II										
			$5,706.00 - $7,141.00			01 19		1	12	E		S11

*** All salaries are monthly unless otherwise indicated.**

Pay Scales/CalHR Net: Updated 1/14/2022 Page 40- A

Source: California Department of Human Resources, 2022.

Figure A3: CDCR Prisoner Fire Crew Pay Information

major non-emergency medical or dental treatment shall be returned to the appropriate facility.

51130.26.1 Medical/Dental Emergencies in Camp

Ambulance service and treatment for seriously ill or injured inmates shall be arranged by the Camp Commander at a local nearby hospital. The Camp Commander shall advise the CMO or Medical Officer-of-the-Day at the parent facility. Serious health emergencies shall be reported, as are other emergencies.

51130.26.2 Emergency Under Supervision of Contracting Agency

If an inmate becomes seriously ill or is seriously injured while under the supervision of a cooperating agency, the Fire Captain or other appropriate department head shall immediately notify the Camp Commander so that immediate steps may be taken to care for the inmate. The Fire Captain shall complete a CDC Form 620, Inmate Accident Report, and submit it to the Department.

Sufficient supplies of CDC Form 620 shall be maintained by the Department and supplied to the cooperating agencies to comply with this directive.

51130.26.3 Injury While on Fire Suppression

Inmates who become disabled resulting from injuries received while engaged in fire suppression activities may be eligible to receive benefits as prescribed in LC 3365 and 4458. Within one work day of their injury or within one work day after staff became informed of their injury, inmates shall be provided with a SCIF Form 3301. Injuries suffered by inmates shall be reported on copies of SCIF Form 3067, Employee's Claim For Worker's Compensation Benefits, without delay. The Department and the cooperating agency shall cooperate in providing the proper reports to cover the details of the injury.

51130.26.4 Death

If an apparent death of an inmate occurs during their assignment away from the Conservation Camp, the Camp Commander shall contact the nearest physician for medical assistance. If the inmate is pronounced dead by the physician, the coroner shall be notified before the body is moved and the coroner's instructions shall be followed. The Warden of the parent facility shall be notified and further instructions requested. After the release of the body by the coroner and further instructions from the Warden, the body shall be turned over to a licensed undertaker nearest the community where the death occurred (in accordance with DOM 51070).

- A complete incident report shall be submitted to the Warden of the appropriate facility without delay.

51130.26.5 Medical Supplies

Medical supplies shall be prescribed and approved by the CMO for use by Department personnel in administering routine medications and minor first aid to inmates in the camp.

- A standard first aid application book shall be kept in the Camp Commander's office. All camp employees are required to complete a basic course in first aid and cardiac pulmonary resuscitation.

51130.26.6 Medical/Sanitation Inspections

The appropriate facility CMO shall inspect each camp at least once each year for sanitation and proper sanitation practices. The Camp Commander may request additional inspections as needed.

51130.27 Inmate Wages

To maintain uniform pay scales for inmates assigned to the Conservation Camps, the following standards have been established:

- The Camp Commander shall assure accuracy of inmate payrolls and establish auditing procedures to ensure inmates are paid according to their length of service, performance, and assignment.

51130.27.1 Pay Committee

Each camp has an in-camp pay committee. The committee determines the promotion and/or demotion of inmates in the various pay grades. This committee shall administer the monthly pay allocations and stay within the prescribed limits for their camp. This monthly pay allocation is provided by the parent facility, usually at the beginning of each fiscal year.

- The committee is composed of the following camp personnel, or in their absence, the designated representatives of each department:
  - Camp Commander or their assistant.
  - Cooperating agency person in charge.
- The committee shall meet as necessary to consider the recommendations of both departments. The Department employee in charge shall maintain adequate records.

51130.27.2 Pay Period

The pay period is based on the calendar month and inmates are compensated for each day's work within the month. The standard project workweek is five eight-hour days, Monday through Friday, with Saturdays, Sundays, and approved holidays off.

