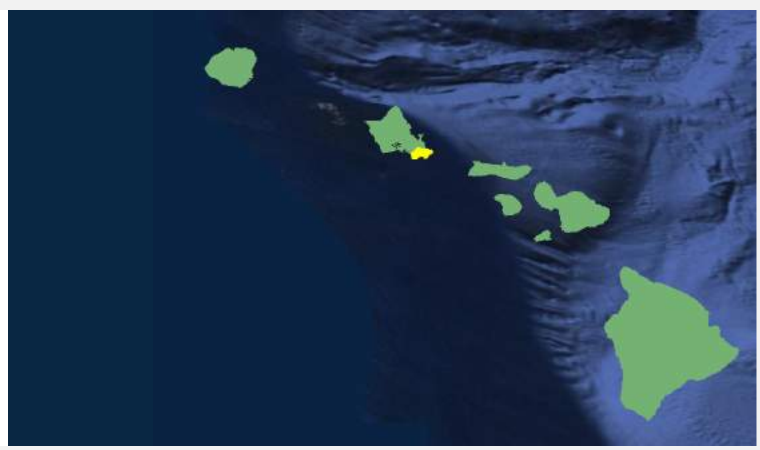
COMMUNITY WILDFIRE PROTECTION PLAN



EAST HONOLULU

O‘AHU, HAWAI‘I 2024

HWMO Hawaii Wildfire Management Organization

Coordinated and developed by Hawai‘i Wildfire Management Organization, in partnership with Hawai‘i Department of Land and Natural Resources, Division of Forestry and Wildlife. Funded by the USDA Forest Service Landscape Scale Restoration Program

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MUTUAL AGREEMENT SIGNATURE PAGE

The following three entities mutually agree to the final contents of this East Honolulu Community Wildfire Protection Plan: State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife; Honolulu Fire Department; and Honolulu Department of Emergency Management.

This plan:

- Was collaboratively developed by agencies, entities, community members, and individuals with interest or jurisdiction in East Honolulu, O'ahu.
- Describes wildfire hazards in the natural and built environment.
- Provides the concerns, recommended actions, and priorities of those who live and work in the area to better reduce wildfire threats, mitigate hazards, improve public safety, and protect natural resources from the impacts of wildfire.
- Is written to appropriately begin and inform wildfire mitigation action planning at the local level, and is not regulatory or binding.

Pursuant to the 2003 Healthy Forest Restoration Act (HFRA), the following signatures represent mutual agreement of the contents of this CWPP.

Michael Walker Digitally signed by Michael Walker
Date: 2024.06.25 11:37:05 -10'00'

Michael J. Walker, Statewide Fire Protection Forester
Hawai'i State Department of Land and Natural Resources
Division of Forestry and Wildlife

Digitally signed by Hao, Sheldon K
Date: 2024.06.24 14:49:15 -10'00'

Sheldon K. Hao, Fire Chief
City and County of Honolulu
Honolulu Fire Department

Digitally signed by Toiya, Hirokazu
Date: 2024.07.10 08:07:50 -10'00'

Hirokazu Toiya, Director
City and County of Honolulu
Department of Emergency Management

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ACRONYMS

DEM: City and County of Honolulu Dept. of Emergency Management; DLNR-DOFAW: Department of Land and Natural Resources, Division of Forestry and Wildlife; HECO: Hawaiian Electric Co.; HFD: Honolulu Fire Department; HWMO: Hawai'i Wildfire Management Organization

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EXECUTIVE SUMMARY

This Community Wildfire Protection Plan (CWPP) was developed by the Hawai'i Wildfire Management Organization (HWMO) with guidance and support from government agencies and representatives, community members, local organizations, and decision makers concerned about wildfire issues in East Honolulu, O'ahu, Hawai'i. State of Hawai'i Department of Land and Natural Resources- Division of Forestry and Wildlife (DLNR-DOFAW) and City and County of Honolulu Fire Department (HFD) were the primary partners to HWMO in carrying out this CWPP process.

The East Honolulu CWPP focuses on wildfire preparedness and readiness, hazard assessment and reduction, and the wildfire mitigation priorities of those who live and work in the area. The process used to develop this plan engaged a diversity of agencies and individuals concerned with the at-risk area, following the guidelines and requirements of federal programs such as the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation program and the National Fire Plan (NFP).

Stakeholder participants in the development of this plan agree that wildfire threats are imminent and can lead to widespread damage to East Honolulu watersheds, natural resources, and human communities. The danger of wildfire is related to high numbers of human-caused ignitions, dry conditions, steep slopes, high fire potential of vegetation, and challenging firefighting conditions. In the last decade, several areas of East Honolulu have burned.

CWPPs serve mainly as a mechanism for assessing, communicating, and preparing for wildfire collaboratively. They are not enforceable or regulatory. The mitigation actions recommended within the document are intended to inspire and catalyze projects and inform next-step actions. Participation and action are voluntary and rely on all parties understanding that firefighting is the last line of defense and that everyone plays a role in wildfire safety and protection.

A CWPP is a first step toward increased public-private collaboration toward wildfire awareness, preparedness, and proactive hazard reduction.

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PART I
OVERVIEW

INTRODUCTION

The communities, lands, and waters of East Honolulu, O'ahu, Hawai'i, have been classified as "at high risk" of wildfire occurrence and impacts. The safety of residents, and the protection of private property, community infrastructure, and natural and cultural resources, is a shared responsibility between residents and communities; owners, developers, and associations; private businesses and municipal service operators; and county, state, and federal governments. The aim of this Community Wildfire Protection Plan (CWPP) is to carry out wildfire protection planning and subsequent actions for East Honolulu.

THE PURPOSE OF WILDFIRE PROTECTION PLANNING IS TO...

- Motivate and empower local government, communities, and property owners to organize, plan, and take action on issues impacting the safety and resilience of values at risk.
- Enhance levels of fire resilience and protection to the communities and infrastructure.
- Identify the threat of wildland fires in the area.
- Identify strategies to reduce the risks to structures, infrastructure, and commerce in the community during a wildfire.
- Identify wildfire hazards, education, and mitigation actions needed to reduce risk.
- Transfer practical knowledge through collaboration between stakeholders toward common goals and objectives.

OUTCOMES OF WILDFIRE PROTECTION PLANNING...

1. Improve community safety through:

- Coordination and collaboration
- Public awareness and education
- Increased wildfire prevention and preparedness
- Widespread hazard reduction efforts
- Improved wildfire response capacity
- Development of long term strategies

2. Catalyze efforts to guide planning and sustained implementation of actions toward:

FIRE ADAPTED COMMUNITIES

RESILIENT LANDSCAPES

SAFE & EFFECTIVE WILDFIRE RESPONSE

PROCESS- HOW A CWPP IS DEVELOPED

1. The project is launched, partnerships are established, administrative and funding processes are completed.
2. The community risk assessment is reviewed, updated, or performed as necessary.
3. Opportunities are coordinated and offered for interested parties (community members, government agencies, other relevant/concerned individuals and entities) to review wildfire information, discuss concerns, identify strategies, and prioritize recommended actions.
4. Wildfire information and community input results are used to develop the CWPP document.
5. The CWPP is finalized via review and signatures of Fire, Forestry, and Emergency Management departments to meet federal compliance requisites.

TIMELINE- THE DEVELOPMENT OF THE EAST HONOLULU CWPP

2021	HWMO worked with State Division of Forestry and Wildlife and US Forest Service to initiate the project and complete all contract and administrative components, to include a COVID-19-related extension.
July- Oct 2021	HWMO developed area and fire maps for the planning process, confirming boundaries and goals with partners.
Dec 2021- Mar 2022	DLNR-DOFAW and HWMO worked together to complete a comprehensive hazard assessment for the residential areas within the East Honolulu CWPP area.
Mar 2022	A virtual workshop was held with fire and emergency services agency representatives with jurisdiction and interest in the East Honolulu CWPP area to: review the purpose, intent, and next steps for the CWPP; discuss wildfire concerns for East Honolulu, and collaborate toward holding a workshop with relevant agencies, organizations, and community members.
Mar- May 2022	Virtual workshops were developed, planned, and advertised through neighborhood boards for upcoming agency and community meetings. Representatives from fire, forestry, and natural resource management agencies attended, along with local groups, organizations, and residents.
April 2022	Community CWPP input survey was launched and circulated via email with closing date of August 2022.
Jan 2023	HWMO completed all background information, research, mapping, and processing of agency and community priorities based on input provided during workshops and assessments. Early draft completed in June.
Aug 2023	Release to partners for review delayed by urgent and necessary shift to tasks related to catastrophic fires.
June 2024	Partner review of CWPP was completed. Plan was submitted for signatures.

PARTNERSHIPS AND COLLABORATIONS

This CWPP was developed in close collaboration with many individuals and entities who live and/or work in the East Honolulu area, including residents, community leaders, government agency representatives, and private organizations. However, the primary collaborators were:

City & County of Honolulu Fire Department

Department of Land and Natural Resources, Division of Forestry and Wildlife

Hawai'i Wildfire Management Organization

Ko'olau Mountains Watershed Partnership

University of Hawai'i, Cooperative Extension

Neighborhood Board members and resident-participants from Kaimuki, Hawai 'i Kai, Kuliouou-Kalani Iki, Diamond Head/Kapahulu/St. Louis Heights, and Wai'alae-Kahala.

STATEMENT OF LIABILITY

A CWPP helps communities clarify and refine priorities for the protection of life, property, and critical infrastructure. It is intended to create a foundation of collaboration and communication among diverse parties toward achieving wildfire risk reduction goals.

A CWPP is not a binding, regulatory document. The action plans are voluntary. The process and the associated document are mechanisms for assessing risk, discussing, learning, and planning collaboratively across sectors and neighboring communities. This is not a pre-determined, top-down, outside-expert or single-agency-driven determination of future activities, but rather a compilation of information and priorities to inspire, inform, and guide wildfire preparedness activities. This is in line with the improved understanding across the country that everyone who lives and works in a fire prone area has a role to play when it comes to preventing ignitions, reducing hazards, and ensuring a wildfire-informed, wildfire-ready, and wildfire-resilient community. A CWPP does not provide or guarantee funding but does qualify entities in the area to apply for certain wildfire mitigation funding opportunities.

The activities suggested by this document, the assessments and recommendations of fire experts and officials, and the plans and projects outlined by the community, are made in good faith according to information available at this time. HWMO and DLNR-DOFAW assume no liability and make no guarantees regarding the level of success users of this plan will experience. Despite efforts to prevent or contain wildfires, fires still occur. The intention of all decisions and actions made under this plan is to reduce the potential for wildfires and the impacts when and if they do occur.

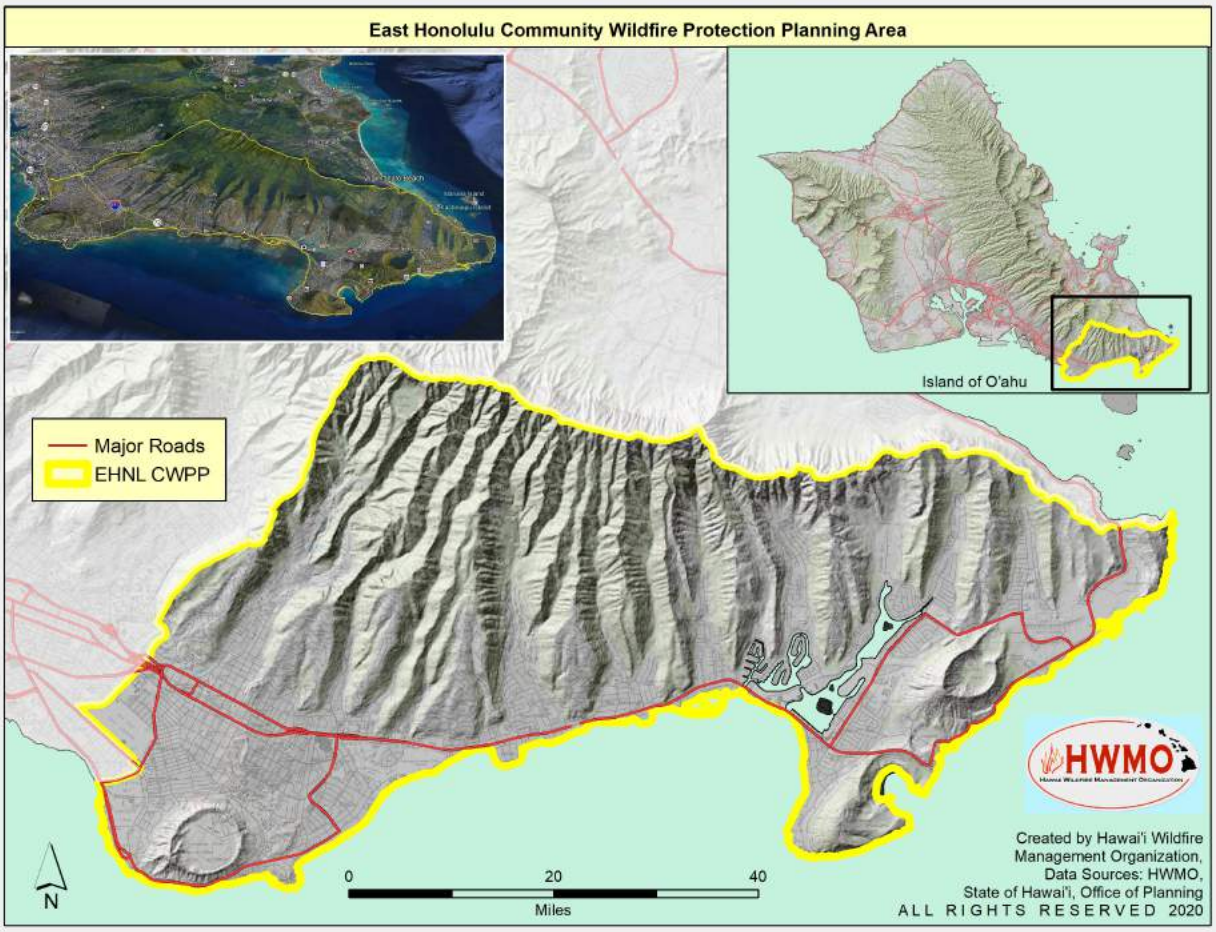
COVID-19 STATEMENT

In an effort to maintain a highly collaborative, effective, and safe CWPP process during several variations of social and travel restrictions across the county and state, the majority of this CWPP was using virtual alternatives to in-person activities. To adapt to COVID-19, several virtual workshops were held with agency and community representatives, and a web-based survey went out to those who lived and worked in East Honolulu for 30 days. Any additional information, community input, and/or action plans generated will be added to this document as updates. The collaborators involved in the development of this CWPP are committed to a long-term process of community engagement and partnership.

PLANNING AREA

CWPP BOUNDARIES

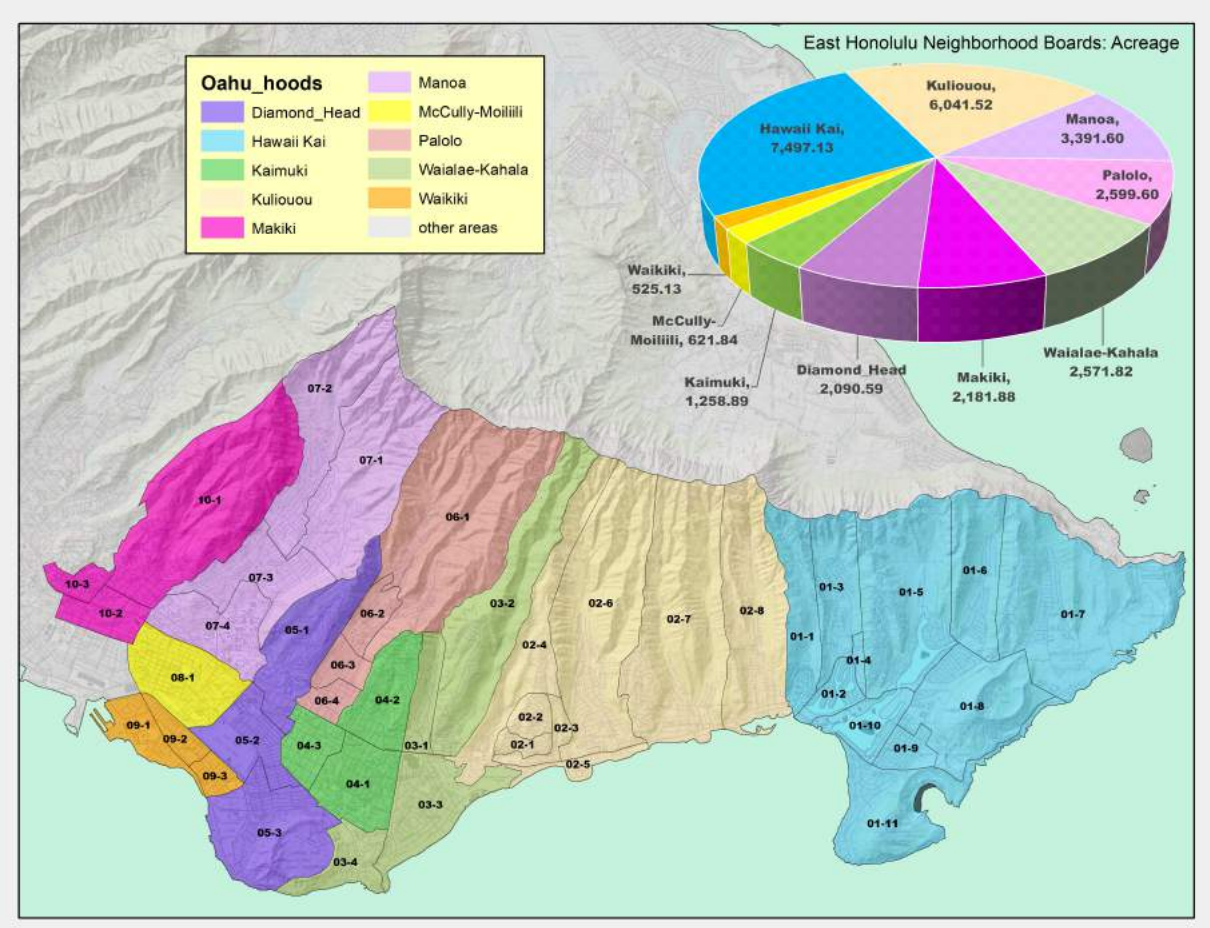
The East Honolulu CWPP (Map 1) is part of a series of CWPPs across the City and County of Honolulu, a land designation that encompasses the entire island of O'ahu. To date, CWPPs have been developed for western O'ahu and the East Honolulu. The CWPP delineation for the East Honolulu plan follows the boundaries established for ten neighborhood boards (Map 2), encompassing a total of 22,060 acres.



Map 1. East Honolulu CWPP Planning Boundaries.

COMMUNITIES AT RISK

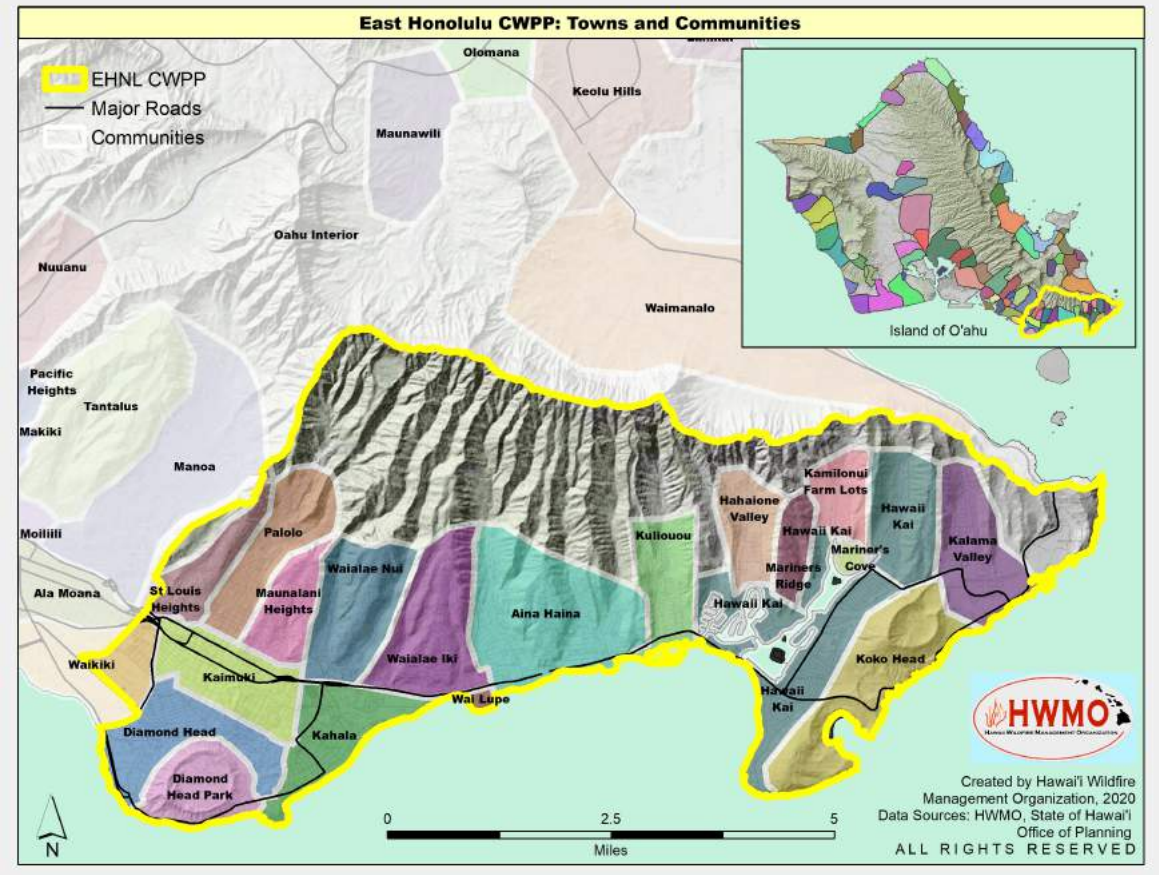
Located in one of the most densely developed areas on O'ahu, East Honolulu is considered at moderate to high risk of wildfire due to dry, steep portions of the landscape and frequent human-caused ignitions, albeit with faster emergency response times and better ingress/egress than in more rural regions of the island.