- Inmates shall be paid for emergency work on an hourly basis. This pay commences at the time of dispatch to the emergency and continues until the inmate has returned to their camp. (Refer to PC2782 and PC 2785.)

51130.27.3 Pay Schedules

The specific rate per hour is established by the Department.

- Grade I – $1.45 per day:
  - The majority of camp inmates shall be assigned to this grade.
- Grade II – $1.67 per day:
  - Skilled and experienced grade workers and a selected number of in-camp inmates shall be assigned to this grade.
- Grade III – $1.95 per day:
  - A limited number of skilled inmates who have been given special assignments shall be included at this level.
- Grade IV – $2.56 per day:
  - This pay grade is reserved for a very limited number of highly-skilled journeyman level inmates.
- Grade V – $3.90 per day:
  - Two positions in each outlying camp are designated for the first cook at this pay grade.
- Emergency Fire Fighter – $1.00 hourly:
  - Reimbursed by the State Emergency Fund.

51130.27.4 Reimbursement by Cooperating Agency

The procedure for the cooperating agency to report inmate emergency time for reimbursement and payment of inmates shall be on appropriate forms as prescribed by the parent facility.

- The Department shall invoice the cooperating agency within 60 days of each event based upon the actual expenditures for inmate and camp employee pay for fire overtime.

51130.28 Emergency Crews Work Assignment

The CDF Regional Chief shall inform the Camp Division Chief of the procedure for dispatching Conservation Camp crews to all emergency activities. Dispatching of crews shall be in accordance with existing State, Region, and Ranger Unit procedures. When calls are received dispatching inmate crews from camp, or off regular work projects to emergency fire duty, the information shall be shared immediately with the Camp Commander, or the Department person in charge, to permit that person to determine custodial coverage by the Department. To the extent possible, the information passed on shall include the time of the dispatch call, destination, and any other pertinent information. The "home camp staff" shall be advised of crew location changes through appropriate dispatch channels.

51130.28.1 In Camp

When the crews are in camp, the Department shall assemble the crews and employees of both agencies and count the inmates onto the trucks or buses. At that time, the cooperating agency takes custody of the inmates. Should a Department employee accompany, custody of the inmates is a mutual responsibility.

51130.28.2 Completion of Assignment

Upon completion of the emergency assignment, all trucks and buses shall be thoroughly searched prior to leaving the emergency camp by both the Department and the cooperating agency.

Under no circumstances shall emergency camp equipment or supplies, except for properly secured lunches and other items normally carried, be allowed on the vehicle.

51130.29 Emergency Fire Camp

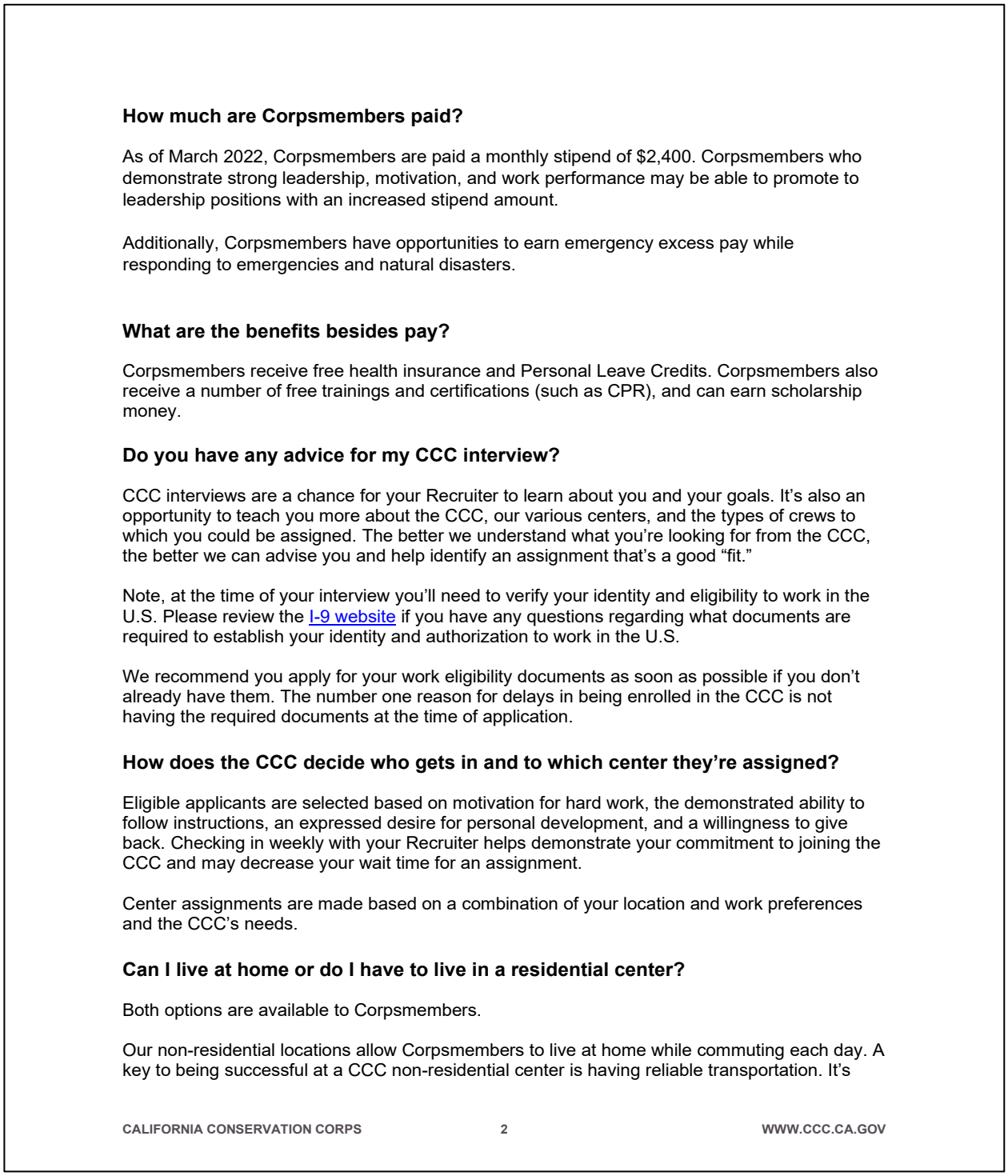
Fire control and suppression are a major part of the Conservation Camp Program. When a fire is in progress and of such proportions to require a supporting emergency fire camp, the cooperating agency shall have a prescribed organization that operates the camp and directs suppression activities.

51130.29.1 Organization in Fire Camp

The following organization guidelines are established to cover the Department's employee participation in the emergency fire camp organization:

Source: California Department of Corrections and Rehabilitation, 2020.

Figure A4: California Conservation Corps Pay Information



How much are Corpsmembers paid?

As of March 2022, Corpsmembers are paid a monthly stipend of $2,400. Corpsmembers who demonstrate strong leadership, motivation, and work performance may be able to promote to leadership positions with an increased stipend amount.

Additionally, Corpsmembers have opportunities to earn emergency excess pay while responding to emergencies and natural disasters.

What are the benefits besides pay?

Corpsmembers receive free health insurance and Personal Leave Credits. Corpsmembers also receive a number of free trainings and certifications (such as CPR), and can earn scholarship money.

Do you have any advice for my CCC interview?

CCC interviews are a chance for your Recruiter to learn about you and your goals. It's also an opportunity to teach you more about the CCC, our various centers, and the types of crews to which you could be assigned. The better we understand what you're looking for from the CCC, the better we can advise you and help identify an assignment that's a good "fit."

Note, at the time of your interview you'll need to verify your identity and eligibility to work in the U.S. Please review the I-9 website if you have any questions regarding what documents are required to establish your identity and authorization to work in the U.S.