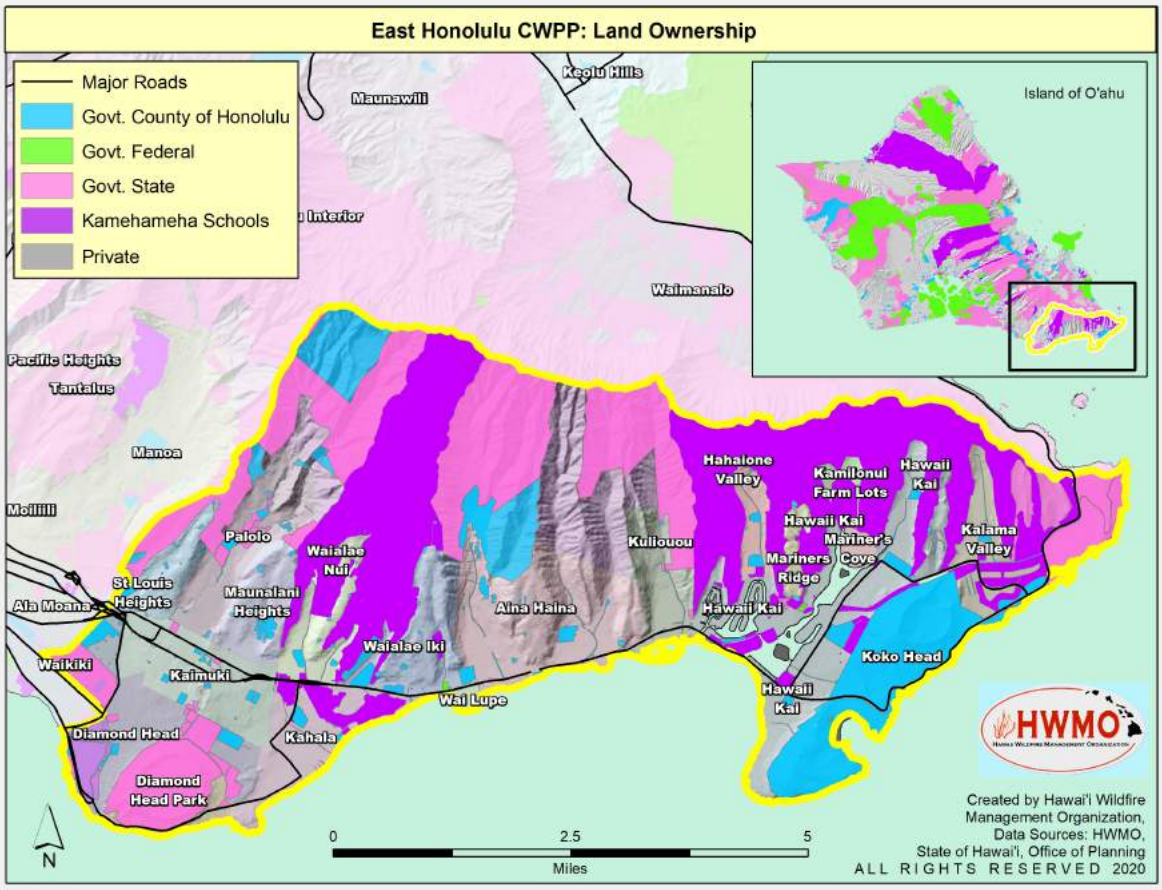
Map 2. Neighborhood Boards in East Honolulu CWPP Planning Area.

There are six clusters of residential communities (Map 3) with 50,922 residents in total per the 2020 U.S. Census. The northern border is comprised of the southern Ko'olau mountain range which is characterized by steep, knife-edge ridges and valleys containing remnant native Hawaiian ecosystems as well as rare and endangered species. Densely populated residential communities, schools, recreational areas, etc. are nested within the valleys and the coastline, all within close proximity to mountains, streams, watersheds, windswept coastlines, beaches, and marine sanctuaries.

Nearly three-quarters of the area under consideration in this plan is privately owned (Map 4), mostly consisting of residential lots. The City and County of Honolulu owns about 2,000 acres including various city parks and natural areas such as Koko Crater which is also a tourist destination. Other popular tourist attractions include Hanauma Bay Marine Sanctuary and Diamond Head State Park, both of which (in pre-COVID times) host one million visitors annually. Finally, East Honolulu's single coastal highway connects densely populated neighborhoods to important shorelines, beaches, remnant fish ponds, and scenic drives such as Kaiwi State Scenic Shoreline, the last undeveloped coastline on the southeastern tip of O'ahu.



Map 3. Residential community areas in East Honolulu CWPP Planning Area.



Map 4. Land ownership in East Honolulu CWPP Planning Area.

PART II

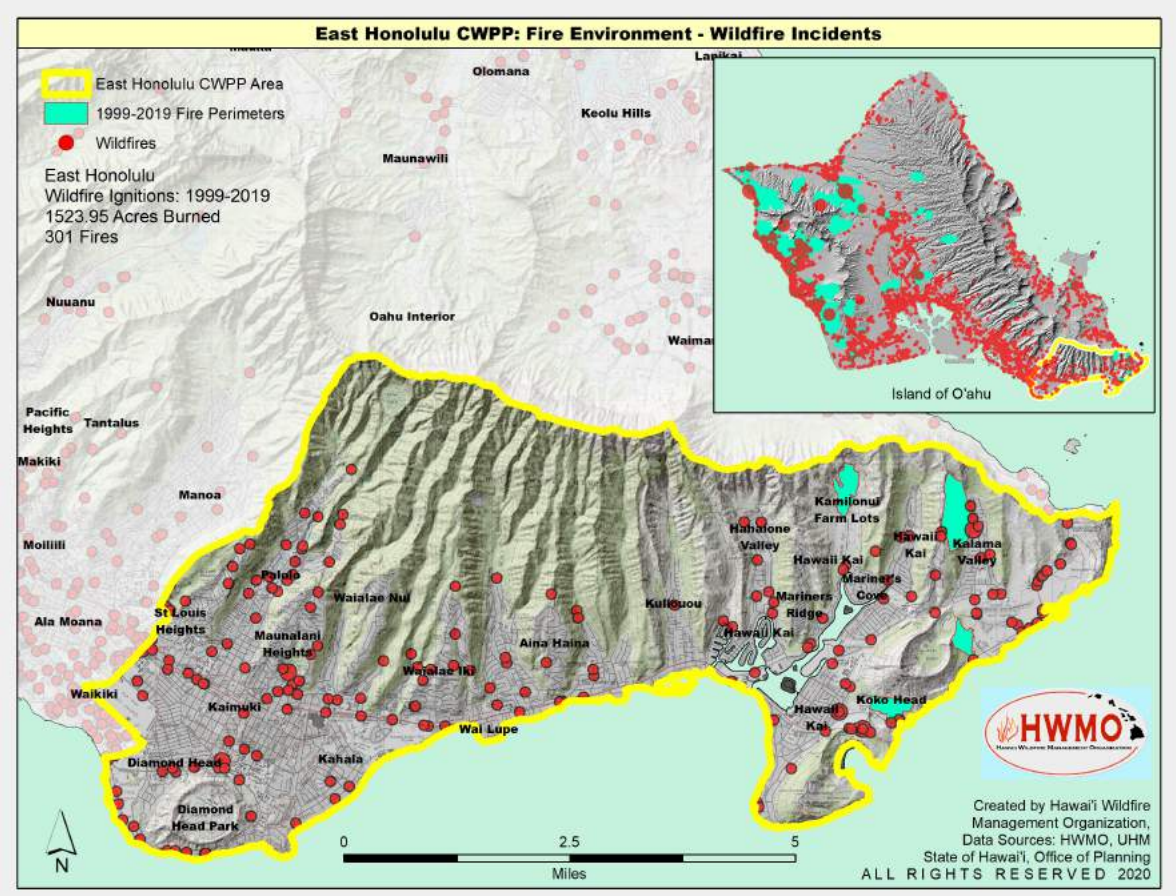
WILDFIRE CHARACTERISTICS AND CONSIDERATIONS

FIRE HISTORY

WILDFIRE OCCURRENCE

The majority of wildfires on O'ahu are caused by human error or arson, especially near developments, power lines right of way, and along roadsides. Additionally, dry non-native grasslands and shrublands surrounding some communities pose fire hazards. Once ignited along the interface, wildfire can spread rapidly through and around residential areas, threatening property, life, critical infrastructure, and both natural and cultural resources.

The fire history (Map 5) below shows individual ignition locations over the past twenty years, including the perimeters of larger fires in the drier, leeward region of O'ahu's eastern end. Areas of high human activity have a high probability of becoming repeat ignition hot spots. Across Hawai'i, humans are the cause of wildfires 99% of the time (only 1% are from natural causes such as lava or lighting). Reducing ignition is a major important component of reducing wildfire occurrence and damages.



Map 5. Notable fires 1999 - 2019, in East Honolulu CWPP Planning Area.

NOTABLE FIRES

Photo 1. Kamilo Nui fire in 2017. Photo Credit: KHON2

Wildfires have repeatedly been a problem in East Honolulu, particularly in Hawai'i Kai which is exposed to trade winds that originate from the north and wrap around the eastern end of the island. In addition, Hawai'i Kai is adjacent to lowland alien-dominated grasslands, shrublands as well as cliffs and ridges which can experience periods of drought. Steep slopes, strong winds, and a large percentage of highly ignitable invasive vegetation characterize portions of eastern O'ahu. This, coupled with warm weather, recurring drought conditions, and a history of human-caused fires puts the area at increased risk of wildfire.

Compounding the problem is the high density of residents and tourists alike accessing the various neighborhoods, parks, golf courses, and hiking trails, both along the seashore and in the Ko`olau mountains. More challenging still is that some flammable areas are adjacent to roadways, particularly near the undeveloped state Kaiwi coastline which has seen multiple fires in the past couple of decades.

For example, three intentionally set fires in 2008 and 2011 were set in the Kaiwi area. These damaged endangered plants and also caused a shutdown of the area's sole highway. Likewise, the county's Koko Crater Park has burned repeatedly, causing a highway shutdown and prompting evacuations. Finally, wildfires in the densely populated neighborhoods of Kamilo Nui, Kalama Valley, and Mariner's Ridge areas have come dangerously close to homes, forcing residents to evacuate and seek shelter temporarily. The majority of these fires have been accidental or intentionally set, either by arsonists or in some cases by unattended fireworks.

Table 1 (next page) summarizes the notable fires between 2003-2019.

Location	Date	Size (acres)	Threatened Resources
Kaiwi/ Hawai'i Kai	Jan 2019	4	Threatened shoreline and native plants. No homes threatened.
Hawai'i Kai	May 2017	65	Homes in Kamilo Nui threatened by a dozen or so fires intentionally set in the area
Hawai'i Kai	Feb 2017	60	Koko Head Crater wildfire burned close to houses, impeded traffic and forced the evacuation of two dozen animals from a stable
Hawai'i Kai	July 2010	200	12 fires set by fireworks landing in dry brush threatened $50 million worth of homes on Kamehame Ridge in Kalama Valley, prompting evacuations of residents
Hawai'i Kai	Nov 2011	50	Abandoned vehicle sets fire in Kaiwi prompting Kalanianaole Hwy shutdown
Hawai'i Kai	Mar 2011	10	Downed power line set fire near Mariner's ridge
Hawai'i Kai	July 2008	8	Three intentionally set fires damaged Kaiwi Scenic Shoreline and endangered plants
Hawai'i Kai	Aug 2003	100	Koko Crater burned to the edge of Kalaniana'ole Highway threatening dozen homes and prompting evacuation of Sandy Beach goers

Table 1. Notable fires 2003 - 2019, East Honolulu Region, O'ahu.

FIRE ENVIRONMENT
WILDFIRE DRIVERS

The factors that contribute to wildfire occurrence and spread are a combination of fuels, topography, climate, and weather conditions during a fire event. In East Honolulu, these can stack up to yield a moderate to high risk of wildfire depending on the severity of the conditions, and lead to rapid fire spread and significant wildfire-caused impacts from summit to sea.

TOPOGRAPHY

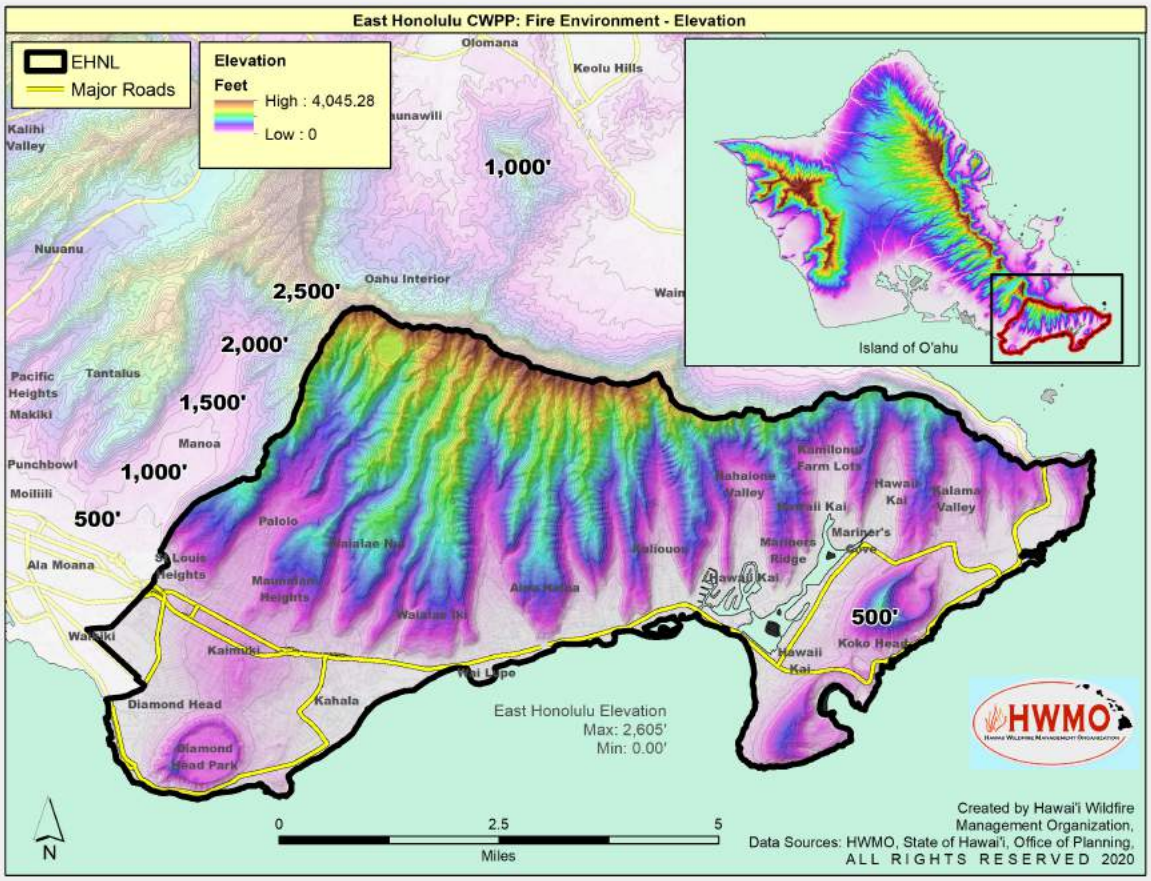
Topography influences fire behavior principally by the steepness of the slope. However, the configuration of valleys and ridges can influence fire spread and intensity. In general, the steeper the slope, the higher the uphill fire rate spread and intensity.

Photo 2. The south-facing view of the CWPP area includes flat coastal areas dissected by steep ridges and ravines. Source: Google Maps

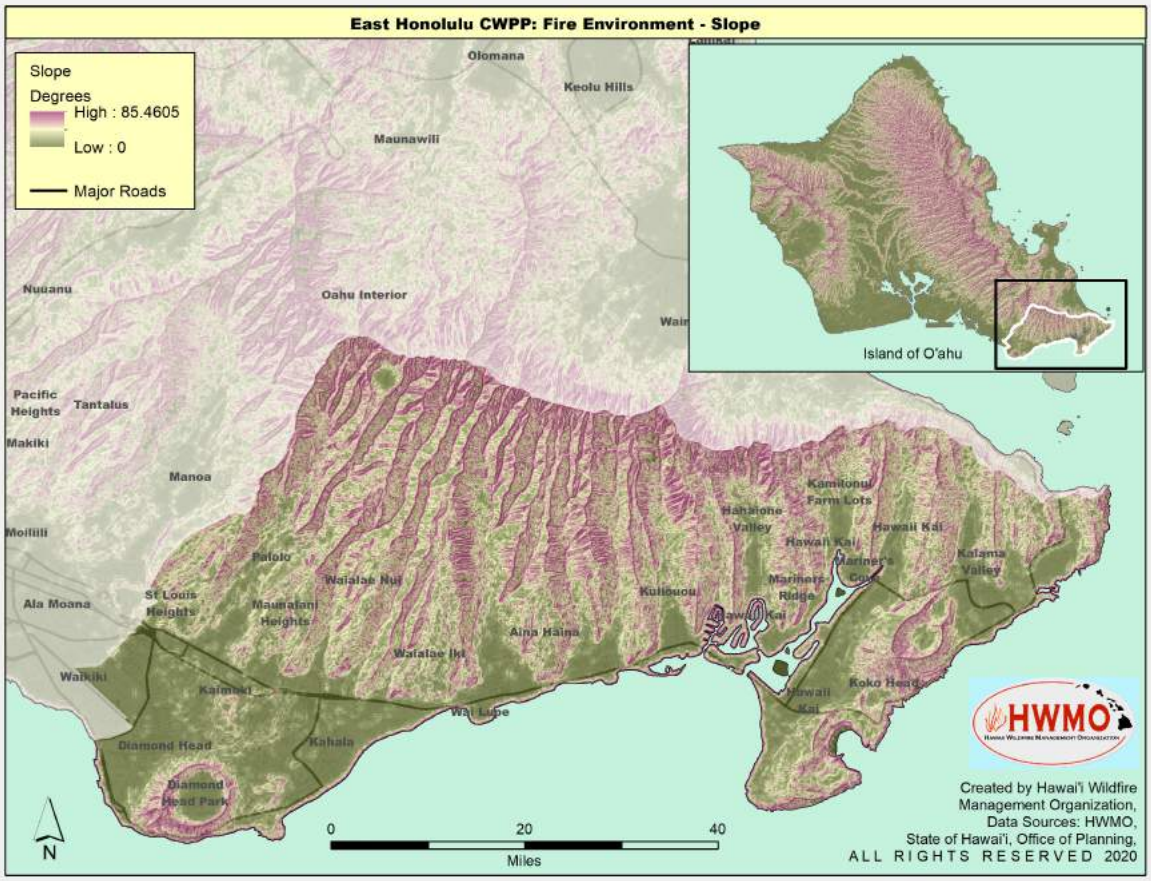
The project area spans coastal flatlands and beaches dissected by steep, knife-edge ridges and valleys of the southern Ko'olau mountains. This mountain range rises abruptly between the leeward and windward coasts and central plains of O'ahu. Within the planning area, the Ko'olau mountains are characterized by rugged, and often inaccessible terrain rising from sea level to approximately 2,500 ft in elevation. Sun-exposed, south-facing slopes (Photo 2 above) will be drier, especially at lower elevations, and burn at a higher intensity than their counterparts on the moisture-laden north side. This topography can create dangerous conditions when wildfires occur since wildfires spread more quickly as they progress upslope.

The communities of leeward East Honolulu have a coastal east and west egress option along the H-1 Highway which turns from a multi-lane route to a two-lane route on the east end. However, many of the communities nested in valleys and built along ridges from St Louis Heights to Kalama Valley have limited access routes. These constraints may limit emergency response access to the fire-prone, wildland areas behind homes. Once wildfires spread into steep, upland areas, the lack of roads and difficult terrain frequently limit fire response to costly aerial operations (i.e., bucket drops by helicopters), as conditions are often too dangerous to put firefighters on the ground.

Map 6 is the span of elevations while Map 7 depicts the slope across the East Honolulu CWPP area.



Map 6. Elevation across the East Honolulu CWPP Planning Area.

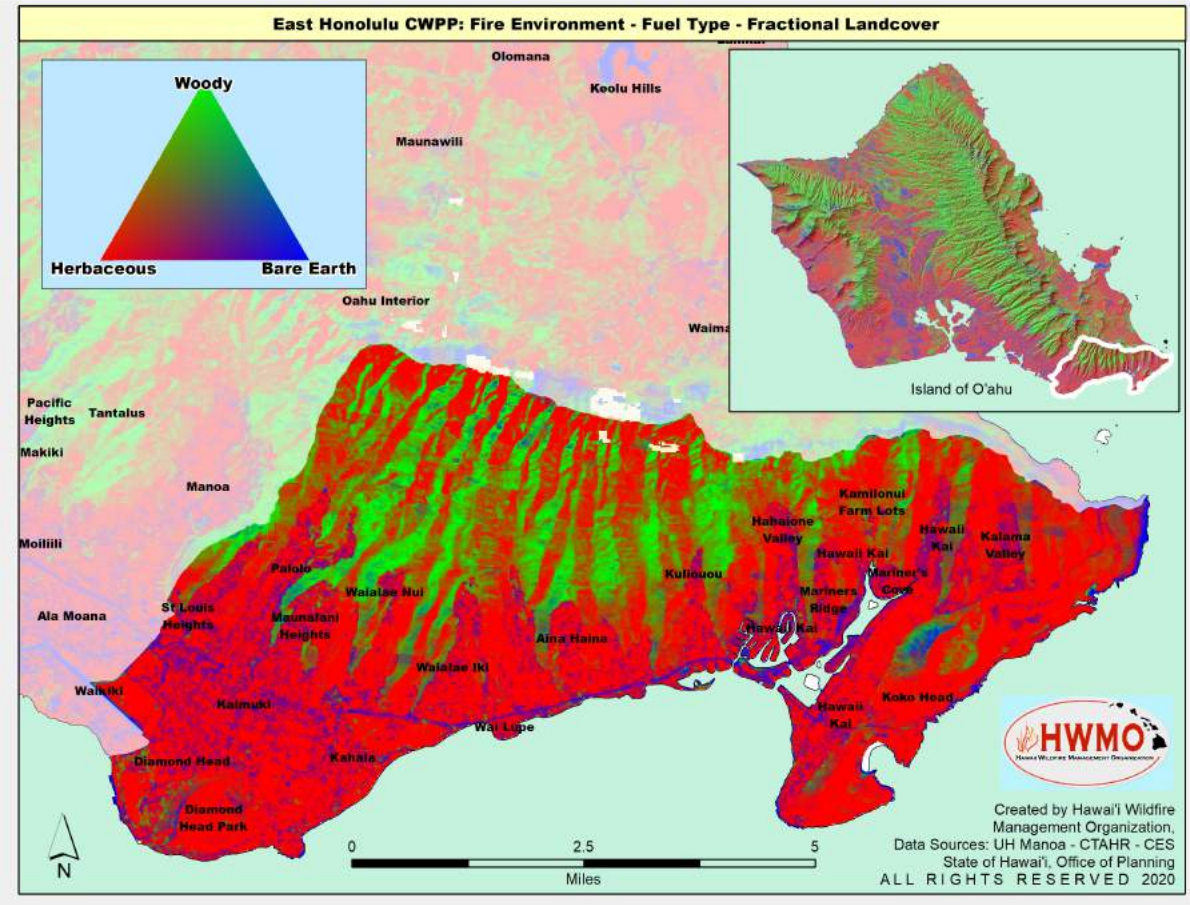


Map 7. Slope across the East Honolulu CWPP Planning Area.