We recommend you apply for your work eligibility documents as soon as possible if you don't already have them. The number one reason for delays in being enrolled in the CCC is not having the required documents at the time of application.

How does the CCC decide who gets in and to which center they're assigned?

Eligible applicants are selected based on motivation for hard work, the demonstrated ability to follow instructions, an expressed desire for personal development, and a willingness to give back. Checking in weekly with your Recruiter helps demonstrate your commitment to joining the CCC and may decrease your wait time for an assignment.

Center assignments are made based on a combination of your location and work preferences and the CCC's needs.

Can I live at home or do I have to live in a residential center?

Both options are available to Corpsmembers.

Our non-residential locations allow Corpsmembers to live at home while commuting each day. A key to being successful at a CCC non-residential center is having reliable transportation. It's

CALIFORNIA CONSERVATION CORPS 2 WWW.CCC.CA.GOV

Source: California Conservation Corps, n.d.b.

Figure A5: California Conservation Corps Emergency Pay Information

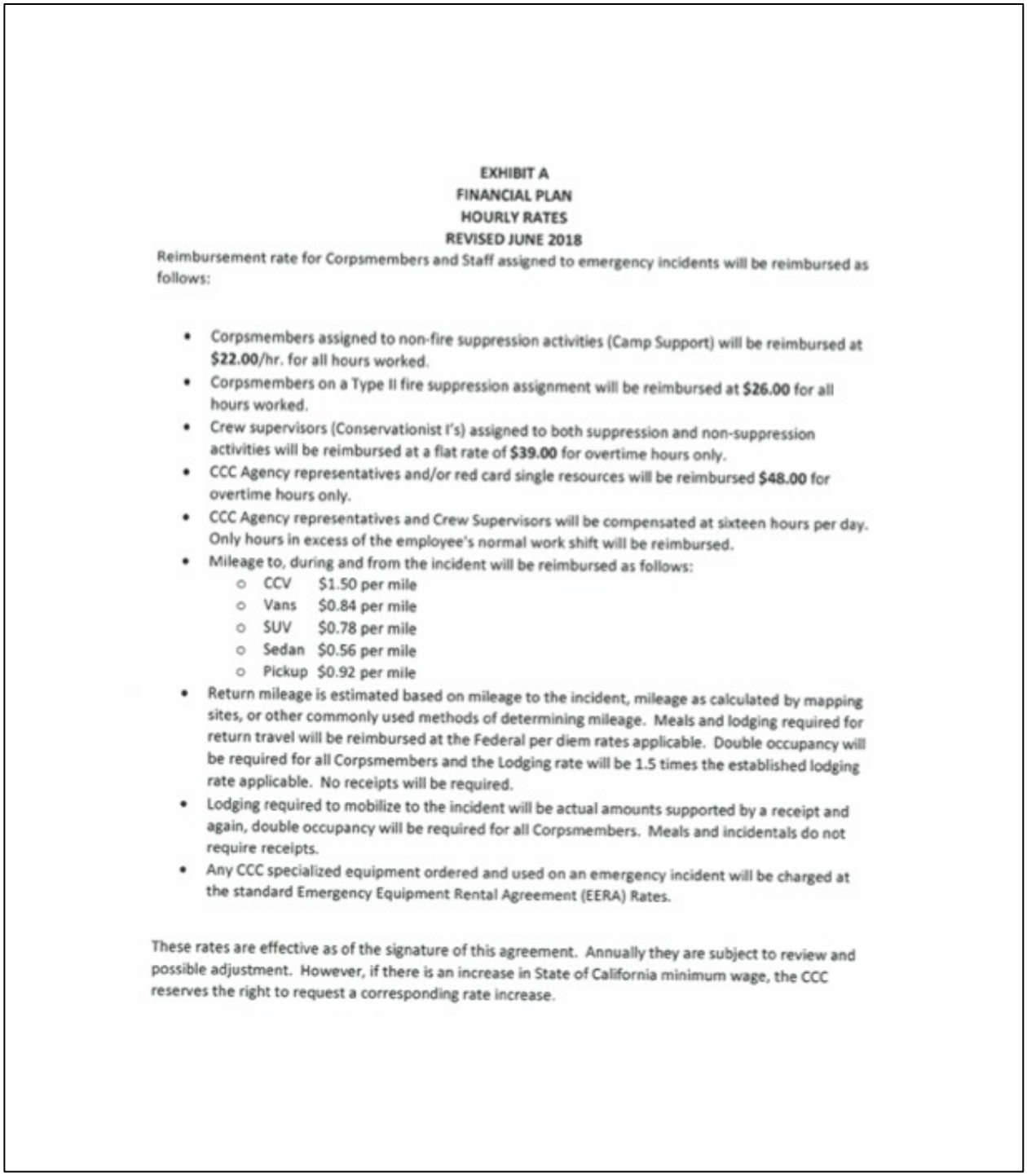


EXHIBIT A
FINANCIAL PLAN
HOURLY RATES
REVISED JUNE 2018

Reimbursement rate for Corpsmembers and Staff assigned to emergency incidents will be reimbursed as follows:

- Corpsmembers assigned to non-fire suppression activities (Camp Support) will be reimbursed at **$22.00**/hr. for all hours worked.
- Corpsmembers on a Type II fire suppression assignment will be reimbursed at **$26.00** for all hours worked.