FUEL

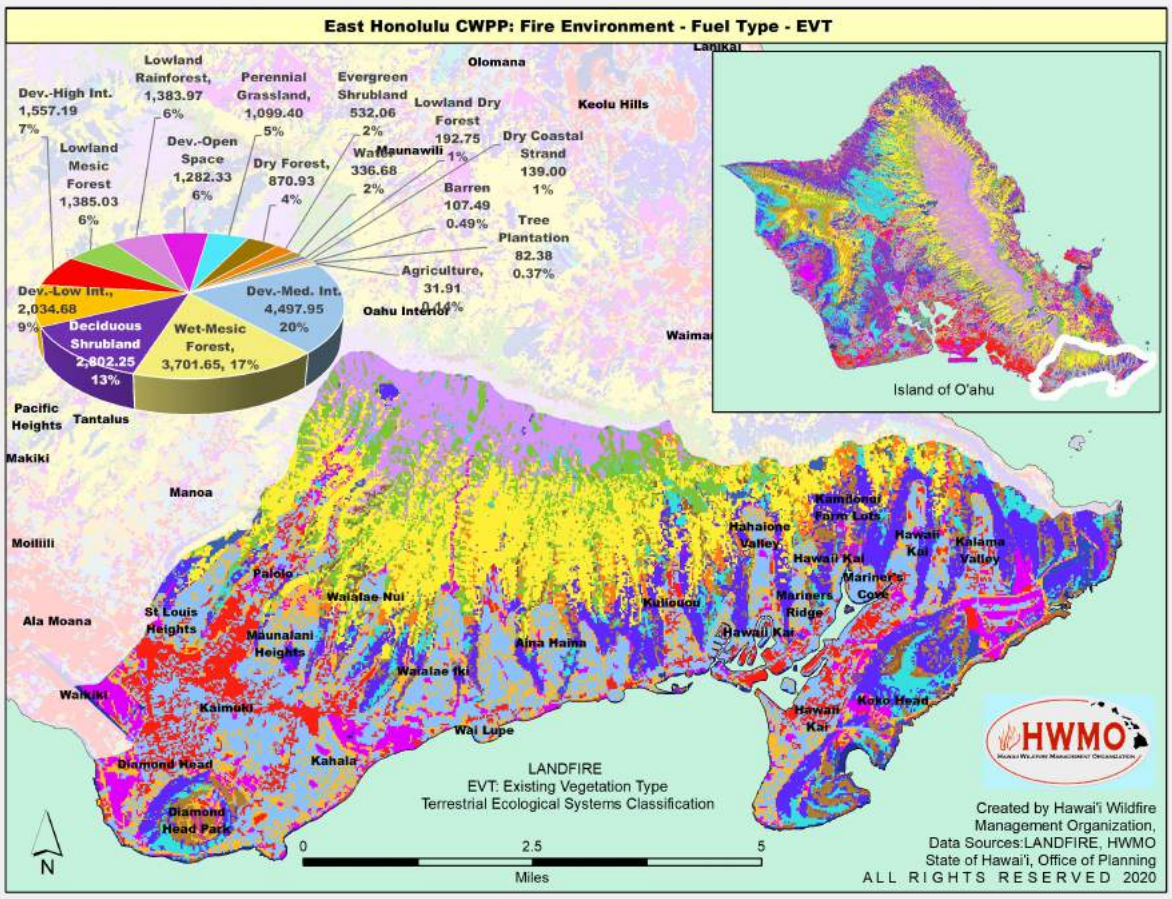
Fine "flashy" fuels ignite more easily and spread faster with higher intensities than coarser fuels. For a given fuel, the more abundant and continuous it is, the faster the fire spreads and the higher its intensity. Fine fuels like grasses take a shorter time to burn out than coarser fuels like shrubs and trees.

Since East Honolulu covers various topographic and climatic characteristics from summit to sea, a mosaic of land cover types exists within the area. Map 8 below characterizes fuels in the CWPP area by indicating whether it is grass, woody, or bare ground. While the species also indicate the level of fire hazard, visualizing by class of vegetation such as in Map 8 is useful for understanding how easily fire will ignite. The majority of the dry lowlands' vegetation is grasses which are flashy, dry easily and ignite readily, dissected by ridges in green with more woody vegetation. In the best case scenario, these patchy or non-contiguous fuels could slow the spread of fire between ridges and valleys and/ or provide options for fire control.



Map 8. Fuel type: Woody/green, herbaceous (grass, shrubs, forbs)/red, and bare earth in the East Honolulu CWPP Planning Area.

Zooming in to consider the specific vegetation types (Map 9), the lower elevations (< 1,000 ft) are primarily developed urban zones surrounded by patches of non-native grasslands mixed with



Map 9. Fuel types across across the East Honolulu CWPP Planning Area. Note that all areas are considered high fire hazard.

deciduous shrublands. This alien-dominated lowland vegetation transitions into both wet and mesic (drier) forests at higher elevations. Although no detailed vegetation survey data exists for the entire planning area, Guinea grass (Megathyrsus maximus) and Buffel grass (Cenchrus ciliaris) are the dominant alien grass fire threats. Both provide abundant fuels that cure rapidly in dry conditions, are easily ignitable even in humid conditions, and allow fires to spread rapidly, creating dangerous conditions for fire responders. Guinea grass is particularly problematic as it is fast-growing, invades a wide range of ecosystems, and alters the flammability and fuel load of a given area. Natural resource managers have noted that Guinea grass produces extra long flame lengths and generates a lot of heat during wildfires.

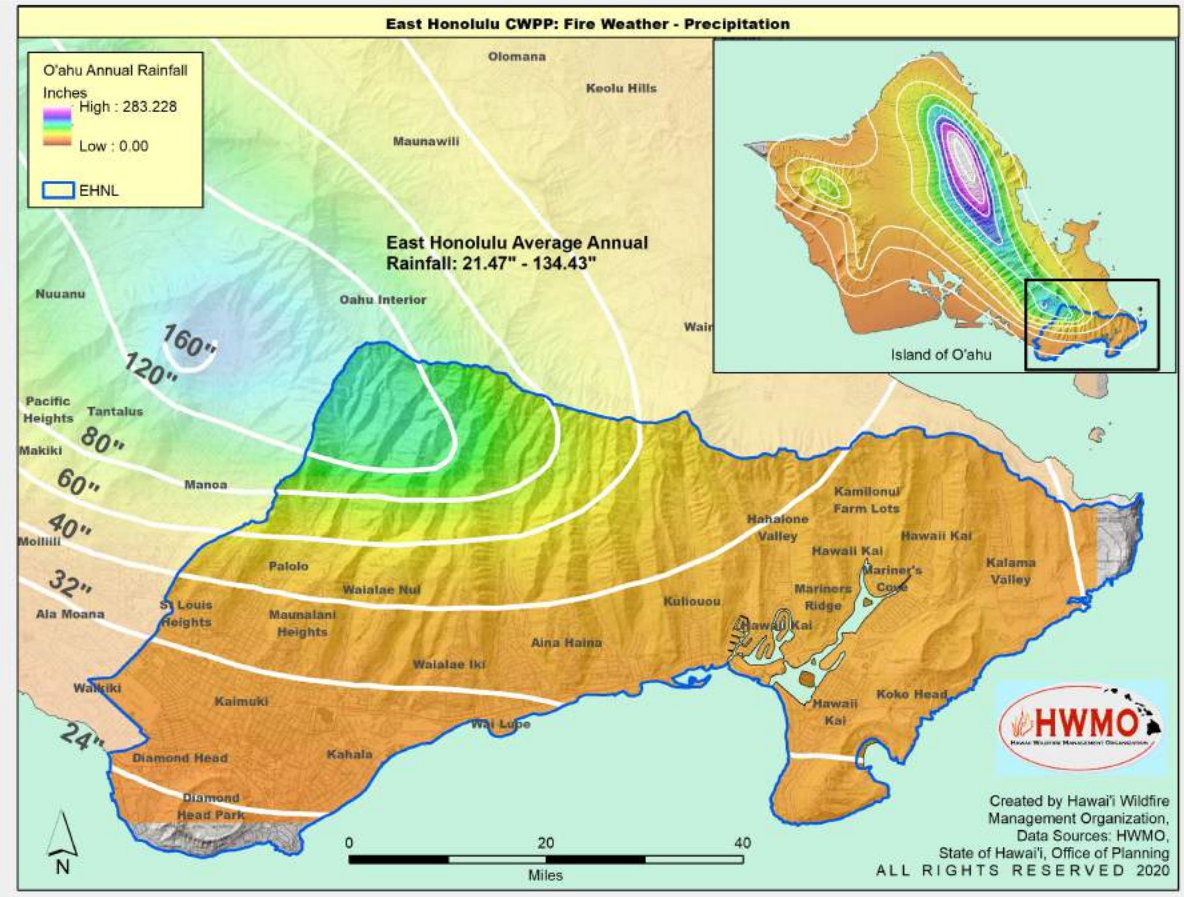
Lower elevation forests in East Honolulu contain various non-native tree species most notably Kiawe (Prosopis pallida), Koa haole (Leucaena leucocephala), and Christmas berry (Schinus terebinthifolius). Although fire behavior in these mixed forests is poorly documented, natural resource managers and firefighters have observed certain problematic fire-promoting characteristics. For example, both koa haole and kiawe can form thick, dense stands and are flammable. According to local firefighters, koa haole pods have been known to travel several miles during strong wind events. These pods can act as firebrands and ignite vegetation near houses or other structures directly, as well as ignite new spot

fires during a large wildfire event. Together with exotic grasses, koa haole and kiawe can form a chain of ladder fuels that can be an extreme fire hazard.

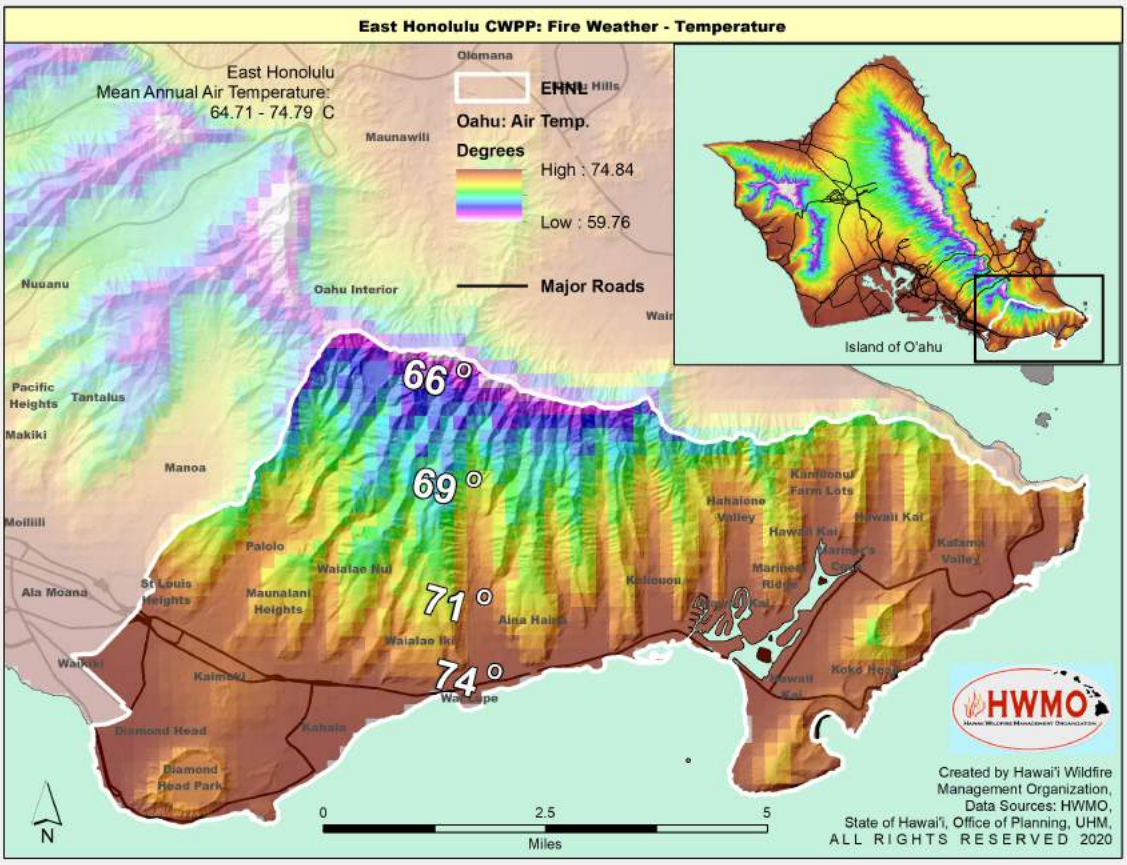
In addition, fuels from lowland grasslands and shrublands can carry a wildfire upslope much more quickly than a flat area due to convection, or the pre-heating of fuels at higher elevations. As a result, recurrent fires in these lower elevation grasslands and shrublands could not only extirpate endangered lowland species but could also effectively 'erode' the edges of upper forested areas. Once replaced by grasses these areas increase the risk of future fires over time. Upper elevation forests in Palolo and Kuli'ou'ou contain important native ecosystems, particularly some of the last remaining rainforests and native forest bird habitat on O'ahu.

CLIMATE AND WEATHER

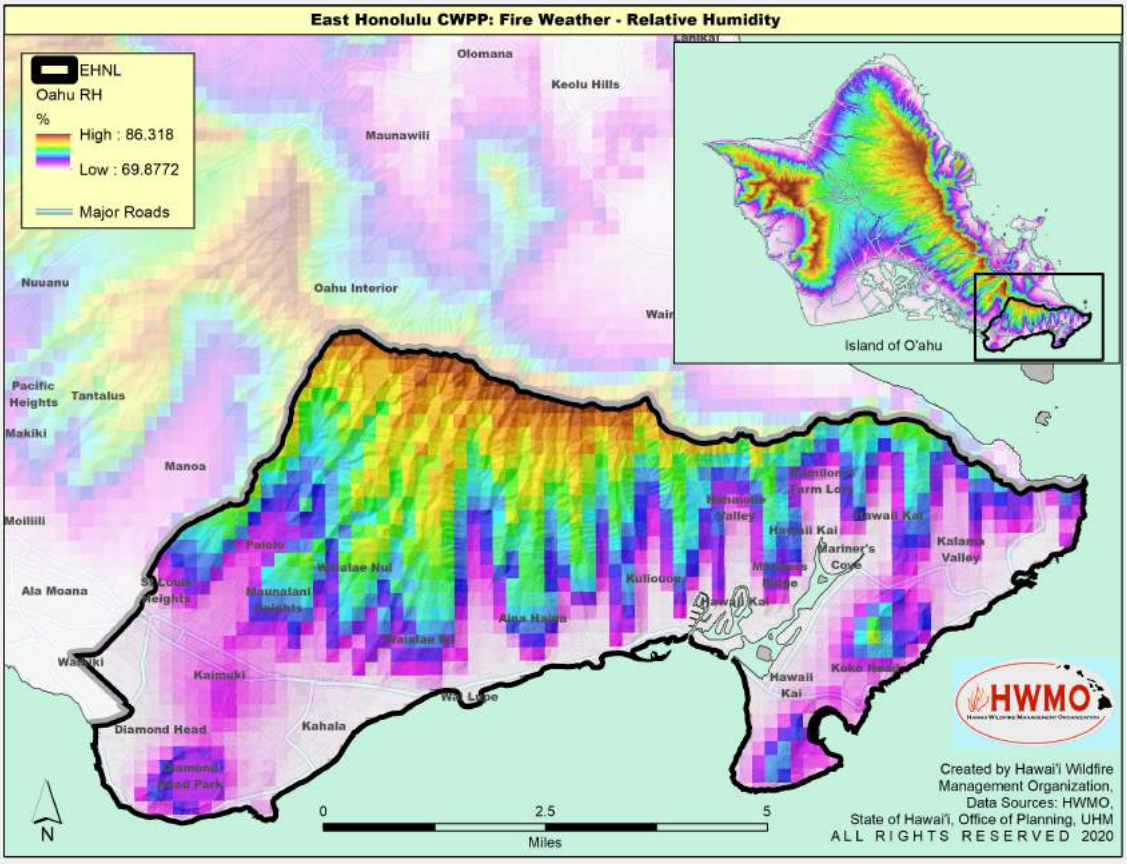
Wildfire occurrence on O'ahu is tied to broad climate patterns, in that more and larger fires typically occur in drier leeward areas. Since the planning area is on the leeward side of the island with south-facing slopes, the conditions are drier at mid and low elevations than on the north-facing slopes along the northern Ko'olau range (Map 10). These conditions make neighborhoods and lands on the leeward coast of O'ahu particularly vulnerable to wildfire starts. Greater sun exposure which in turn produces higher air temperatures and lower relative humidity increases wildfire risk. Maps 11 and 12 illustrate this relationship.



Map 10. Precipitation across the East Honolulu CWPP Planning Area(note that two-thirds of the region is less than 60 inches per year).



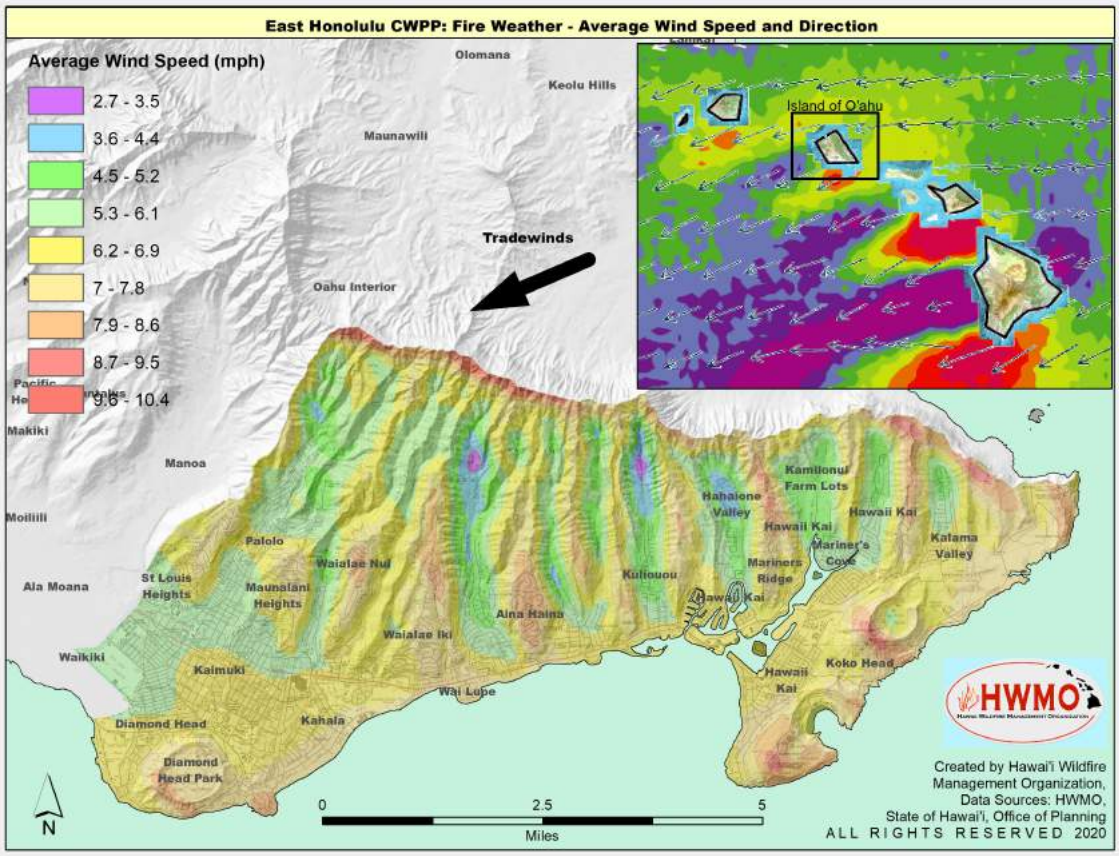
Map 11. Average Air Temperature across the East Honolulu CWPP Planning Area.



Map 12. Relative Humidity across the East Honolulu CWPP Planning Area. Note that in Hawai'i, wildfires can ignite and carry across the landscape even in high humidity.

Since rainfall is greater in mauka (upland) areas, this typically results in lower fire risk on average in these areas. However, due to more abundant vegetation in the higher elevations, mauka areas may experience an increased wildfire risk during periods of drought. Wet periods will also increase the quantity of available vegetative fuels, leading to an increase both in fire risk and in the frequency that mitigation measures such as firebreaks and fuel reduction need to be applied. Since climate change in the Pacific predicts more extreme weather events such as droughts and floods, this could increase both vegetative fuel loads during rainy periods and the likelihood of wildfires during extended dry conditions.

Other wildfire risk factors include wind speed and direction. The planning area is subject to daily weather patterns including diurnal thermal winds which cause sea breezes during the day as the land warms and land breezes at night as it cools. Wind speeds vary only slightly across East Honolulu (Map 13) depending on whether one is within a gulch, ravine, along the coast, or at higher elevations. For example, in more sheltered, inland areas, the average wind speed hovers between 3 - 5 mph. However, in more exposed locations such as the coastlines and mountain ridges, wind speeds range between 6 - 10 mph, with gusts even higher. As noted earlier, fires that begin in the lowlands can easily be pushed into the upland areas. This is particularly true on the eastern tip of O'ahu which is most directly exposed to more sunlight and stronger northeastern trade winds, and therefore drier conditions.



Map 13. Dominant wind direction (from the north east) and associated average wind speeds across the East Honolulu CWPP Planning Area.. Winds are driven by the trade wind pattern with localized disruptions due to topography, seasonal anomalies, and storms, often making then erratic.