- Crew supervisors (Conservationist I's) assigned to both suppression and non-suppression activities will be reimbursed at a flat rate of **$39.00** for overtime hours only.
- CCC Agency representatives and/or red card single resources will be reimbursed **$48.00** for overtime hours only.
- CCC Agency representatives and Crew Supervisors will be compensated at sixteen hours per day. Only hours in excess of the employee's normal work shift will be reimbursed.
- Mileage to, during and from the incident will be reimbursed as follows:
  - CCV $1.50 per mile
  - Vans $0.84 per mile
  - SUV $0.78 per mile
  - Sedan $0.56 per mile
  - Pickup $0.92 per mile
- Return mileage is estimated based on mileage to the incident, mileage as calculated by mapping sites, or other commonly used methods of determining mileage. Meals and lodging required for return travel will be reimbursed at the Federal per diem rates applicable. Double occupancy will be required for all Corpsmembers and the Lodging rate will be 1.5 times the established lodging rate applicable. No receipts will be required.
- Lodging required to mobilize to the incident will be actual amounts supported by a receipt and again, double occupancy will be required for all Corpsmembers. Meals and incidentals do not require receipts.
- Any CCC specialized equipment ordered and used on an emergency incident will be charged at the standard Emergency Equipment Rental Agreement (EERA) Rates.

These rates are effective as of the signature of this agreement. Annually they are subject to review and possible adjustment. However, if there is an increase in State of California minimum wage, the CCC reserves the right to request a corresponding rate increase.

Source: United States Forest Service, 2018b.

Figure A6: Federal Fire Fighter Yearly Pay Table

SALARY TABLE 2021-GS
INCORPORATING THE 1% GENERAL SCHEDULE INCREASE
EFFECTIVE JANUARY 2021

Annual Rates by Grade and Step

Grade	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	WITHIN GRADE AMOUNTS
1	$ 19,738	$ 20,400	$ 21,056	$ 21,709	$ 22,365	$ 22,749	$ 23,398	$ 24,052	$ 24,078	$ 24,690	VARIES
2	22,194	22,722	23,457	24,078	24,349	25,065	25,781	26,497	27,213	27,929	VARIES
3	24,216	25,023	25,830	26,637	27,444	28,251	29,058	29,865	30,672	31,479	807
4	27,184	28,090	28,996	29,902	30,808	31,714	32,620	33,526	34,432	35,338	906
5	30,414	31,428	32,442	33,456	34,470	35,484	36,498	37,512	38,526	39,540	1,014
6	33,903	35,033	36,163	37,293	38,423	39,553	40,683	41,813	42,943	44,073	1,130
7	37,674	38,930	40,186	41,442	42,698	43,954	45,210	46,466	47,722	48,978	1,256
8	41,723	43,114	44,505	45,896	47,287	48,678	50,069	51,460	52,851	54,242	1,391
9	46,083	47,619	49,155	50,691	52,227	53,763	55,299	56,835	58,371	59,907	1,536
10	50,748	52,440	54,132	55,824	57,516	59,208	60,900	62,592	64,284	65,976	1,692
11	55,756	57,615	59,474	61,333	63,192	65,051	66,910	68,769	70,628	72,487	1,859
12	66,829	69,057	71,285	73,513	75,741	77,969	80,197	82,425	84,653	86,881	2,228
13	79,468	82,117	84,766	87,415	90,064	92,713	95,362	98,011	100,660	103,309	2,649
14	93,907	97,037	100,167	103,297	106,427	109,557	112,687	115,817	118,947	122,077	3,130
15	110,460	114,142	117,824	121,506	125,188	128,870	132,552	136,234	139,916	143,598	3,682

Source: Office of Personnel Management, 2021

Figure A7: Federal Fire Fighter Hourly and Overtime Pay Table

SALARY TABLE 2021-GS
INCORPORATING THE 1% GENERAL SCHEDULE INCREASE
EFFECTIVE JANUARY 2021

Hourly Basic (B) Rates by Grade and Step
Hourly Title 5 Overtime (O) Rates for FLSA-Exempt Employees by Grade and Step

Grade	B/O	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
1	B	$ 9.46	$ 9.77	$ 10.09	$ 10.40	$ 10.72	$ 10.90	$ 11.21	$ 11.52	$ 11.54	$ 11.83
	O	*14.19*	*14.66*	*15.14*	*15.60*	*16.08*	*16.35*	*16.82*	*17.28*	*17.31*	*17.75*
2	B	10.63	10.89	11.24	11.54	11.67	12.01	12.35	12.70	13.04	13.38
	O	*15.95*	*16.34*	*16.86*	*17.31*	*17.51*	*18.02*	*18.53*	*19.05*	*19.56*	*20.07*
3	B	11.60	11.99	12.38	12.76	13.15	13.54	13.92	14.31	14.70	15.08
	O	*17.40*	*17.99*	*18.57*	*19.14*	*19.73*	*20.31*	*20.88*	*21.47*	*22.05*	*22.62*
4	B	13.03	13.46	13.89	14.33	14.76	15.20	15.63	16.06	16.50	16.93
	O	*19.55*	*20.19*	*20.84*	*21.50*	*22.14*	*22.80*	*23.45*	*24.09*	*24.75*	*25.40*
5	B	14.57	15.06	15.54	16.03	16.52	17.00	17.49	17.97	18.46	18.95
	O	*21.86*	*22.59*	*23.31*	*24.05*	*24.78*	*25.50*	*26.24*	*26.96*	*27.69*	*28.43*
6	B	16.24	16.79	17.33	17.87	18.41	18.95	19.49	20.03	20.58	21.12
	O	*24.36*	*25.19*	*26.00*	*26.81*	*27.62*	*28.43*	*29.24*	*30.05*	*30.87*	*31.68*
7	B	18.05	18.65	19.26	19.86	20.46	21.06	21.66	22.26	22.87	23.47
	O	*27.08*	*27.98*	*28.89*	*29.79*	*30.69*	*31.59*	*32.49*	*33.39*	*34.31*	*35.21*
8	B	19.99	20.66	21.32	21.99	22.66	23.32	23.99	24.66	25.32	25.99
	O	*29.99*	*30.99*	*31.98*	*32.99*	*33.99*	*34.98*	*35.99*	*36.48*	*36.48*	*36.48*
9	B	22.08	22.82	23.55	24.29	25.02	25.76	26.50	27.23	27.97	28.70
	O	*33.12*	*34.23*	*35.33*	*36.44*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*
10	B	24.32	25.13	25.94	26.75	27.56	28.37	29.18	29.99	30.80	31.61
	O	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*
11	B	26.72	27.61	28.50	29.39	30.28	31.17	32.06	32.95	33.84	34.73
	O	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*
12	B	32.02	33.09	34.16	35.22	36.29	37.36	38.43	39.49	40.56	41.63
	O	*36.48*	*36.48*	*36.48*	*36.48*	*36.48*	*37.36*	*38.43*	*39.49*	*40.56*	*41.63*
13	B	38.08	39.35	40.62	41.89	43.15	44.42	45.69	46.96	48.23	49.50
	O	*38.08*	*39.35*	*40.62*	*41.89*	*43.15*	*44.42*	*45.69*	*46.96*	*48.23*	*49.50*
14	B	45.00	46.50	48.00	49.50	51.00	52.49	53.99	55.49	56.99	58.49
	O	*45.00*	*46.50*	*48.00*	*49.50*	*51.00*	*52.49*	*53.99*	*55.49*	*56.99*	*58.49*
15	B	52.93	54.69	56.46	58.22	59.98	61.75	63.51	65.28	67.04	68.81
	O	*52.93*	*54.69*	*56.46*	*58.22*	*59.98*	*61.75*	*63.51*	*65.28*	*67.04*	*68.81*