WILDFIRE IMPACTS

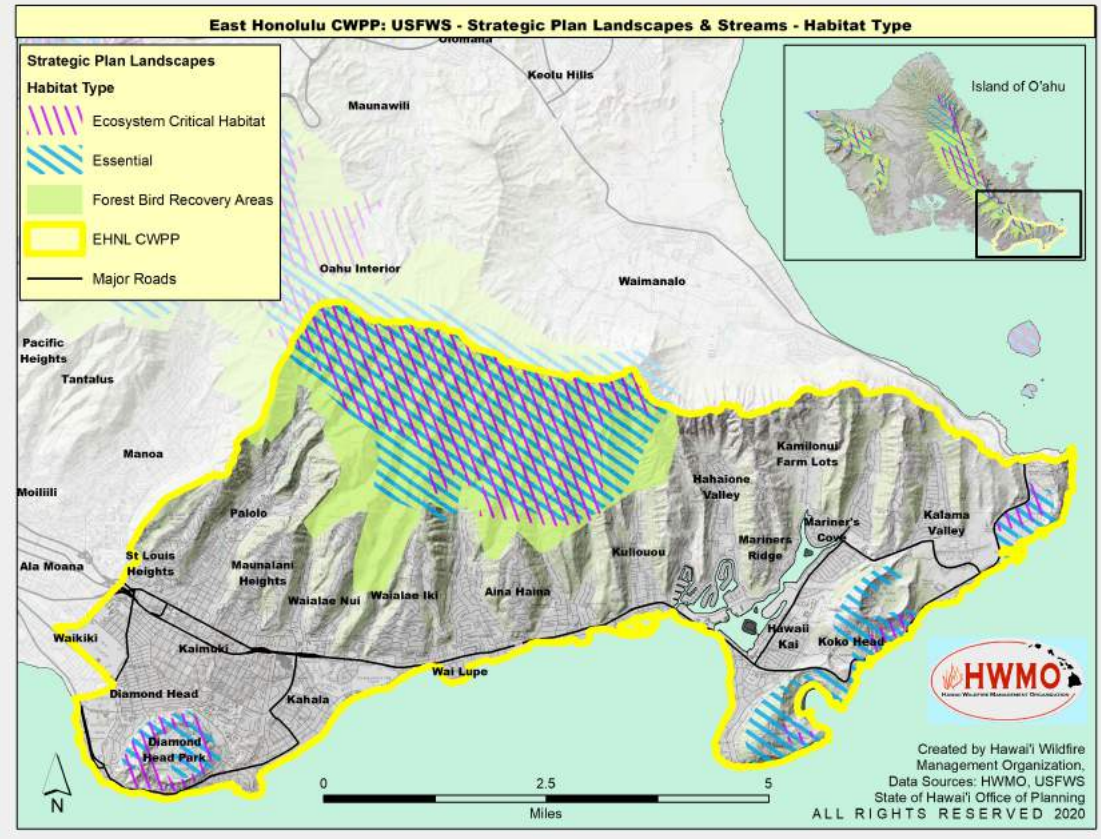
Many of the community, economic, natural, and cultural resources in East Honolulu are exposed to wildfire impacts. These impacts are compounded by the fact that land-based, aquatic, and marine-based natural and cultural resources all lie within close proximity across the region.

IMPACTS TO NATURAL RESOURCES

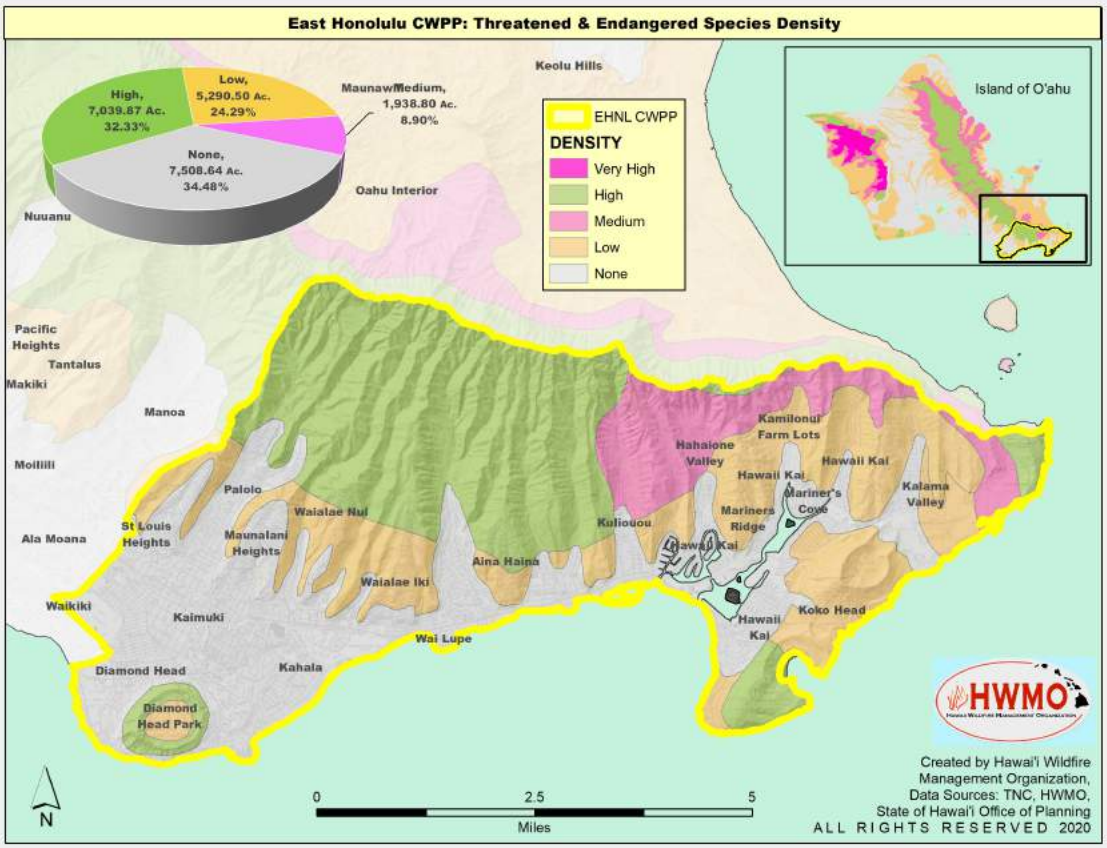
Recurrent wildfires result in the conversion of both native and non-native forested areas to fire-adapted grasslands and shrublands. As a result, these fire-prone ecosystems are expanding in many parts of the state. Wildfire is a major cause of native ecosystem loss and degradation.

Many of the natural and cultural resources across the East Honolulu CWPP area are exposed to wildfire impacts given the high number of human-caused ignitions in densely populated areas and the dominance of highly flammable fuels at lower elevations. These impacts are compounded by the fact that land-based, aquatic, and marine-based natural and cultural resources all lie within close proximity across the region.

The planning area contains important remnant native coastal strands and dryland vegetation, as well as rare and endangered species (Maps 14 and 15), some at critically low numbers—all of which may be in the direct path of future fires. For example, the endangered carnation Schiedea adamantis is known historically from a single population on the dry slopes of Diamond Head. The seasonal



Map 14. Critical Habitat within the East Honolulu CWPP Planning Area.



Map 15 . Density of Threatened and Endangered Plants within within the East Honolulu CWPP Planning Area.

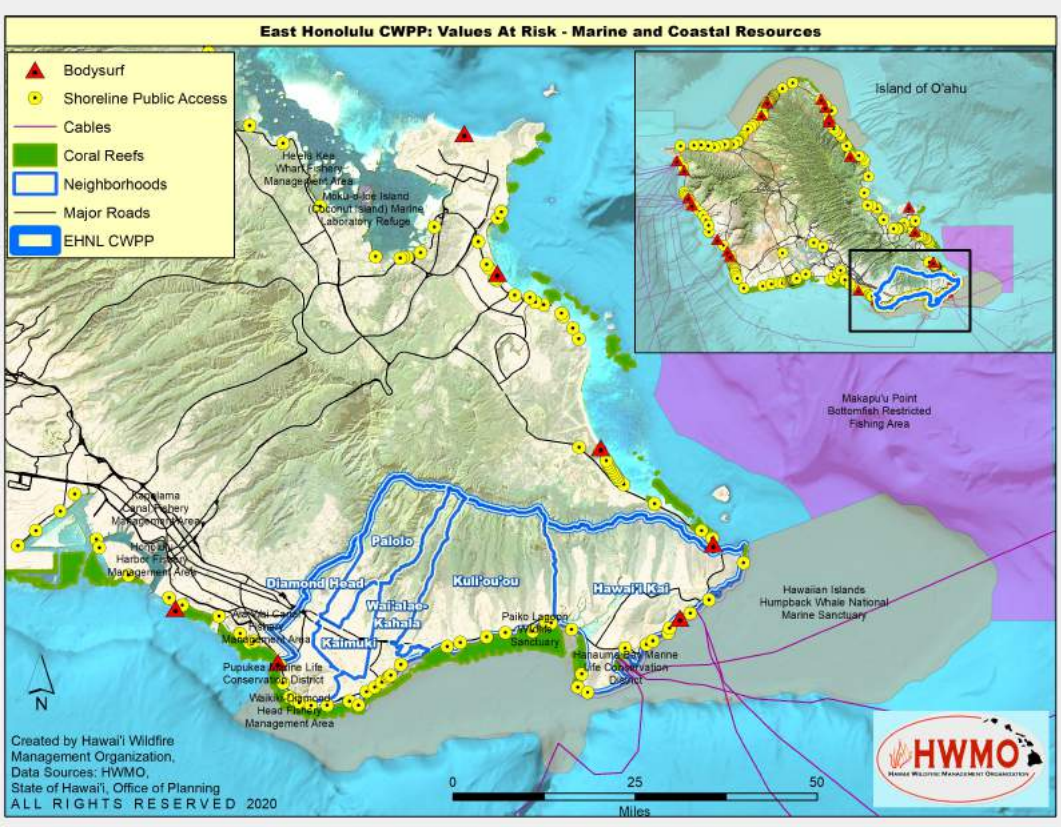
'ihi'ihi fern (Marselia villosa) is found at both Hanamuma Bay and Kaiwi, while fragmented, relic dryland Wiliwili trees (Erythrina sandwicensis) persist between 200 - 400 ft from Wai'alae Nui to Kamilonui. The Kaiwi coastline is the last undeveloped stretch of land in East Honolulu housing native A`ali`i shrublands (Dodonaea viscosa), coastal strand vegetation, and a habitat for the endangered yellow-faced bee (Hylaeus species). White-tailed Tropicbirds (Phaethon lepturus) are known to nest at both Koko Crater and the cliffs of Kaiwi. While the species is not considered rare, seabird nesting sites in the main Hawaiian islands have been greatly reduced across their former range by predators and development.

The upland areas of the southern Ko'olau mountains house remnants of formerly biologically diverse native ecosystems of O'ahu with pockets of threatened, endangered species and their critical habitats. For example, the CWPP area encompasses Board of Water Supply watershed lands, portions of the Honolulu Watershed Forest Reserve, and the Kuli'ou'ou Forest Reserve, all of which have endangered species (the latter is designated for public hunting and hiking). The CWPP area includes several US Fish and Wildlife Service strategic plan designations due to the protection needs of sensitive species such as the O'ahu 'Elepaio (Chasiempis ibidis), a native fly-catcher forest bird endemic to the island. In addition, populations of the O'ahu 'Amakihi (Chlorodrepanis flava) can be found in the Ko'olau mountains of East Honolulu and is likely the only surviving species of honeycreeper remaining on the island.

Remnant native species such as those described above are extraordinarily rare in East Honolulu since most of the area has long been altered by human development. These remaining Hawaiian plant and

animal species do not survive and/or recover from wildfires. More generally, the conversion of their habitat to alien grasslands due to fire not only increases the threat of species extinction but also the potential for future and larger fires by expanding the availability of fine fuels.

Wildfire also increases the potential for erosion and sediment delivery from upland to coastal and nearshore areas. The immediate loss of vegetation after a wildfire directly exposes soils to rainfall, which could potentially increase erosion in the watershed. The Ko'olau Mountains watershed is one of the most important on O'ahu, providing a main source of drinking water to a population of 1 million residents. In addition, the CWPP planning area contains six underground water aquifers from Diamond Head to Hawai'i Kai providing an estimated 2 - 6 million gallons of water per day. Loss of vegetation can increase downstream flooding and sediment delivery thereby impacting not only valuable freshwater resources but also the marine environment (Map 16). Specifically, the coastline from Diamond Head extending to Maunalua Bay and Kaiwi in the east is part of the contiguous south O'ahu humpback whale sanctuary. In addition, Hanauma Bay is designated a marine life state conservation district zone supporting a fragile reef ecosystem and associated marine life. Sediment loading destroys reefs and impacts nearshore fisheries which are an economic driver for tourism as well as subsistence resources to O'ahu families.



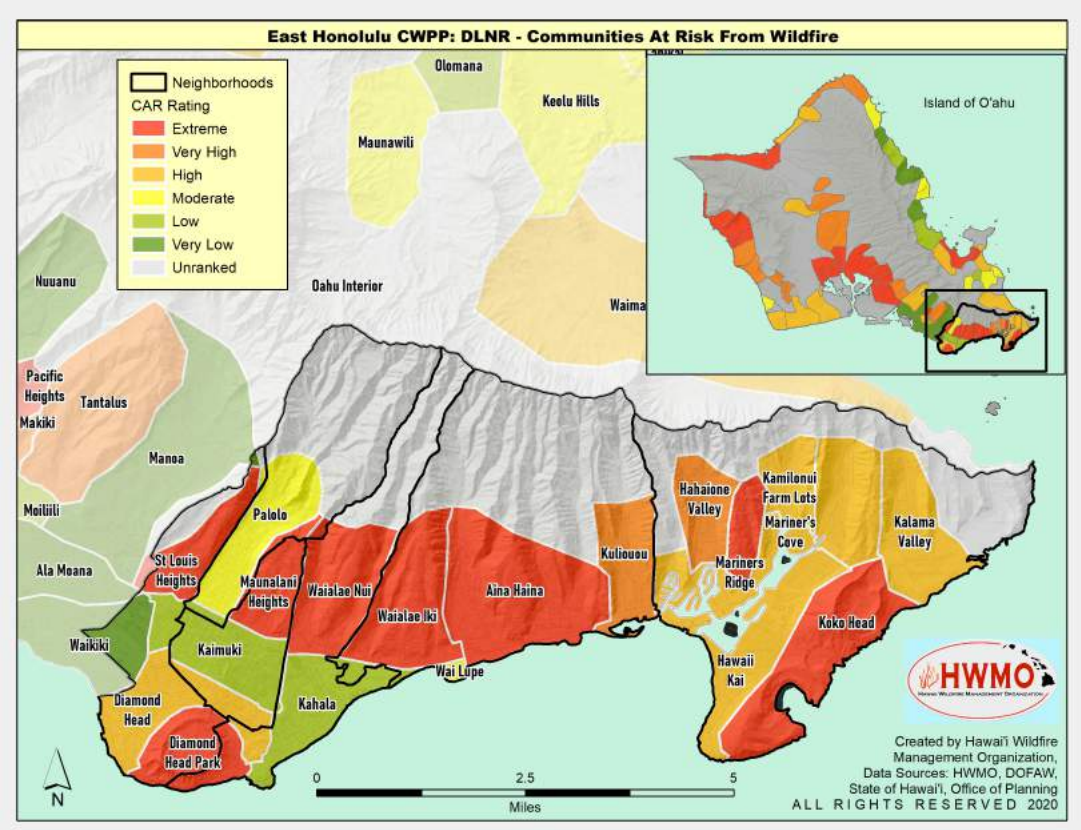
Map 16. Marine and Coastal resources and designations within the East Honolulu CWPP Planning Area.

In addition, burned areas can remain closed to the public for days to months due to landslide and tree-fall danger, limiting important public access to areas to a densely urban populace. This includes opportunities for hiking, hunting, gathering plants, and tending cultural sites. Although fire may have limited direct impacts on these resources, suppression efforts, such as water drops can damage

these important landscape features. Frequent fires also impact powerlines, communication infrastructure, and can lead to road closures – exacerbating already congested traffic areas.

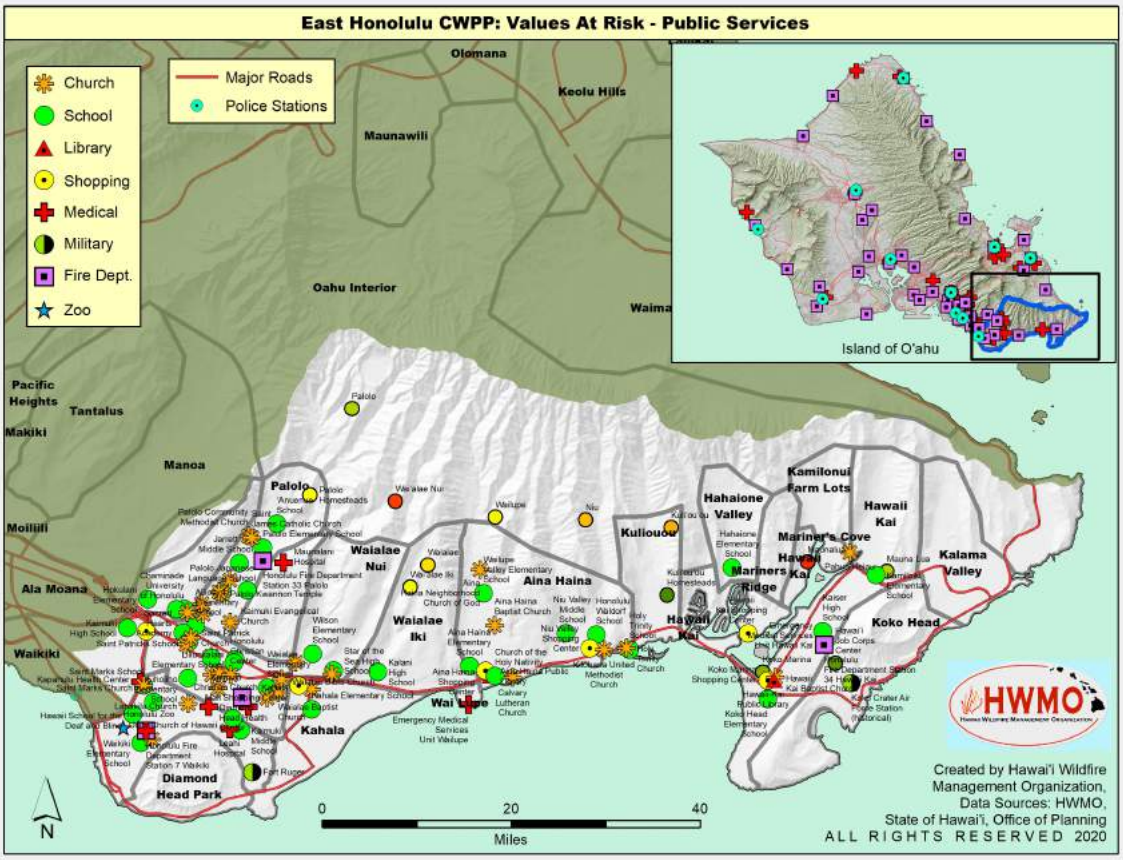
IMPACTS TO COMMUNITIES AND MUNICIPAL RESOURCES

Wildfires threaten lives, homes, and human health not only through the potential loss of life, property, and vital infrastructure but also through the degradation of soil, air, and water quality. In the past, fires have prompted highway shutdowns, evacuations of communities and recreational areas. Traffic and road closures during fire events and post-fire flooding can also block access routes and keep people from their homes and work and are costly to local government. This can be especially disruptive in the East Honolulu area which has a high density of both tourists and residents. In total, fourteen of the eighteen residential communities identified in Map 17 are rated at high to extremely high risk of wildfire.

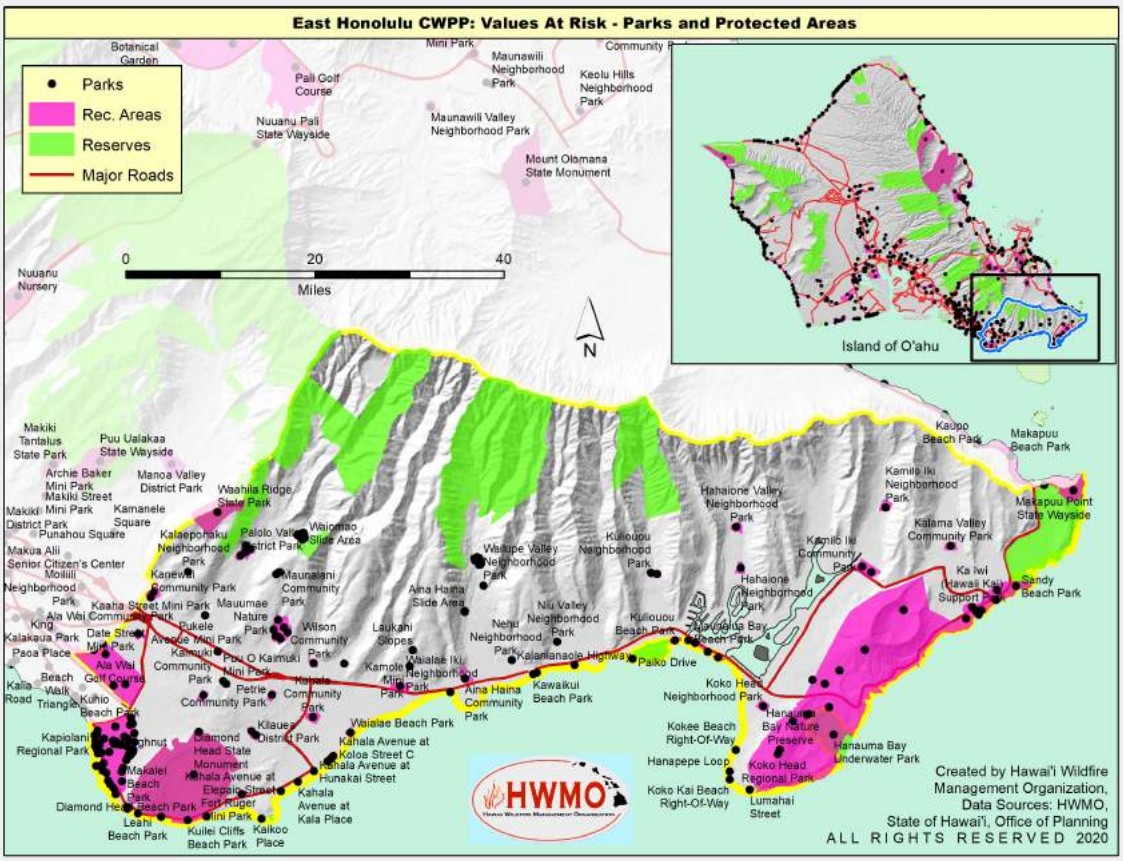


Map 17. Communities at risk from wildfires within the East Honolulu CWPP Planning Area. Note most are assessed and rated as high risk.

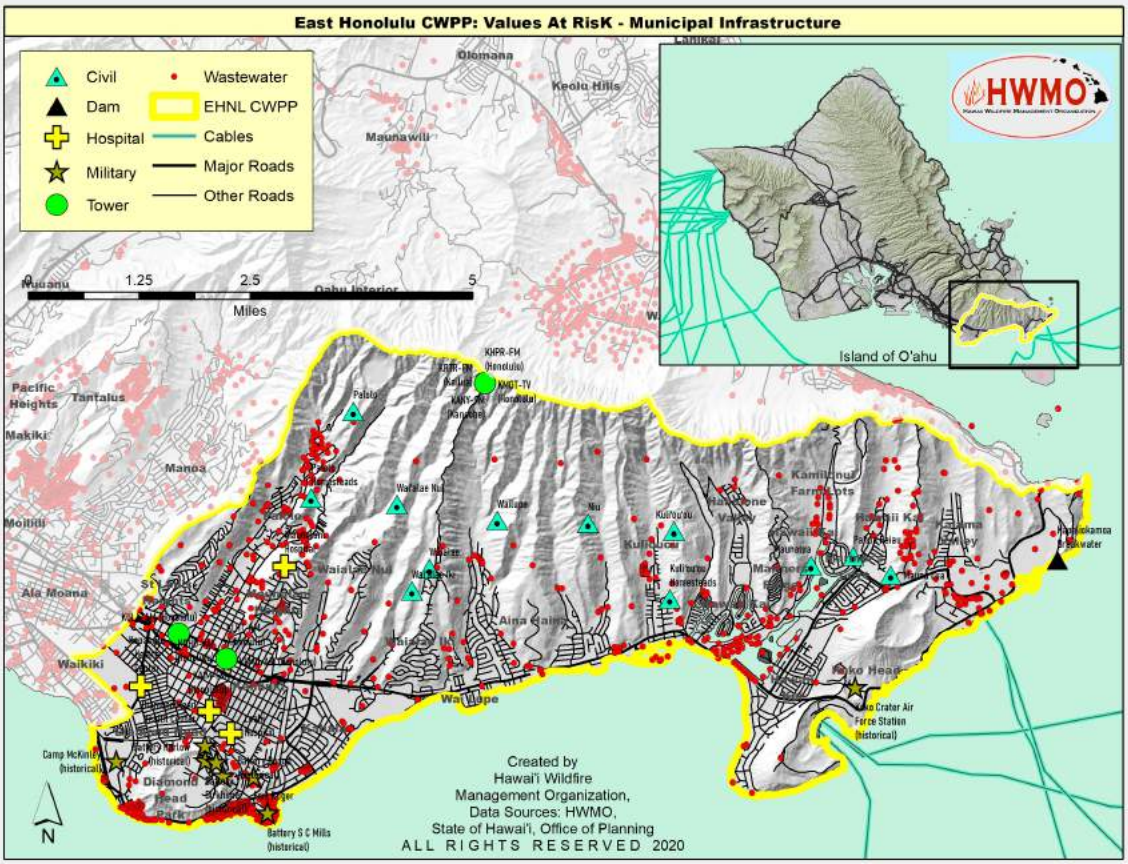
Even a small fire could have disruptive and damaging effects in East Honolulu. An area spanning ten miles supports about 51,000 residents as well as their public services (Map 18), parks (Map 19), recreational areas, beaches, natural areas, and infrastructures (Map 20). Burned soil from wildfires decreases groundwater recharge, which if widespread could impact both surface and groundwater, specifically in the valuable Ko'olau Mountains watershed, streams, and various underlying aquifers.



Map 18. Public services at risk of wildfire within the East Honolulu CWPP Planning Area.



Map 19. Parks and protected areas within the East Honolulu CWPP Planning Area.



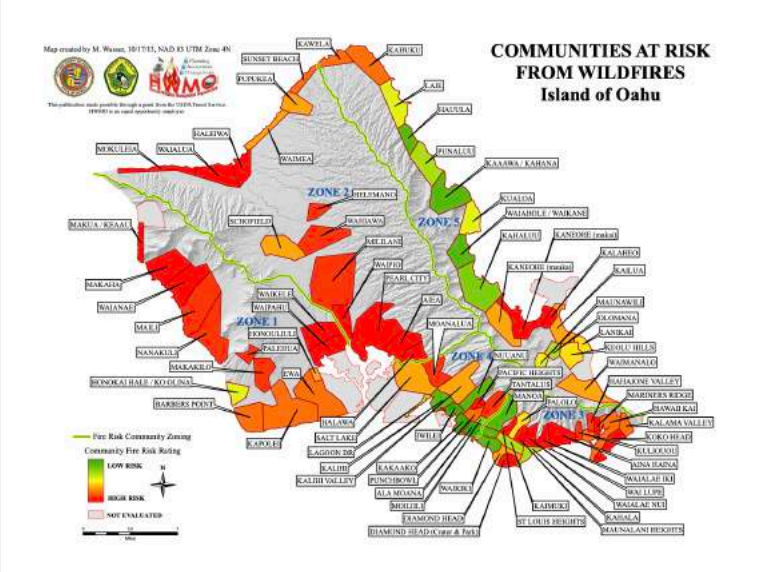
Map 20. Municipal infrastructure at risk within the East Honolulu CWPP Planning Area.

As noted earlier post-fire rain events cause erosion that damages nearshore resources, which can have effects on one of the area's primary economic bases—coastal and marine-based tourism—as well as resident and visitor recreational activities.

HAZARD ASSESSMENT

COMMUNITIES AT RISK FROM WILDFIRE

For the purposes of assessing hazards and wildfire threats to resources, residential areas within the CWPP planning area were simplified into four "communities" (Map 2). The boundaries depict the areas determined by DLNR-DOFAW to have similar features in terms of wildfire hazard characteristics and have long been the boundaries used in the DLNR-DOFAW's Communities at Risk from Wildfire maps, maps created from comprehensive assessments to depict wildfire threats to developed areas and communities.



Map 21. Map of Communities at risk from wildfire across O'ahu, 2012.

In the 2012 Communities at Risk from Wildfires map (right), which is the most recent of these maps for O'ahu, the majority of communities within East Honolulu are rated as either high or extremely high risk (Map 21). Do note that this map ONLY rates areas where there are residents living, built structures, and neighborhood developments. Gray areas on the map indicate that no humans inhabit the area, and therefore, were not assessed using this method.

WILDFIRE HAZARD ASSESSMENT

The purpose of the required community risk assessment is to:

- Provide site-specific information to the public to promote wildfire awareness.
- Help identify and prioritize areas for treatment.
- Determine the highest priority uses for available financial and human resources.

The methods for this plan's community wildfire risk assessment followed the guidelines established by the HFRA. The wildfire risk assessment also follows the guidelines and requirements of the FEMA Pre-Disaster Mitigation program and the National Fire Plan. Locally, we have opted to name the effort Wildfire Hazard Assessment, rather than Wildfire Risk Assessment.

In partnership with DLNR-DOFAW, HWMO assessed the communities within East Honolulu using a process that rates 21 wildfire hazard characteristics, which have been further grouped into three categories: Subdivision Hazard, Vegetation Hazard, and Building Hazard.

The purpose of looking in depth at each category and specific hazard is to identify the factors that put each community most at risk, and to enable mitigation action plans and activities that are targeted toward reducing risk in the factors that most need attention per area.

Table 2 below provides the detailed categories assessed within each of the three categories. A weighted calculation determines the final rating for the category. Table 3, which follows, provides the ratings per area per hazard category.

Hazard Category	Individual Hazards Assessed Within Category
Subdivision Hazard	Fire Service Access Home Setbacks Ingress/Egress Private/Landowner Firewise Landscaping and Defensible Space Proximity of Subdivision to Wildland Areas All Season Road Condition Road Maintenance Road Width Street Signs Structure Density Unmanaged, Untended, Undeveloped Land
Vegetation Hazard	Defensible Space: Fuels Reduction Around Homes & Structures Fuel Loading Fuel Structure & Arrangement Proximity of Flammable Fuels Around Subdivision Vegetation Within 300‘ of Homes
Building Hazard	Siding/Soffits Roofing Assembly Structural Ignitability Under-Skirting Around Decks, Lanai, Post & Pier Structures Utilities Placement: Gas & Electric

Table 2. Overview of hazard assessment categories and the individual hazards that comprise them within the East Honolulu CWPP Planning Area.

Hazard Ratings: (Subtotals)	Subdivision	Vegetation	Building
Waikiki	MOD	LOW	LOD-MOD
Diamond Head	MOD	LOW-MOD	LOW-MOD
Diamond Head Park	MOD-HIGH	HIGH	LOW-MOD
Kaimuki	LOW-MOD	LOW	MOD
St. Louis Heights	MOD-HIGH	HIGH	MOD
Palolo	MOD	HIGH	MOD
Maunalani Heights	MOD-HIGH	HIGH	MOD
Wai'alae Nui	MOD-HIGH	HIGH	MOD
Kahala	MOD	LOW	MOD
Wai Lupe	MOD	LOW	MOD
Aina Haina	MOD-HIGH	MOD-HIGH	MOD
Kuliouou	MOD	MOD-HIGH	MOD
Hawai'i Kai Mauka (North of Hawai'i Kai Rd)	MOD	MOD-HIGH	MOD
Hawai'i Kai Central	MOD	LOW	MOD
Hawai'i Kai Makai (South of Kalanianiole)	MOD	MOD	LOW
Mariners Ridge	MOD	MOD-HIGH	MOD-HIGH
Koko Head	MOD	HIGH	LOW-MOD
Kamilo Nui Farm Lots (1rd closed/private land)	HIGH	HIGH	HIGH
Mariners Cove	MOD	MOD-HIGH	LOW
Kalama Valley	MOD	MOD-HIGH	LOW-MOD
Hahaione	MOD	HIGH	MOD

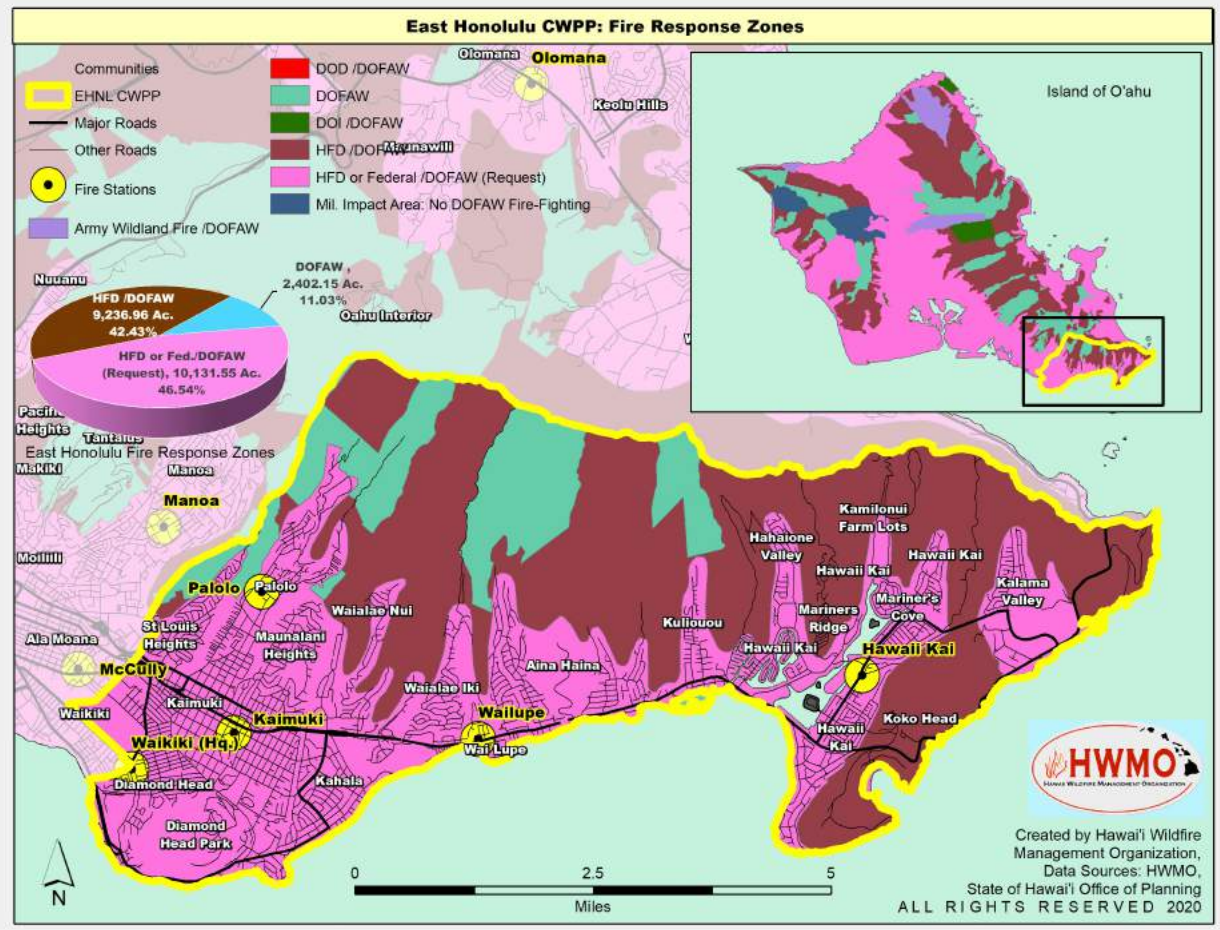
Table 3. Hazard assessment ratings per subdivision/community area within the East Honolulu CWPP Planning Area. Priority hazards to address are shown in red.

EMERGENCY RESPONSE

FIRE SUPPRESSION

Initial response to the majority of wildfires (as well as all medical and other emergencies) is the responsibility of City and County of Honolulu Fire Department (HFD). State Division of Forestry and Wildlife (DLNR-DOFAW) responds to wildfire events on state lands and provides additional wildland firefighting assistance when state lands are threatened and/or mutual aid agreements are invoked.

HFD has resources and equipment which are spread across the entire island and made available when needed if they are not already in use. HFD has 44 fire stations across O'ahu, nearly half of which are concentrated in or near Honolulu. There are five fire stations within the CWPP planning area and two additional just outside the CWPP boundaries (Map 22). The HFD suppression force lies



Map 22. Fire response zones within the East Honolulu CWPP Planning Area. Indicates areas where fires are suppressed by Honolulu Fire Department and/or DLNR-DOFAW.

within the Fire Operations division of HFD. The Fire Operations division responds to fires, hazardous materials incidents, technical rescues, natural disasters, and emergency medical calls. HFD also participates in many wildfire-relevant nonemergency activities to enhance public safety and maintain

response readiness: commercial and public school fire inspections; pre-incident planning; public education (including prevention); community risk reduction; and code enforcement.

DLNR-DOFAW is the primary responder for wildfires on lands managed by the state, which accounts a portion (approx. 11%) of the East Honolulu CWPP planning area. DLNR-DOFAW also co-responds with county and federal fire agencies, which is determined by mutual aid agreements and memoranda of agreement or understanding. In addition to suppression, DLNR-DOFAW manages and protects natural and cultural resources, as well as public use and recreation on lands within DLNR-DOFAW jurisdiction.

FFD is a Department of Defense multi-service Fire Department that was consolidated in 1979 from Army, Navy, and Air Force fire departments. On O'ahu, FFD now provides fire protection and emergency medical services to all Department of Defense military installations (198 square miles), and provides mutual aid to the City and County of Honolulu (396 square miles) upon request.

Army Fire is specialized toward wildland fire management, and responds to wildfires within its designated and mutual response jurisdictions on behalf of the U.S. Army. While active in the protection of life and property from fire, the U.S. Army also works toward the protection of the state's endangered plant and animal species through numerous prevention and protective initiatives.

EMERGENCY MANAGEMENT DOCUMENTS AND OTHER PLANS

The CWPP is non-regulatory and cooperative in nature. The plan provides (1) a foundation for increased communication, coordination and collaboration among agencies and the public, (2) identification and prioritization of areas for hazardous fuel reduction projects and wildfire mitigation actions, and (3) assistance meeting federal and state planning requirements and qualifying for assistance programs. The CWPP is designed to work in conjunction with other county and state plans, operational policies, assessments, and programs, etc., including but not limited to:

City and *County of Honolulu:*

The Multi-Hazard Pre-Disaster Mitigation Plan for the City and County of Honolulu (2020)
City and County of Honolulu Drought Mitigation Strategies
Board of Water Supply East Honolulu Watershed Management Plan

State of Hawai'i:

State Drought Plan (2017)
State of Hawai'i Hazard Mitigation Plan (2023)
State Division of Forestry and Wildlife Operational Policy for Wildfire Control
DLNR Forest Action Plan (2016)

Preparedness Guides

Ready, Set, Go! Wildfire Action Guide, Wildfire & Drought Lookout!
Homeowner's Handbook to Prepare for Natural Disasters (University of Hawai'i, Sea Grant)
Hawaiian Electric Emergency Preparedness Handbook

MULTIPLE-AGENCY AGREEMENTS

Memoranda of Agreement, Memoranda of Understanding, and/or Mutual Aid Agreements are in place among HFD, DLNR-DOFAW, FFD, and Army Fire. These agreements identify the suppression responsibilities of each party as well as other fire management activities such as joint participation in prevention, training, and equipment acquisition. Fire response zones are delineated in Map 23.

EVACUATION PROTOCOLS AND NEEDS

Evacuation protocols for neighborhoods and areas in East Honolulu have been determined for natural hazards such as tsunamis, and can be found in the documents listed below. However, fire safety zones for all neighborhoods and areas of East Honolulu are yet to be determined, and are a priority action determined by the public as part of this CWPP process. Currently, the HFD Incident Commander determines the need for evacuation and works with HPD and DEM depending on the size of the area that needs to be evacuated? Evacuation orders are issued by the on-scene incident commander and where necessary disseminated using the Integrated Public Alert and Warning System and the all-hazards outdoor siren system.

The following resources are available for disaster planning and preparedness:

- City and County of Honolulu Department of Emergency Management website
- State Emergency Operations Plan #4: Firefighting
- Tsunami Evacuation Zones
- Pacific Tsunami Warning Center
- National Weather Service Central Pacific Hurricane Center

STATE FIRE CODE

The Hawai'i State Fire Code is adopted by the State of Hawai'i according to Chapter 132 of the Hawai'i Revised Statutes, with modifications to the 2018 National Fire Protection Association 1 Fire Code. The Fire Code of the City and County of Honolulu is adopted with modifications from the State Fire Code. For more information on City and County of Honolulu and Hawai'i State Fire Codes, visit https://fire.honolulu.gov/fire-code/

WILDFIRE PREVENTION

Several agencies are working both independently and collaboratively on wildfire prevention activities in the East Honolulu CWPP area.

HFD Fire Prevention Bureau works toward saving lives and property and protecting the environment by promoting fire prevention and other public safety education programs. HFD Fire Prevention Bureau administers the fire prevention program for the City and County of Honolulu; plans and develops rules, regulations, and procedures in the enforcement of fire codes; assists in the formulation and revision of the State Fire Code and the Fire Code of the City and County of Honolulu; administers fire safety and education programs; administers plans reviews; develops and

conducts a fire inspection program; and conducts fire investigations to determine the origin and cause of fires within its jurisdiction.

DLNR is statutorily mandated to take measures for the prevention of wildland fires within DLNR-DOFAW managed lands and to cooperate with county and federal fire agencies in developing plans and programs for prevention assistance of wildfires on lands not managed by DOFAW. **DLNR-DOFAW** is involved with and committed to the following community risk reduction initiatives: supporting the development and action plans of Community Wildfire Protection Plans, locally administering the U.S. Forest Service Wildland-Urban Interface grant program, serving as the state liaison for the Firewise USA™ community risk reduction program (in partnership with HWMO), and administering State Legislature Grant-In-Aid awards given to local organizations who are working on wildfire-related projects (in 2021, these include HWMO and Ka'ala Farm, Inc.)

HWMO is a nonprofit organization founded in 2000 to focus on wildfire prevention and risk reduction activities. The organization serves as a hub of wildfire information, mitigation, and project assistance across Hawai'i. HWMO supplements and complements agency wildfire efforts, aims to meet community hazard reduction needs, and coordinates/leads multi-jurisdictional and multi-partner wildfire projects. HWMO develops and offers educational wildfire prevention, preparedness, and planning workshops for diverse audiences and stakeholder groups; leads the development of Community Wildfire Protection Plans and fire management plans; serves as the community liaison for the Firewise USA program (in partnership with DLNR-DOFAW), assisting communities with their applications, renewals, and offering learning and connecting opportunities among the 15 Firewise-recognized communities across Hawai'i; leads multi-partner wildfire collaboration projects and groups; and implements cross-boundary fuels management projects. HWMO also collaborates closely with the Cohesive Wildland Fire Management Strategy, Western Region and the Fire Adapted Communities network, liaising with and sharing best practices between Hawai'i and national partners. HWMO works together with the University of Hawai'i to implement the Pacific Fire Exchange project, a fire science communication project that develops, collates, and shares best available wildfire information on behalf of a broad partnership that includes DLNR-DOFAW, USDA Forest Service, County Fire Departments, and other forestry and fire entities.

University of Hawai'i at Mānoa College of Tropical Agricultural and Human Resources (UHM-CTAHR) has several researchers, extension specialists, and some graduate students who synthesize and develop new information on topics pertaining to wildfire. Faculty expertise includes range management, forestry, ecology, social science, and fire science which has contributed to a range of wildfire-related products such as fuels data, maps, risk models, and other information. HWMO and UHM-CTAHR Cooperative Extension partner to implement the Pacific Fire Exchange project (PFX). PFX is a fire science communication project that works to improve the availability and sharing of fire science relevant to the Pacific Island region to support and inform the wildfire mitigation work of land managers and emergency responders.

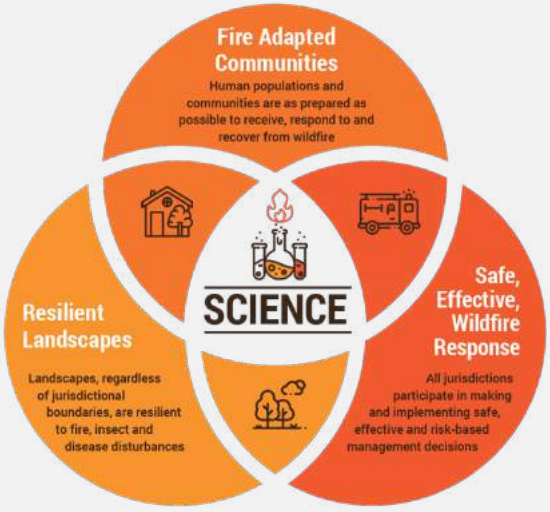
Together, **all of the above entities** participate in and support the multi-agency statewide *Wildfire and Drought Lookout!* awareness and preparedness campaign each year; conduct wildfire hazard

assessments (often in partnership with each other); and collaborate whenever possible to protect life, property, and natural resources from the impacts of wildfire.

PART III
WILDFIRE ACTION PRIORITIES

WILDFIRE ACTION PRIORITIES

NATIONAL COHESIVE WILDLAND FIRE MANAGEMENT STRATEGY



The ***National Cohesive Wildland Fire Management Strategy*** (subsequently referred to as Cohesive Strategy) encourages communities to develop a dynamic approach to planning for, responding to, and recovering from wildland fires. It provides a framework for wildfire-related discussions, efforts, and goals across the United States. The overarching national strategy is further divided into three regions for tighter collaboration and coordination in each area. Hawai'i falls into the Western Region. The three categories are Fire-Adapted Communities; Resilient Landscapes, and Safe and Effective Wildfire Response. ***Considering each and addressing all three is necessary for effective wildfire preparedness and protection***.