Source: Office of Personnel Management, 2021.

Figure A8: CalFire Hours of Work and Overtime

Section 7.2 Out-of-Class Claims Process

7.2.1 If an employee believes he/she is working out-of-class in a manner, which violates the Out-of-Class Pay section of this agreement, he/she may file a complaint in accordance with the following.

7.2.2 Out-of-class claims will be filed through the Complaint Procedure contained in Section 7.1 Complaint Procedure of this agreement. All such claims must be on the form prescribed by the State. Once the Complaint Procedure within the department has been exhausted, the employee or his/her representative may within 30 days forward the matter to the CalHR for a review hearing by its staff over the classification aspects of the complaint. If it is determined that an employee is working out-of-class, the employee shall be compensated for the out-of-class period specified by the applicable MOU provision of this agreement.

7.2.3 If it is determined by the CalHR that the employee is working out-of-class and CAL FIRE Local 2881 believes that the MOU provisions of this agreement have not been properly applied, it may forward the salary issue only to arbitration.

7.2.4 Approved out-of-class complaints may be compensated retroactively for a period of no greater than one (1) year preceding the filing of the complaint.

ARTICLE 8 – HOURS OF WORK AND OVERTIME

Section 8.1 Firefighter I

8.1.1 Effective July 3, 2006, a Fire Fighter I will be scheduled to work 72 hours per week (3 consecutive 24-hour days) which includes 19 hours of extended duty week compensation.

8.1.2 For purposes of calculating overtime, the hourly rate of pay will be based on an average duty week of 72 hours. All overtime (extended duty week and unplanned) shall be compensated at the time and one-half rate based on a 72-hour clock. Effective July 1, 2017, all overtime (extended duty week and unplanned) shall be compensated at the time and one-half rate based on a 65-hour clock. Effective July 1, 2018, all overtime (extended duty week and unplanned) shall be compensated at the time and one-half rate based on a 60-hour clock. Effective July 1, 2019, all overtime (extended duty week and unplanned) shall be compensated at the time and one-half rate based on a 56-hour clock.

Formula: (((S ÷ 4.33) ÷ C) X f) = Hourly Rate of Pay (HROP)

S = Salary including differentials included in calculating overtime

C = Clock f = factor EDWC = Extended Duty Week Compensation

UPOT = Unplanned Overtime

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Source: California Department of Human Resources, 2017.