Public and government agency participants identified hazard reduction priorities for East Honolulu within the Cohesive Strategy categories, after first having an opportunity to learn more about each category of wildfire preparedness and safety challenges and goals. This participant input was collected via two live virtual workshops and a web-based survey. The live workshops were facilitated toward the discussion and recording of wildfire-related concerns, priorities, and recommended actions per category. Additional focused conversations were also facilitated per residential area, to capture each area's unique wildfire issues and next-step priorities. A web-based survey followed the format of the live workshops, asking participants who were unable to attend the workshops for their highest priority wildfire-related concerns per category, along with suggested actions for addressing those concerns.

Both live-workshop and web-survey input have been combined and integrated into the discussion and priorities provided below for addressing wildfire in East Honolulu. An independent summary of data from the web-based survey is provided in Appendix C.

RESILIENT LANDSCAPES

DISCUSSION

Across East Honolulu, vegetation is dense, dry, and very flammable. Workshop participants discussed the need for sustained reduction of fuels and an increased capacity to manage vegetation for the long-term. Upland native ecosystems, the Kaiwi coastline and endangered species in Diamond Head State Park were considered vulnerable to fire and in need of vegetation management (alien grasses).

GOALS

Landscapes (natural and culture resources) across all jurisdictions and land ownerships must be supported to become resilient to fire-related disturbances in accordance with management objectives. This includes the following:

1. Risk of wildfire occurring and impacting lands and waters is diminished.
2. Pre-fire hazards are managed and mitigated (reducing ignitions/managing vegetative fuels).
3. Sensitive resources are minimally or not damaged during wildfire events by the firefighting effort.
4. Post-fire recovery, rehabilitation, and restoration are supported.

ACTION PRIORITIES

- Mitigate threats to aquatic and terrestrial natural resources (wetlands, forests, endangered species)
  - Areas of concern include Diamond Head State Park (habitat for endangered species) and invasive fountain grass found there
  - Native ecosystems adjacent to Kailua and Kaneohe are also of concern and contain important forests and wetlands
  - Prevent the spread of invasive species (fountain grass which promotes fires)
  - Protect rare plants and animals (O'ahu 'Elepaio) habitat from fire
  - Plant native species to prevent erosion after fire
- Reduce vegetation fuels buildup
  - Areas of concern include Kaiwi coastline where people, roads, and vegetation intersect to create fire hazards
  - Weed whack/remove non-native grasses and use grazing (goats/sheep) to reduce vegetation
  - Install fuel breaks
- Mitigate vulnerable fire-prone zones
  - Kokohead park (shooting range) is an area of concern where ignitable vegetation exists behind firing range
  - Community groups (such as Kamilo Nui) can help identify these and other areas for possible outreach and education among users

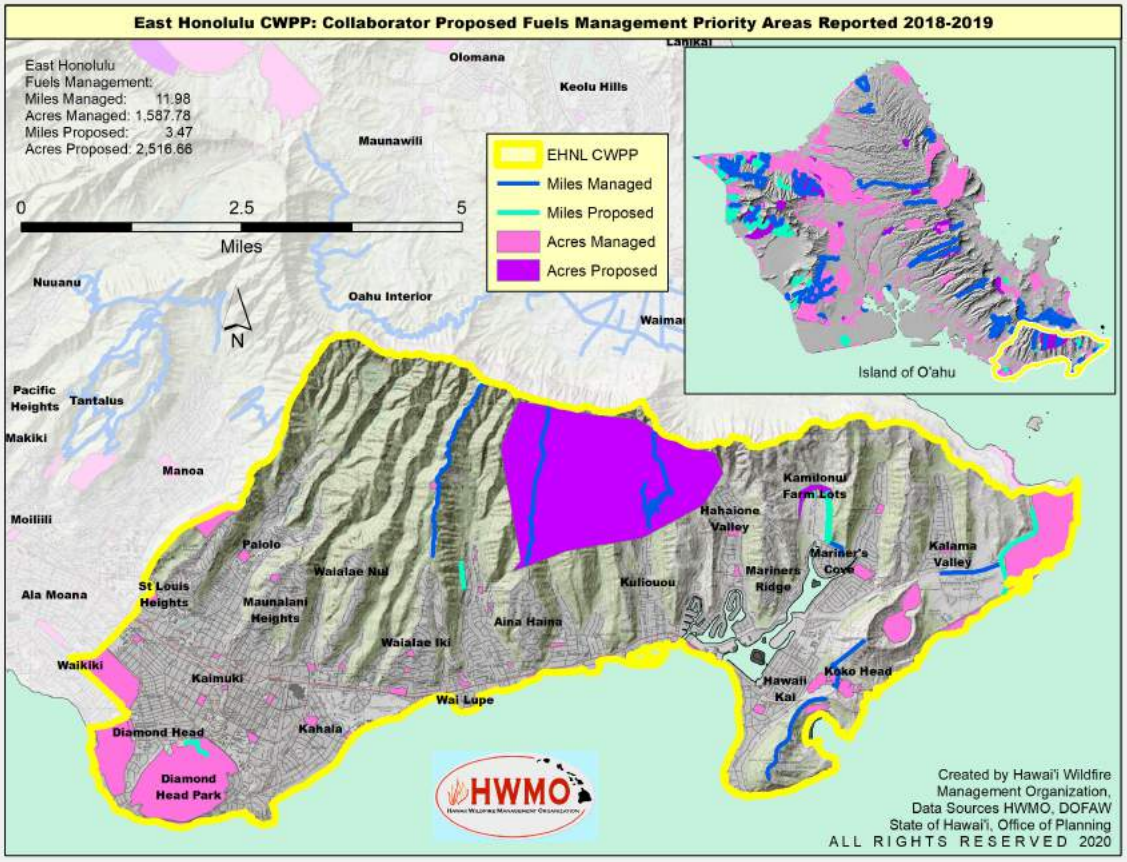
Additionally, a CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure. Based on the fuel hazard ratings acquired during the hazard assessment, recommendations for the type and method of vegetative fuel reduction treatments for high fuel hazard areas are listed in Table 4 below.

Resource, Structure, or Value at Risk	Fuel Hazard Rating	Type of Treatment
Mauka forest lands, parks, reserves	High or Extreme if unmanaged and weather conditions dry	Mechanical, hand labor, chemical, fuels conversion, animals if strategically managed
Gentle sloping grasslands and scrublands	High or Extreme if unmanaged and weather conditions dry	Mechanical, hand labor, chemical, fuels conversion, animals if strategically managed
Homes, structures with large lots or heavy vegetation, and historical sites	Moderate to Extreme	Firewise strategies around the home/ structure ignition zones. Reduce fuel along property boundaries and roadsides. Weedwhip, hand-pull, mow, grazing, herbicide, trim branches. Clear debris piles. Convert fuels to drought-tolerant, fire-resistant (preferably native) plants. Reduce ladder fuels. Complement vegetation management strategies with home hardening (replace ignitable/burnable materials with non combustible materials).
Roadsides	Moderate to Extreme (depending on location and weather conditions)	Conduct roadside fuels treatments at frequency that matches fuel growth (keep low), maximize width of roadside reduction areas. Develop a grazing corridor/buffer for long-term fuels management. Convert roadside fuels to fire-resistant plants that require little or no maintenance and are less ignitable.
Unmaintained Agricultural lands	Moderate to Extreme (depending on location and weather conditions)	Mechanical, animal, chemical, re-establish active agriculture.

Table 4. Hazardous fuels treatments for the East Honolulu CWPP Planning Area.

In 2018, land managers across Hawai'i contributed to a fuels management mapping project, wherein those who chose to participate indicated areas that have some level of active fuels management occurring. The project was coordinated by HWMO, also the coordinator and writer of this CWPP. Participants in the mapping project also indicated areas additional areas they believe would be necessary to address with fuels management activities to achieve optimal fire mitigation. While participation was voluntary, and therefore, not a complete representation of all that is occurring and

needed in East Honolulu, it does provide a starting point for discussion and fuels management project planning (Map 23).



Map 23. 2018 - 2019 fuels management activities as identified by East Honolulu participants and partners.

FIRE ADAPTED COMMUNITIES

DISCUSSION

Despite past fires, some residents in East Honolulu are not as informed, engaged, or active in wildfire preparedness and hazard reduction as is necessary for optimal safety and prevention. Community outreach and education programs, technical assistance, opportunities, and capacity-building are needed. Abandoned vehicles and rubbish are building up in certain areas. Some places are not designed for safe and effective firefighting.

GOALS

Human populations and infrastructure must be able to withstand wildfires without loss of life or property. Communities must become as prepared as possible to endure, respond to, and recover from wildland fire. Everyone must know they play a role in prevention and safety and must do their part. This includes the following:

1. Roles and responsibilities established in all jurisdictions and across all communities and landownership for mitigating fire threats and impacts.
2. People accept and act upon their responsibility to prepare families and properties.
3. Risk to community areas and resources, including municipal resources, is diminished.
4. Effectiveness of activities is monitored and shared and is relevant to local mitigation and other plans.

ACTION PRIORITIES

- Improve neighborhood (roads) and wildfire suppression (water) infrastructure
  - Install wide fire breaks, 2-ways in/2-ways out; turnarounds, and restrict parking to one side of the road
- Reduce human-caused ignitions from fireworks, encampments and improperly disposed debris
  - Specifically, abandoned trash and vehicles in Kalama Valley, Waimanalo, and Ka`iwi coastline are a problem
  - Clear vegetation and install firebreaks, roads & paths
  - Reduce the threat of illegal fireworks (increase enforcement and consider pilot program to increase inspections of cargo/containers)
- Increase awareness of wildfire prevention among residents and businesses
  - Campaigns targeted towards schools, neighborhood boards, businesses
  - Encourage participation in Firewise program and early reporting (see something, say something)
  - Ensure coordination between community members and the Honolulu Fire Department
  - Encourage Provide information, and pursue outreach and education programs for residents and area managers to treat structural ignitability of homes and buildings.*
- Have community wildfire preparedness standards and messaging
  - Ensure Firewise Communities have the same level of interest/concern and stay alert to threats
  - Consider outreach efforts via conservation groups, social media, and email campaigns
  - Establish volunteer sign-up networks to clear the vegetation and clean up trash

** Strategies for treating structural and home/yard ignitability in Hawai'i have been established through the Hawai'i version of the Ready, Set, Go! Action guide. This informational resource is included as Appendix A of this document and should be used by residents in East Honolulu to treat structural, home, and yard ignitability.*

SAFE AND EFFECTIVE WILDFIRE RESPONSE

DISCUSSION

Despite the urban nature of East Honolulu, some residential areas are not adequately set up for wildfire response. The most pressing issues are limited ingress/egress for ridge communities, lack of water, and vacant lots or unknown landowners with unwanted vegetation.

GOALS

All jurisdictions will continuously work together toward making and implementing safe, effective, efficient risk-based wildfire management decisions to ensure that:

1. Injuries and loss of life for the public and firefighters are diminished.
2. Adequate infrastructure and capacity: water, access, equipment, training.
3. Pre-fire multi-jurisdictional planning occurs.
4. Response, esp. when jurisdiction is shared, is efficient and effective.

ACTION PRIORITIES

- Adequate wildfire suppression (water) infrastructure
  - Ensure access to water for out-planting, maintaining animals for grazing & fuels reduction, and fire fighting operations (dip tanks)
  - Develop alternative fire fighting resources means (resident's pools for dip sources, rain collection systems, etc.)
  - Develop a system of water tanks and cisterns for use by firefighters, for both ground and aerial operations.
- Prepare community emergency/evacuation plan(s)
  - Ensure plans have the most up-to-date maps of access roads for community evacuation
  - Engage with neighborhood boards and neighboring communities for evacuation planning
  - Designate meet-up points and escape routes
  - Coordinate with the Honolulu Fire Department for private property access
- Incentivize hazard reduction, especially in lots where the owner is unknown (or not present)
  - Determine land ownership and attempt to contact absentee property owners to remove unwanted vegetation
  - Amplify lobbying for county ordinances regulating hazard removal
  - Pursue financial support for hazard mitigation programs and personnel within the fire department.
  - Develop a reporting system for the community to become aware of problem areas
- Increase firefighting access around community-wildland interfaces via fuel breaks to prevent fire spread into wildland areas above low-elevation communities, and to prevent fire spread from fuels on slopes beneath hill and ridge-top communities into residential areas on the perimeters.

CWPP IMPLEMENTATION AND MAINTENANCE

HFRA requires that the City & County of Honolulu Fire Department (HFD) and Department of Emergency Management (DEM), and Hawaii Division of Land and Natural Resources- Division of Forestry and Wildlife (DLNR-DOFAW) all agree on the final contents of the East Honolulu CWPP. The plan is signed by each agency in order to meet HFRA and FEMA requirements.

Across the state and country, there is a changing understanding and paradigm related to wildfire: reducing wildfire occurrence and impacts takes the participation and action of all who live and work in an area. There is a role for everyone to play to reduce risk, enhance preparedness, and ensure the safety and integrity of our community and natural resources. Firefighting is the last line of defense, with much to also be done ahead of time to reduce fire's ability to ignite and spread and to prepare homes and people to withstand wildfire.

It is for these reasons that the East Honolulu CWPP was developed: to collaborate, co-determine priorities, and encourage participation by all parties. ***Because of the non-regulatory nature of the CWPP, the relevance and effectiveness of the East Honolulu CWPP will rely heavily upon the initiative and involvement of individuals, groups, organizations, elected officials, and government agencies in the East Honolulu area.***

Partners involved in developing this document intend to provide technical support, identify and coordinate funding when possible, and serve as resources for wildfire risk reduction efforts in East Honolulu. Together, representatives of HFD, DEM, DLNR-DOFAW, HWMO, and others can identify sources of funding for projects, document the successes and lessons learned from those projects, and evaluate and update the CWPP as needed and as possible. Area residents are urged to contribute time and effort toward creating defensible space, reducing structural ignitability, and working at the community level to initiate and maintain wildfire protection projects. Decision makers and elected officials are encouraged to support these efforts through appropriate budgets and policies.

Additionally, as Hawai'i's community liaison to the national Firewise program, and in partnership with HFD, DEM, and DLNR-DOFAW, HWMO will work with any community in East Honolulu that is interested in undergoing the Firewise USA® recognition process. This includes forming a local Firewise committee and action team, completing a comprehensive hazard assessment specific to their subdivision, and sustaining neighborhood-level action toward risk reduction. Kamilonui-Mariner's Cove is already a recognized Firewise USA® community and has kept its recognized status through successful mitigation efforts for several years now, with no anticipated change in that effort. At the time of writing, several additional communities in the area have either started the process of national recognition or have expressed interest in the program. There is a statewide network of such communities available for inspiration, the sharing of lessons learned, and next-level learning.

Many East Honolulu CWPP action items will require continuing support for wildfire risk projects. This will involve actively pursuing funding for projects, staying informed and in contact with one another, and updating this CWPP regularly so that it remains a "living" document.

Updated project priorities and additionally identified priorities will be added as appendices to this foundational document whenever possible, in an effort to keep the plan current and to support ongoing collaborative learning, planning, and implementation of projects.

All who have been involved in the development of this CWPP are committed to building community awareness of these issues so that East Honolulu will continue to make progress toward the goals of having Fire Adapted Communities, Resilient Landscapes, and Safe and Effective Wildfire Response in East Honolulu.

APPENDIX

APPENDIX A:

READY, SET, GO! HAWAI'I VERSION WILDFIRE ACTION GUIDE

APPENDIX B:

COMMUNITY MEETING INPUT

APPENDIX C:

COMMUNITY SURVEY RESULTS

APPENDIX D AND BEYOND:

ADDITIONS AND UPDATES TO PROJECT PRIORITIES

APPENDIX A

READY, SET, GO! HAWAI'I VERSION WILDFIRE ACTION GUIDE

Includes the following key information:

Wildfire in Hawai'i Overview

Ready:

- Firewise Landscaping Recommendations
- Home Hardening

Set:

Situational Awareness

Go!:

Family Emergency Evacuation Planning

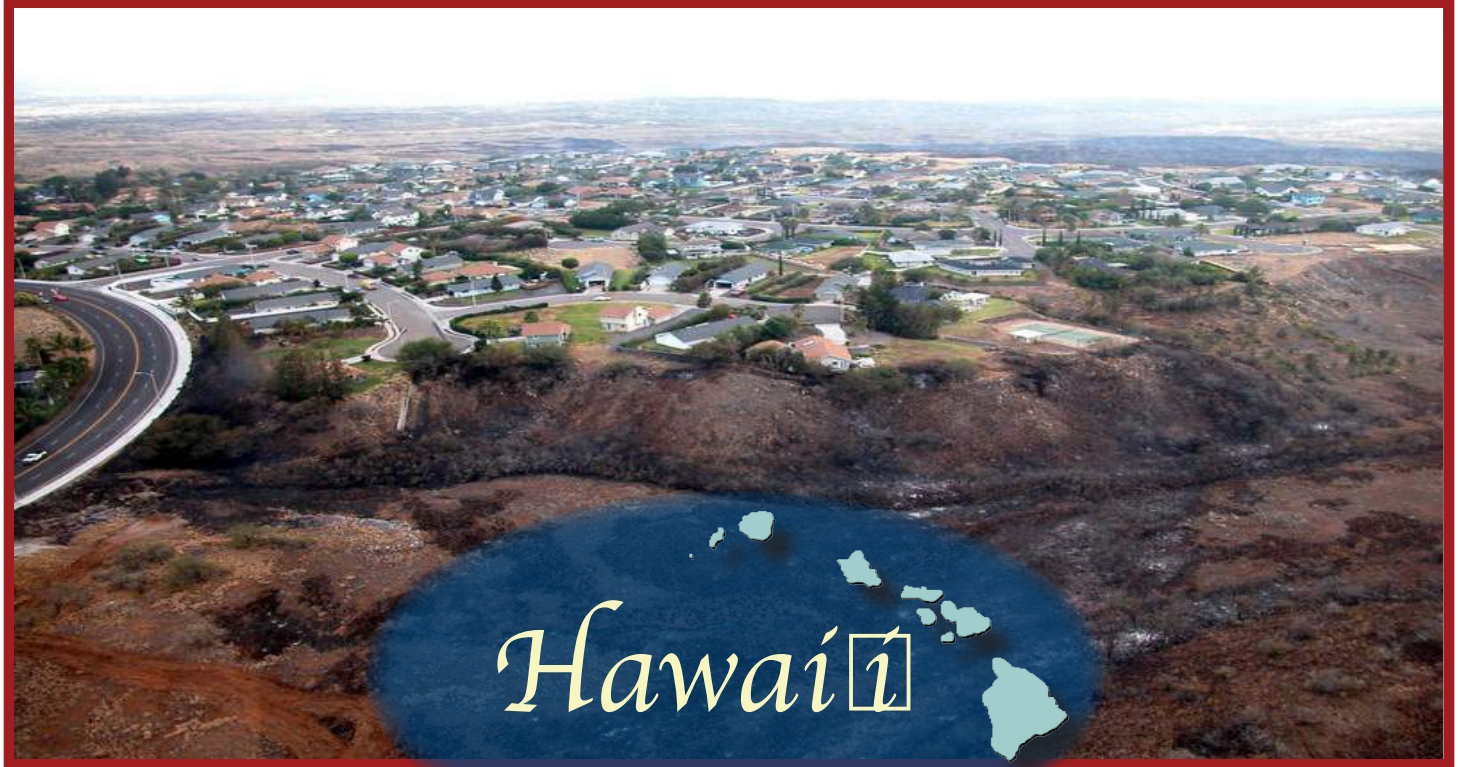
Evacuation

Items with this symbol fulfill the CWPP requirement for strategies to reduce structural ignitability.

READY, SET, GO!

YOUR PERSONAL WILDLAND FIRE ACTION GUIDE

Rev. 2021



HWMO
HAWAII WILDFIRE MANAGEMENT ORGANIZATION
HawaiiWildfire.org

This guide was developed by Hawaii Wildfire Management Organization, in partnership with:

READY, SET, GO!

READY, SET, GO!

Wildland Fire Action Guide

Saving Lives and Property
Through Advanced Planning

The fire season is now a year-round reality in many areas across the Hawaiian Islands, requiring firefighters and residents to be on heightened alert for the threat of wildland fire.

Each year, wildland fires consume hundreds of homes across the nation in the Wildland-Urban Interface (WUI), and Hawaii is at a similar risk. Studies show that as many as 80 percent of the homes lost to wildland fires could have been saved if their owners had only followed a few simple fire-safe practices. In addition, wildland fire related deaths occur because people wait too long to leave their home.

In the event of a wildland fire, our first responders take every precaution to help protect you and your property. However, the reality is that in a major wildland fire event, there will simply not be enough fire resources or firefighters to defend every home.

Successfully preparing for a wildland fire enables you to proactively take personal responsibility for protecting yourself, your family and your property. In this Action Guide, we hope to provide the tips and tools you need to prepare for a wildland fire threat (Ready), have situational awareness when a fire starts (Set), and to act early (Go!).

The Ready, Set, Go! Program works in complimentary and collaborative fashion with the Firewise USA® program and other existing wildland fire public education efforts. Utilizing firefighters and local wildland fire prevention expertise, it amplifies their messages to individuals to better achieve the common goal of wildland fire preparedness.

Many residents have built homes and landscaped without fully understanding the impact a fire can have on them and few have adequately prepared their families for a quick evacuation.

It's not a question of **if** but **when** the next major wildland fire will occur. Through advanced planning, understanding and preparation, we can all be partners in the wildland fire solution. We hope you find the tips in the following pages helpful in creating heightened awareness and a more fire-safe environment for you, your family and firefighters.

INSIDE

This publication was produced by Hawaii Wildfire Management Organization (HWMO), made possible through a grant from the USDA Forest Service and with the help of HWMO's partners from Hawaii Department of Land and Natural Resources - Division of Forestry and Wildlife, College of Tropical Agriculture and Human Resources of the University of Hawaii at Manoa, Hawaii Fire Department, Honolulu Fire Department, Kauai Fire Department, and Maui Fire Department, and the Pacific Fire Exchange project, in a cooperative effort with the International Association of Fire Chiefs. HWMO is an equal opportunity employer. The national RSG! Program is managed by the International Association of Fire Chiefs, funded by the United States Department of Agriculture Forest Service, the United States Department of the Interior, with partner support from the United States Fire Administration, Firewise USA, and the Insurance Institute for Business and Home Safety. For more information on the RSG! Program, please visit www.wildlandfireRSG.org. This Hawaii version of the RSG Action Plan is being funded in part by The Cooperative Fire Program of the U.S. Forest Service, Department of Agriculture, Region 5. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability. (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Living in the Wildland Urban Interface and the Ember Zone

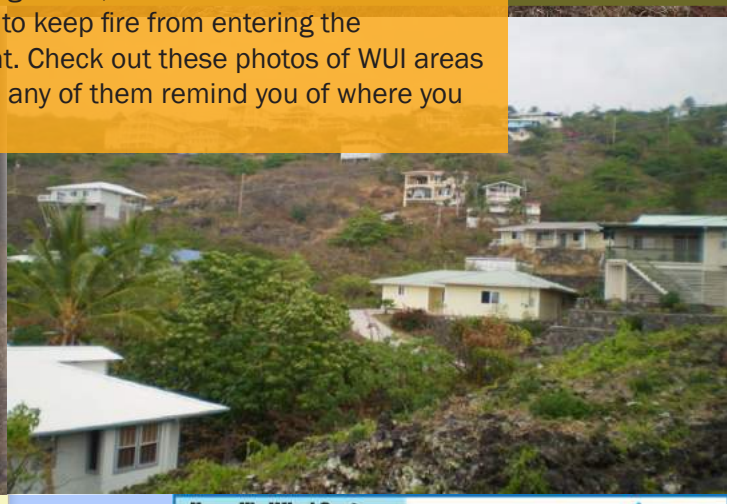
Ready, Set, Go! Begins with a House That Firefighters Can Defend

Defensible Space Works!

If you live next to a natural area, the Wildland Urban Interface, you should provide firefighters with the defensible space they need to protect your home. The buffer zone you create by removing weeds, brush and other vegetation helps keep the fire away from your home and reduces the risk from flying embers. Firewise Communities and other wildland fire preparedness education programs provide valuable guidance on property enhancements.

Consider This

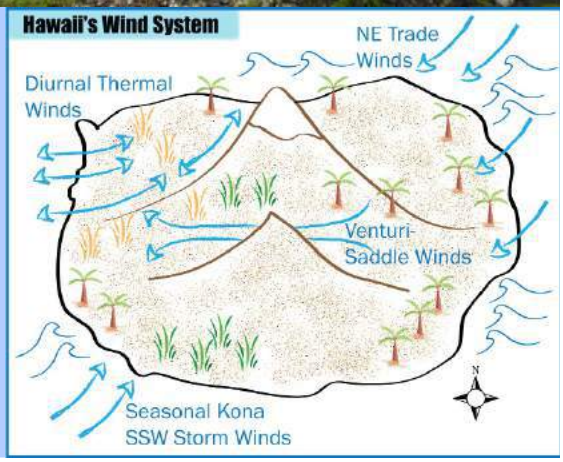
Unmanaged vegetation between and around homes increases the risk of wildland fire spreading throughout the community, endangering lives and property. Pre-fire planning, fuels management, and sufficient fuelbreaks allow firefighters the space they need to keep fire from entering the community during a wildland fire event. Check out these photos of WUI areas from different parts of the islands. Do any of them remind you of where you and your family live?



Not Only the Homes on the Wildland Boundary are at Risk

A home within one mile of a natural area is in the Ember Zone. Wind-driven embers can attack your home. You and your home must be prepared well before a fire occurs. Ember fires can destroy homes or neighborhoods far from the actual flame front of the wildland fire. These threats are amplified in Hawaii due to the culmination of thermal, saddle, storm, and trade winds that create a complex system of strong, erratic winds (see diagram on right).

Fire is wind-driven.
Know your wind-related risks.

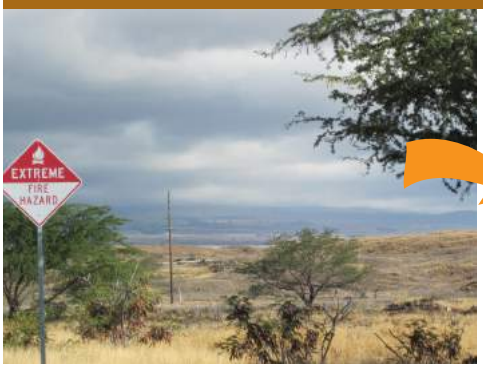


Hawaii's Growing Wildland Fire Problem

And Why We Should Be Concerned

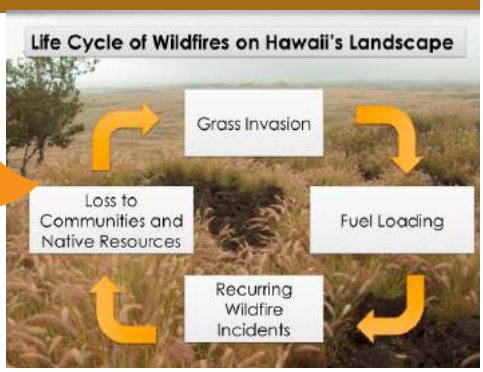
Traditionally, Hawaii ecosystems existed with a very limited presence of wildland fire. However, as climate conditions and land uses have changed over recent time, non-native, fire-adapted vegetation have rapidly spread through our wildland landscapes and toward community boundaries. In addition, communities are expanding further into fire-prone areas, increasing the risk of wildland fires that threaten natural resources, including native habitats, and people's lives and homes.

Impacts on Natural Resources



Invasive vegetation such as guinea and fountain grass spread easily and rapidly.

These plants also ignite easily. After the fire, they re-sprout and out-compete native plants, spreading over a larger area than before.



All it takes is another spark and the same area will burn hotter, more intensely, and over a larger area than before. This creates a vicious fire cycle.

Wildland fire, fueled by the build-up of dry vegetation and driven by a complex system of hot dry winds, are extremely difficult, expensive, and dangerous to control. Hawaii's wide diversity of challenging terrains add to the challenge for firefighters.

Did You Know?

26% of the state land cover is nonnative grassland. These grasses are fire-prone and spread more and more with each fire.

Mauka Fires Affect Makai Health and Safety

Large fires destroy vegetation that help hold down soil. Heavy winds can lift the soil and create dust storms that impact air quality and human health.

In addition, Hawaii's high-intensity rain events can sweep away soil through erosion, runoff and landslides.

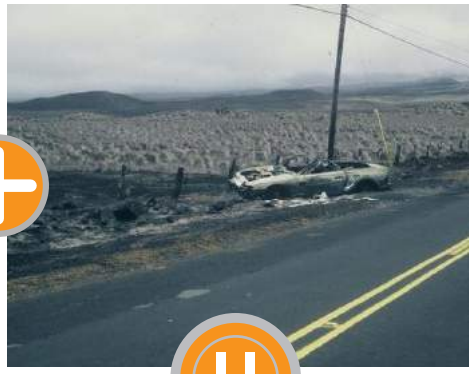
Rivers and streams carry the debris and sediment into the ocean polluting coral reefs and negatively affecting sea life. This adversely affects commerce such as fishing and marine/coastal-based tourism.

Impacts on People & Communities

Towns and cities expanding outwardly into formerly undeveloped areas...

and large areas of fallow, invasive, or un-managed vegetation...

and a steady increase in human ignition sources via human error and intention...



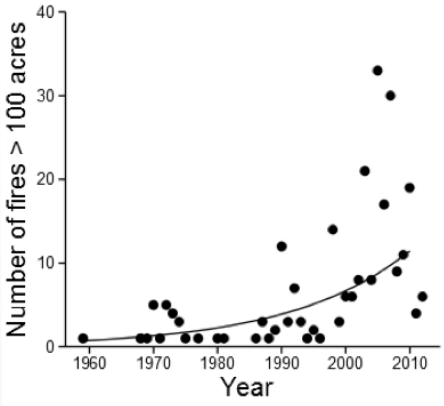
Did You Know?

Hawaii experiences more than 1,000 wildfires per year, burning an average of 20,000- 40,000 acres each year.

On average, every island has at least one 1,000 acre fire every year.

Wildfires in Hawaii are increasing in size, frequency, and impacts.

Every island and every area (windward, leeward, mauka, makai) can be at risk under the right conditions, mainly during periods of dry weather and high winds.

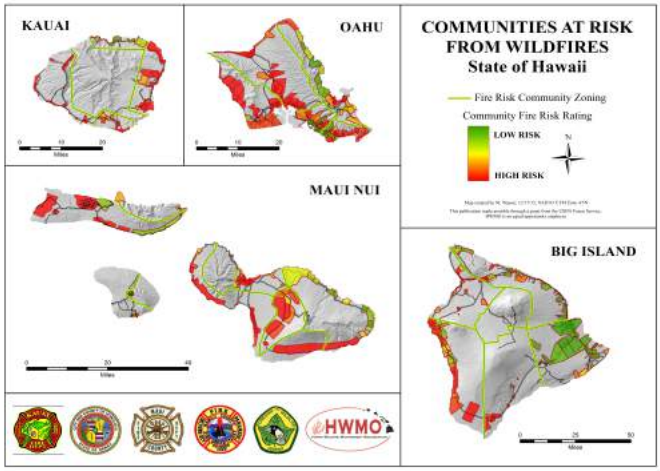


...are increasing the size, frequency, and intensity of fires across all of the islands on both wet and dry sides.

Future Outlook

Climate change is increasing the length and frequency of drought periods, creating drier conditions. Scientists predict these trends will continue and even worsen, which will result in larger fires that are more severe and intense. As more areas become drier, they will become more prone to wildfire. If your area is currently low risk in the map below, it likely is still at risk during very dry periods. Under certain conditions, such as dry periods and heavy winds, anywhere can burn, and we are seeing that occur. As a result, it's best if you take action now, rather than later, when it may be too late.

The Communities at Risk from Wildfires Map (on right) was the result of an effort that looked at 36 hazard characteristics that contribute to wildfire risk for neighborhoods and communities (gray areas were NOT assessed). Many of Hawaii's communities are at moderate to high risk of wildfire for reasons ranging from climate to lack of water to lack of community awareness and action. Many of the challenges are ones we can address with collaborative action.



How You Can Make a Difference

We need to create **resilient landscapes and communities** across Hawaii. You can play a significant role by increasing resilience in and around your own home and preparing your family for a potential wildland fire event. Use the following pages as a guideline.

What is Defensible Space?

Defensible space is the required space between structures and the wildland area that, under normal conditions, creates a sufficient buffer to slow or halt the spread of wildfire to a structure. It protects the home from igniting due to direct flame or radiant heat. Defensible space is essential for structure survivability during wildland fire conditions. For more information about defensible space zones and preparedness techniques within each, visit the Firewise USA® website, www.firewise.org.

ZONE ONE

Zone One extends 30 feet out from buildings, structures, decks, etc.

- Remove all dead or dying vegetation.
- Remove "**ladder fuels**" (low-level vegetation that allows the fire to spread from the ground to the tree canopy). Create at least 6 feet of separation between low-level vegetation and tree branches. This can be done by reducing the height of low-level vegetation and/or trimming low tree branches.
- Create "fire-free" area within 5 feet of home, using non-flammable landscaping materials and/or high-moisture content, drought-resistant vegetation.
- Trim tree canopies regularly to keep their branches a minimum of 10 feet from structures and other trees.
- Remove leaf litter (dry leaves/pine needles) from yard, roof and rain gutters.
- Relocate woodpiles or other combustible materials into Zone Two.
- Remove combustible material and vegetation from around and under decks, lanai, or the entire house if foundation is post-and-pier.
- Remove or prune vegetation near windows.

ZONE TWO *

Zone Two extends 30 to 100 feet out from buildings, structures and decks. You can minimize the chance of fire jumping from plant to plant by removing dead material and removing and/or thinning vegetation. The minimum spacing between vegetation is three times the dimension of the plant.

- Remove "ladder fuels."
- Cut or mow annual grass down to a maximum height of 4 inches.
- Trim tree canopies regularly to keep their branches a minimum of 10 feet from other trees/cluster of trees.

* For larger properties, consider areas outside of Zone Two as a third zone to address. Continue reducing ladder fuels, managing fuels, hardening structures, and properly storing combustible materials.

Actions You Can Take Today!

Weed around the property regularly, especially areas that a lawn mower is not appropriate for (tall dry grasses, rocky terrain, etc.)

Remove leaf litter and other debris that accumulate around the building, under vegetation, and other collection areas.

Remove leaf litter, straw and other debris from under and around propane tanks to create 10 feet of clearance around it.

Eliminate ladder fuels by pruning tree branches on trees around the property to within at least 6 feet of the ground, using a bypass lopper (seen above), pruner saw, or long reach/hand pruner.

Remove flammable materials from underneath the house, decks, porches, and lanai. Common flammables include scrap-wood, firewood, and combustible furniture.

Mow the lawn regularly to keep grasses shorter than 4 inches tall around the home. Do not mow in the heat of the day or when the wind is blowing. Never mow in dry vegetation.

Watch Out for Exotic Vegetation

Non-native trees, such as ironwood (seen below) constantly drop needles, leaves, branches, and other debris, so it's best to stay on top of removing them from the ground before the pile becomes a major project. Consider reforesting these areas with native trees that don't drop large amounts of debris.

Invasive grasses such as guinea and fountain grass grow rapidly when un-managed and can dry out very quickly, creating a major fire hazard. Weed them often and consider replanting with low-lying, drought-tolerant, native ground cover.

Defensible Space - Hawaiian Style

Consider selecting native plants from this list that are most relevant to your area:


Mamaki


Kolea


Maia Pilo


‘Ilima Papa


Bonamia


‘Ākia


‘A‘ali‘i


‘Akoko


‘Ihi


Nānū


Pōhinahina


Ma‘o Hau Hele


Koki‘o


‘Ūlei


Wiliwili


Koai‘a


Uhiuhi


Hala Pepe


‘Ohi‘a Lehua


Ko‘oko‘olau


‘Ohe Makai


‘Iliahi


Nehe


Alahe‘e


‘Ala‘ala Wai Nui


Kolomona


Koai‘a

Creating defensible space does not necessarily mean eliminating the presence of greenery on your property. You can still landscape around your home to make it fire-safe without compromising beauty and aesthetics. By planting native, drought-tolerant plants (**xeriscaping**) around your home, you can:

- Protect your home from wildland fire ignition and spread
- Beautify your property
- Perpetuate an important natural and cultural resource
- Decrease the maintenance needs of your landscaping

For the drier areas of Hawaii, consider that native dryland plants are specially adapted to local conditions and require less upkeep, water, and fire maintenance, saving yourself a great deal of time, money, and resources. Non-native, lush plants often drop hazardous debris and can become fire prone in drought conditions.

Homes with Great Xeriscaping

Did You Know?

The same winds that blow hazardous debris toward a collection area (underneath shrubs, under the lanai, next to outer edges of home, etc.) will likely carry embers during a wildland fire to that same spot, and ignite that pile. That’s why it’s incredibly important to consistently remove debris from these areas long before a wildland fire occurs.

What is a Hardened Home?

Construction materials and the quality of the defensible space surrounding it are what give a home the best chance to survive a wildland fire. Embers from a wildland fire will find the weak link in your home's fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor. However, there are measures you can take to safeguard your home from wildland fire. While you may not be able to accomplish all the measures listed below, each will increase your home's, and possibly your family's, safety and survival during a wildland fire.

Home Improvements

Gutter Guards or Screens

Enclosed Eaves

Screened Vents

Non-Combustible Fencing

Windows Clear of Vegetation

ROOFS

Roofs are the most vulnerable surface where embers land because they can lodge and start a fire. Roof valleys, open ends of barrel tiles and rain **gutters** are all points of entry.

EAVES

Embers can gather under open **eaves** and ignite exposed wood or other combustible material.

VENTS

Embers can enter the attic or other concealed spaces and ignite combustible materials. Vents in eaves and cornices are particularly vulnerable, as are any unscreened **vents**.

WALLS and FENCING

Combustible siding or other combustible or overlapping materials provide surfaces or crevices for embers to nestle and ignite. Combustible **fencing** can become engulfed and if attached to the home's sidings can carry the fire right to the home.

WINDOWS and DOORS

Embers can enter gaps in doors, including garage doors. Plants or combustible storage near **windows** can be ignited from embers and generate heat that can break windows and/or melt combustible frames.

BALCONIES and DECKS

Embers can collect in or on combustible surfaces or the undersides of decks, lanai, and balconies, ignite the material and enter the home through walls or windows. Post-and-pier homes, common throughout Hawaii, are especially vulnerable since most, if not all, of the underside of the house is exposed.

To harden your home even further, consider protecting your home with a residential fire sprinkler system. In addition to extinguishing a fire started by an ember that enters your home, it also protects you and your family year-round from any fire that may start inside your home.

Creating a Safe Ho

Roof: Your roof is the most vulnerable part of your home because it can easily catch fire from wind-blown embers. Homes with wood-shake or shingle roofs are at high risk of being destroyed during a wildland fire.

Build your roof or re-roof with fire-resistant materials such as composition, **metal** (as seen in picture) or tile. Block any spaces between roof decking and covering to prevent ember intrusion.

Clear pine needles, leaves and other debris from your roof and gutters.

Cut any tree branches within ten feet of your roof.

Deck/Patio Cover: Use heavy timber or non-flammable construction material for decks.

Enclose the underside of balconies and decks with fire-resistant materials to prevent embers from blowing underneath.

Keep your deck clear of combustible items, such as baskets, dried flower arrangements and other debris.

The decking surface must be ignition resistant if it's within 10 feet of the home.

Inside: Keep working fire extinguishers on hand.

Install smoke alarms on each level of your home and near bedrooms. Test them monthly and change the batteries twice a year.

Non-Combustible Fencing: Make sure to use non-combustible fencing to protect your home during a wildland fire.

Home Site and Yard: Ensure you have at least a 100-foot radius of defensible space (cleared vegetation) around your home. Note that even more clearance may be needed for homes in severe hazard areas. This means looking past what you own to determine the impact a common slope or neighbors' yard will have on your property during a wildland fire.

Cut dry weeds and grass before noon when temperatures are cooler to reduce the chance of sparking a fire.

Landscape with fire-resistant plants that have a high moisture content and are low-growing.

Keep woodpiles, propane tanks and combustible materials away from your home and other structures such as garages, barns and sheds.

Ensure that trees are far away from power lines.

Driveways and Access Roads: Driveways should be designed to allow fire and emergency vehicles and equipment to reach your house.

Access roads should have a minimum 10-foot clearance on either side of the traveled section of the roadway and should allow for two-way traffic.

Ensure that all gates open inward and are wide enough to accommodate emergency equipment.

Trim trees and shrubs overhanging the road to a minimum of 13 1⁄2 feet to allow emergency vehicles to pass.

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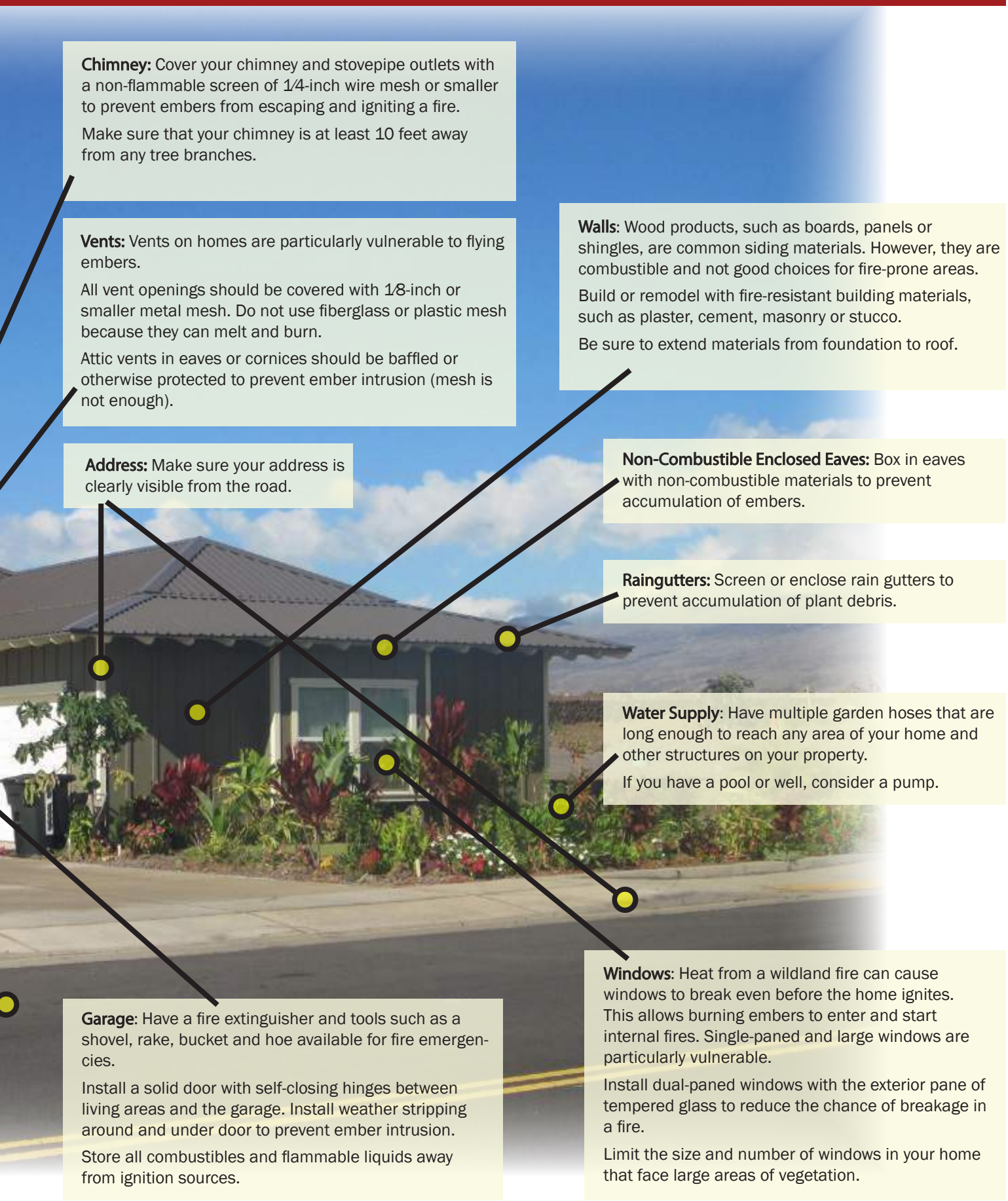


Chimney: Cover your chimney and stovepipe outlets with a non-flammable screen of 1⁄4-inch wire mesh or smaller to prevent embers from escaping and igniting a fire.

Make sure that your chimney is at least 10 feet away from any tree branches.

Vents: Vents on homes are particularly vulnerable to flying embers.

All vent openings should be covered with 1⁄8-inch or smaller metal mesh. Do not use fiberglass or plastic mesh because they can melt and burn.

Attic vents in eaves or cornices should be baffled or otherwise protected to prevent ember intrusion (mesh is not enough).

Address: Make sure your address is clearly visible from the road.

Walls: Wood products, such as boards, panels or shingles, are common siding materials. However, they are combustible and not good choices for fire-prone areas.

Build or remodel with fire-resistant building materials, such as plaster, cement, masonry or stucco.

Be sure to extend materials from foundation to roof.

Non-Combustible Enclosed Eaves: Box in eaves with non-combustible materials to prevent accumulation of embers.

Raingutters: Screen or enclose rain gutters to prevent accumulation of plant debris.

Water Supply: Have multiple garden hoses that are long enough to reach any area of your home and other structures on your property.

If you have a pool or well, consider a pump.

Garage: Have a fire extinguisher and tools such as a shovel, rake, bucket and hoe available for fire emergencies.

Install a solid door with self-closing hinges between living areas and the garage. Install weather stripping around and under door to prevent ember intrusion.

Store all combustibles and flammable liquids away from ignition sources.

Windows: Heat from a wildland fire can cause windows to break even before the home ignites. This allows burning embers to enter and start internal fires. Single-paned and large windows are particularly vulnerable.

Install dual-paned windows with the exterior pane of tempered glass to reduce the chance of breakage in a fire.

Limit the size and number of windows in your home that face large areas of vegetation.

READY, SET, GO!

Create Your Own Action Guide

Now that you've done everything you can to protect your house, its time to prepare your family. Your **Wildland Fire Action Guide** must be prepared with all members of your household well in advance of a fire. Use these checklists to help you gain a situational awareness of the threat and to prepare your Wildland Fire Action Guide. For more information on property and home preparedness before a fire threat, review the preparedness checklist on the Firewise Communities website, www.firewise.org.

Ready – Preparing for the Fire Threat

Take Action for Your Community

- ☐ Talk to your community members and community association about creating a Community Wildfire Protection Plan (CWPP). Hawaii Wildfire Management Organization can assist with this process.
- ☐ Coordinate with local county CERT teams.
- ☐ Get to know your neighbors. If there are any elderly or handicapped residents, or others with limited mobility, plan with them on how you can best assist them in the event of a wildland fire.

- ☐ Create a **Family Disaster Plan** that includes meeting locations and communication plans and rehearse it regularly. Include in your plan the evacuation of pets and large animals such as horses.
- ☐ Have fire extinguishers on hand and train your family how to use them.
- ☐ Ensure that your family knows where your gas, electric and water main shut-off controls are and how to use them.
- ☐ Plan several different evacuation routes.
- ☐ Designate an emergency meeting location outside the fire hazard area.
- ☐ Assemble an emergency supply kit as recommended by the American Red Cross (www.redcross.org).
- ☐ Appoint an out-of-area friend or relative as a point of contact so you can communicate with family members who have relocated.
- ☐ Maintain a list of emergency contact numbers posted near your phone and in your emergency supply kit.
- ☐ Keep an extra emergency supply kit in your car in case you can't get to your home because of fire.
- ☐ Have a portable radio or scanner so you can stay updated on the fire.
- ☐ Have a clear list and easy access location for necessary medications, glasses and other health aids.

Set – Situational Awareness When a Fire Starts

- [ ] Evacuate as soon as you are set! Do not wait for evacuation orders. Get out early - you can always return home if it is safe. This protects you, decreases traffic, and allows firefighters to focus on fire suppression. See more under the "Go" section.
- [ ] Alert family and neighbors.
- [ ] Dress in appropriate clothing (i.e., clothing made from natural fibers, such as cotton, and work boots). Have goggles and a dry bandana or particle mask handy.
- [ ] Ensure that you have your emergency supply kit on hand that includes all necessary items, such as a battery powered radio, spare batteries, emergency contact numbers, and ample drinking water.
- [ ] Stay tuned to your TV or local radio stations for updates, or check the fire department Web site.
- [ ] Remain close to your house, drink plenty of water and keep an eye on your family and pets until you are ready to leave.

If You are Trapped: Survival Tips

- [ ] Shelter away from outside walls.
- [ ] Bring garden hoses inside house so embers don't destroy them.
- [ ] Patrol inside your home for spot fires and extinguish them.
- [ ] Wear long sleeves and long pants made of natural fibers such as cotton.
- [ ] Stay hydrated.
- [ ] Ensure you can exit the home if it catches fire (remember if it's hot inside the house, it is four to five times hotter outside).
- [ ] Fill sinks and tubs for an emergency water supply.
- [ ] Place wet towels under doors to keep smoke and embers out.
- [ ] After the fire has passed, check your entire property and extinguish any fires or embers.
- [ ] If there are fires that you can not extinguish with a small amount of water or in a short period of time, call 9-1-1.

Outside Checklist

- [ ] Gather up flammable items from the exterior of the house and bring them inside (e.g., patio furniture, children's toys, door mats, etc.) or place them in your pool.
- [ ] Turn off propane tanks.
- [ ] Don't leave sprinklers on or water running - they can waste critical water pressure.
- [ ] Leave exterior lights on.
- [ ] Back your car into the driveway. Shut doors and roll up windows.
- [ ] Have a ladder available.
- [ ] Patrol your property and extinguish all small fires until you leave.
- [ ] Seal attic and ground vents with pre-cut plywood or commercial seals if time permits.

Inside Checklist

- [ ] Shut all windows and doors, leaving them unlocked.
- [ ] Remove flammable window shades and curtains and close metal shutters.
- [ ] Remove lightweight curtains.
- [ ] Move flammable furniture to the center of the room, away from windows and doors.
- [ ] Shut off gas at the meter. Turn off pilot lights.
- [ ] Leave your lights on so firefighters can see your house under smoky conditions.
- [ ] Shut off the air conditioning.

Go – Leave Early

By leaving early, you give your family the best chance of surviving a wildland fire. You also help firefighters by keeping roads clear of congestion, enabling them to move more freely and do their job in a safer environment.

WHEN TO LEAVE

Leave early enough to avoid being caught in fire, smoke or road congestion. Don't wait to be told by authorities to leave. In an intense wildland fire, they may not have time to knock on every door. If you are advised to leave, don't hesitate!

WHERE TO GO

Leave to a predetermined location (it should be a low-risk area, such as a well-prepared neighbor or relative's house, a Red Cross shelter or evacuation center, motel, etc.). Your local Community Wildfire Protection Plan will also have locations listed.

HOW TO GET THERE

Have several travel routes in case one route is blocked by the fire or by emergency vehicles and equipment. Choose an escape route away from the fire.

WHAT TO TAKE

Take your emergency supply kit containing your family and pet's necessary items.

EMERGENCY SUPPLIES

The American Red Cross recommends every family have an emergency supply kit assembled long before a wildland fire or other emergency occurs. Use the checklist below to help assemble yours. For more information on emergency supplies, visit the American Red Cross Web site at www.redcross.org.

- ☐ Three-day supply of water (one gallon per person per day).
- ☐ Non-perishable food for all family members and pets (three-day supply).
- ☐ First aid kit.
- ☐ Flashlight, battery-powered radio, and extra batteries.
- ☐ An extra set of car keys, credit cards, cash or traveler's checks.
- ☐ Sanitation supplies.
- ☐ Extra eyeglasses or contact lenses.
- ☐ Important family documents and contact numbers.
- ☐ Map marked with evacuation routes.
- ☐ Prescriptions or special medications.
- ☐ Family photos and other irreplaceable items.
- ☐ Easily carried valuables.
- ☐ Personal computers (information on hard drives and disks).
- ☐ Chargers for cell phones, laptops, etc.

Note: Keep a pair of old shoes and a flashlight handy in case of a sudden evacuation at night.

READY, SET, GO!

For Large Landowners & Land Managers

Ready

Prepare Your Family, Employees, and Visitors

- ☐ Go through the previous guidelines (pgs. 12-14) with your family in addition to this section.
- ☐ Have at least two exits for your headquarters and primary residence for your evacuation plan.
- ☐ If you have a GPS device, pre-program it with multiple escape routes.
- ☐ Keep an emergency supply kit in all ranch and personal vehicles.

Prepare Your Animals

- ☐ Create a livestock evacuation plan.
- ☐ Ensure proper registering and branding of livestock.
- ☐ Establish a back-up plan for feeding livestock if grazing land is destroyed by fire.

Know Your Area's Conditions

- ☐ Track the weather daily. Take note of changing conditions.
- ☐ If the weather is too dry: close the area, avoid risky equipment operations, or driving over dry vegetation. Fires can start by simply idling your car over grass. Make sure all vehicles' catalytic converters are in working order.

Prepare Your Property

- ☐ Create and maintain firebreaks (vegetation removed down to bare, mineral soil) each year prior to fire season around pastures and structures. This will allow access for suppression. The width of the firebreaks should be at least 3x the fuel height.
- ☐ Reduce vegetation and remove combustible material around all structures.
- ☐ When selecting for understory vegetation (below trees), choose those that are less fire-prone and don't dry out quickly, and those that don't create ladder fuels.
- ☐ Prioritize assets by assessing the risk and value of each and the effort it would take to protect them.
- ☐ Maintain your equipment (power tools, mowers, catalytic converters, etc.) Make sure working spark arrestors are installed and maintained on equipment.
- ☐ Reinforce fences with metal posts, if applicable.
- ☐ Create a safe zone clear of all vegetation for equipment.
- ☐ Clear vegetation around fuel tanks and other highly combustible equipment.
- ☐ Create a fire pre-plan for your property that includes insights from your fire department and wildland fire experts. Discuss your plan and property specifics with local firefighters ahead of time. (See pre-plan insert on next page).

For Large Landowners & Land Managers

Set

Your Family, Employees, and Visitors

- ☐ Follow guidelines from page 13.
- ☐ Alert family, ranch hands, field workers, or anyone else who is on your property.
- ☐ Make sure you have a contact list or meeting location coordinated ahead of time to ensure everyone's safety.

Your Animals

- ☐ Hook up your stock trailer and load your animals.
- ☐ Unlock and open gates so livestock can escape flames and firefighters can gain access.
- ☐ Close all barn doors so horses and livestock will not go into a burning building.

Your Property

- ☐ Follow guidelines from page 13.
- ☐ Move equipment into a safe zone that is clear of combustible fuels.
- ☐ Close all doors, windows, and turn on exterior/interior lights in barns and other structures.
- ☐ Shut off gas supply and propane tanks.

Catch the Fire Before it Burns Out of Control

Have suppression tools & methods available on site:

- ☐ Fire extinguisher
- ☐ Water
- ☐ Fire tools
- ☐ Phone on site
- ☐ Keys to the dozer

Go

- ☐ Follow guidelines from page 14.
- ☐ Ensure all people have safely evacuated.
- ☐ Stay in communication with fire operations. Ask questions, offer assistance, and give permission. Your invaluable knowledge of the area will prove useful for firefighters who are there to help protect your land and resources. Fire crews can then run an operation that meets your needs as well as theirs.

Pre-Plan: Ensure Firefighters Have Access

- ☐ Make sure address posts are clearly visible and marked in contrasting colors.
- ☐ Keep copies of gate keys and a written list of combinations in a known location.
- ☐ Make sure your property is properly mapped out and that your county fire department has a copy of the map.
- ☐ Maintain roads far in advance of fire season. Make sure there is enough room for fire trucks to drive through and that large turn-outs for emergency vehicles are available. Hazards to look out for include: overhanging trees, low power lines, bridges with weight restrictions, boggy areas, and rural residence internal fencing.
- ☐ Establish "safety zones" (large areas free of vegetation and other hazardous conditions for firefighters to retreat to).
- ☐ Maximize water source access and availability (hydrants, ditches, reservoirs, water tanks, etc.). Ensure pumps and hoses are available and that the size and type of outlets are standard fittings.
- ☐ If you would like to offer your equipment (water, tank, tractor) for firefighting, make arrangements and contacts prior to use for proper tracking and reimbursement.

Post in a location where **every** member of your family can see it, such as on the fridge or front door.

Our Family's Wildland Fire Action Guide

Well before fire danger is HIGH, prepare your family and residence for potential wildfires. Monitor your local media for the latest information on any incident, and make certain your mobile phones have "In Case of Emergency" (ICE) information loaded.

Our family members will call this out-of-area/state contact to report that we are safe:
Name: _____ Phone number(s): _____
Pre-program this into cell phones. Keep it current. Make sure the person agrees to be available/responsive.

If separated and unable to access our home or neighborhood, our family will meet at this safe location:
Primary: _____
Secondary: _____

If our children are in school during an emergency, they will be evacuated to this/these locations:
School 1: _____
Child(ren): _____ School Contact Info: _____
School's Evacuation Protocol: _____

School 2: _____
Child(ren): _____ School Contact Info: _____
School's Evacuation Protocol: _____

Our emergency go-bag is located: _____

Essential items to grab before leaving (medication, glasses, etc.): _____
_____

We will do this with our pets: _____
Our pet emergency go-kit (food, water, bowl, leash, crate, etc.) is located: _____

Neighbors/others in our area we have agreed to help or check on during an emergency or evacuation:
Name: _____ Address: _____ Phone: _____
How we have agreed to assist and/or make sure they are ok: _____
_____

Name: _____ Address: _____ Phone: _____
How we have agreed to assist and/or make sure they are ok: _____

Local Fire Department Information Numbers
(Circle the appropriate contact)

Hawaii (County) Fire Dept.	Honolulu Fire Dept.	Maui Fire Dept.	Kauai Fire Dept.
(808) 932-2912	(808) 723-3473	(808) 876-4690	(808) 241-4985

Safety Tip

Remember to PRACTICE your evacuation plan each year with your family, and keep it up to date!

Emergency Plan Notes

Use the space below to add any additional information to your family's evacuation plan.

Off-island plans during fire season? Plan ahead!

If you are a seasonal resident or property owner, or if you know you will be away, it is critical that you take personal responsibility for your property and the safety of those who may occupy it during your absence. Unmitigated hazards on your property can significantly affect an entire neighborhood, especially adjacent homes and yards. Remember, if an ember lands and ignites a fire on your property, that fire can easily spread and threaten additional lives and homes within the community, whether you are physically present or not. It is up to you to ensure your home, yard, and property are READY at all times.

Essential preparedness actions for part-time and traveling residents:

1. Ensure your vegetation and structures will be managed and maintained to withstand embers and mitgate wildfire ignition and spread while you are away.

Keeping your yard lean (via strategic, Firewise planting methods and trimmed grasses and trees), green (meaning watered and alive, not dry or dead), and clean (regularly maintained, no debris or leaf piles) applies all year long. What is your property and vegetation maintenance plan? How will you know if your plan is successfully occurring?

2. Create a wildfire information packet for any seasonal or temporary guests who will be staying at your property, familiarizing yourself with all potential evacuation routes and how they may have changed over the year.

Introduce your guests to neighbors that may need their help evacuating. Who are those neighbors, in which houses do they live, and what are their contact numbers? Where can guests find your emergency supplies box or evacuation go-bag?

3. Be a good neighbor. Be active in your community, even if you only consider yourself a part-time or seasonal resident.

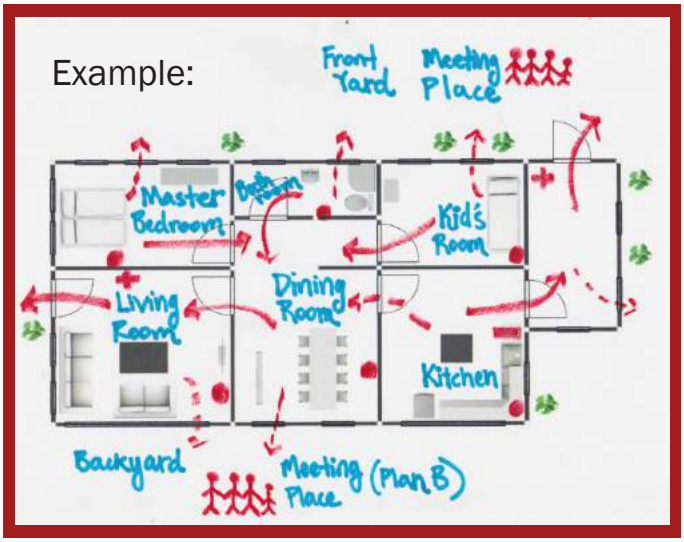
Get to know your neighbors and provide your contact information to them, so that you can work together to find solutions to unexpected risks or hazards within the community, particularly any stemming from your property or that may endanger your property while you are away.

Post in a location where **every** member of your family can see it, such as on the fridge or next to a phone.

Our Family's Home Evacuation Plan

Draw a floor plan or map of your home with the space provided below:

- Show all doors and windows.
- Mark two ways out of each room with arrows (1st choice: solid and 2nd choice: dotted).
- Mark all smoke alarms in the house with a ● . Mark all fire extinguishers with a ▬ .
- Mark your emergency kit with a ✚ . Keep kits close to your 2 main exits.
- Pick and mark a main meeting place (and a backup alternative) outside the house where everyone can meet, away from any hazards.
- Remember to practice your plan at least twice a year.



READY, SET, GO!

Residential Safety Checklist

Tips To Improve Family and Property Survival During A Wildland Fire

Home	Yes	No
1. Does your home have a metal, composition, or tile (or other non-combustible) roof with capped ends and covered fascia?	☐	☐
2. Are the rain gutters and roof free of leaves, needles and branches?	☐	☐
3. Are all vent openings screened with 1/8 inch (or smaller) mesh metal screen?	☐	☐
4. Are approved spark arrestors on chimneys?	☐	☐
5. Does the house have non-combustible siding material?	☐	☐
6. Are the eaves "boxed in" and the decks, lanai, and/or pier-and-posts enclosed?	☐	☐
7. Are the windows made of at least double-paned or tempered glass?	☐	☐
8. Are the decks, porches, lanai, and other similar areas made of non-combustible material and free of easily combustible material (e.g. plastic furniture)?	☐	☐
9. Is all firewood at least 30 feet from the house?	☐	☐

Defensible Space	Yes	No
1. Is dead vegetation cleared 100 feet from the house? (Consider adding distance due to slope of property.)	☐	☐
2. Is there separation between shrubs?	☐	☐
3. Are ladder fuels removed?	☐	☐
4. Is there a clean and green area extending at least 30 feet from the house?	☐	☐
5. Is there a non-combustible area within five feet of the house?	☐	☐
6. Is there separation between trees/tree clusters?	☐	☐

Emergency Access	Yes	No
1. Is the home address visible from the street?	☐	☐
2. Is the home address made of fire-resistant materials?	☐	☐
3. Are street signs present at every intersection leading to the house?	☐	☐
4. Are street signs made of fire-resistant materials?	☐	☐
5. Is flammable vegetation within 10 feet of the driveway cleared and are overhanging obstructions removed?	☐	☐
6. If a long driveway is present, does it have a suitable turnaround area?	☐	☐

--This is a high value resource--
Please pass this on to others
instead of throwing in the trash.
It could save a life or home!

Ready, Set, Go!
www.wildlandfireRSG.org

Hawaii Wildfire
Management Organization
www.hawaiiwildfire.org

APPENDIX B

COMMUNITY MEETING INPUT

BACKGROUND

Input was gathered from community members as to their highest priority concerns related to wildfire, along with suggested actions for addressing those concerns. Responses were solicited in each of the National Wildland Fire Management Strategy categories- **Fire Adapted Communities**, **Safe & Effective Firefighting**, and **Resilient Landscapes** to correspond to, and mimic, the discussion that took place during virtual workshops for seamless integration of all participant input. HWMO held two meetings with key community contacts and leaders on November 9, 2021.

RESULTS

Overall, 43 community members of the East Honolulu area attended. These included agricultural operators/farmers/ranchers; representatives of a community group or nonprofit organization; private company/business representatives; residents, government agency representatives; and natural resource/ forestry/soil managers. Their concerns, comments, and recommended actions are as follows:

Fire Adapted Communities	
Concern	**Specific comment and/or recommended actions**
Human-caused ignitions from fireworks, encampments and improperly disposed of debris	1. Lots of trash and abandoned vehicles in Kalama Valley (previously) which the community needs help removing. Also, concern with dry grass and trash from homeless, abandoned vehicles. 2. Abandoned vehicles can be a problem (Waimanalo) on occasion, but the problem gets resolved pretty quickly. 3. Kaiwi coast & golf course have homeless encampments which could be a cause of ignitions (but residents are sensitive to their situation). 4. Install firebreaks, roads & paths. 5. Clear the vegetation. 6. Clean up the trash. 7. Continue to connect the people living there with resources and help . 8. Need to continue to work to ban fireworks, and work on illegal fireworks problem: banning, enforcement. 9. Consider a pilot program to increase inspections cargo/containers for fireworks.

Lack of education and awareness in wildfire prevention among residents and businesses	1. Be proactive: empower communities to be active and find ways they can be involved before fire happens. 2. Target the following: - School programs - Neighborhood boards - Other parts of the island - Businesses (have table in malls, shopping areas, etc. to increase outreach and exposure) 3. Encourage participation in Firewise program. 4. Encourage early reporting (see something, say something). 5. Educate public on HFD priorities: LIP - Life Safety, Incident Stabilization, Property Conservation. 6. Ensure communities know that HFD may be able to support a community-hosted event (they have materials).
Inconsistent community wildfire preparedness standards and messaging	1. Regardless of community (including Firewise Communities), not all communities have the same level of interest/concern. 2. Firewise Communities need to stay alert to threat and keeping up level of activity. 3. Need to educate the public through nonprofits, conservation/ native plants focus. 4. Use social media to get exposure. 5. Email campaigns (meet, get a native plant) use as a way to generate awareness. 6. Establish volunteer sign up networks for different communities to clear the vegetation and clean up trash. 7. Distribution network email list for volunteer prevention measures, etc.
Lack of neighborhood infrastructure to help with firefighting	1. Problems with ingress/egress (specifically for Kunia areas in Hawai'i Kai) where ridges have only one way in/out. 2. Install fire barriers (breaks) where vegetation is removed 30-50 ft wide. 3. Install 2-ways in/2-ways out; turn-arounds. 4. Restrict parking to one side of road (city ordinance).

Safe & Effective Firefighting	
Recommendation	**Specific comment and/or recommended action**
Inadequate fire suppression infrastructure (water)	1. Lack of access to water is a concern as well as increasing drought. 2. Need to have water for: - restoration activities (out-planting) - maintaining animals for grazing & fuels reduction - fire fighting operations (dip tanks) 3. Consider a pilot program: rain barrels for water collection. Maybe state/county parks? $40 rebate for 200 gal rain barrels sponsored by Board of Water Supply. 4. Consider dipping out of pools. 5. Concern that when wildfires do occur, we are using potable water (possible impact on precious resource). 6. Consider salt water as a fire fighting resource (although not necessarily the best for equipment or native vegetation). 7. Fire hydrants regularly blocked (need to enforce parking rules)
Lack of community emergency / evacuation plan(s)	1. Create and conduct an evacuation plan. 2. Develop up-to-date maps of access roads trails within and surrounding communities and share these with fire companies. 3. Citizens and residents determine/mark safest paths up hills (behind homes). 4. Get neighborhood boards to plan escape routes. 5. Create a flyer/guide to help with planning. 6. Coordinate with neighboring communities - eg. ridge tops and valley bottoms. 7. Designate meet-up spot for roll-call, etc. 8. Be receptive to firefighters coming through yards to respond.
Lack of incentives for hazard reduction and unknown land tenure	1. How do we figure out who the land owners are? If it's city and county, then it might be easier. If it's private land, then it could be challenging to contact them. 2. How to get landowners to manage fuels? Are there any regulations (ordnance) to prevent vegetation buildup in developments? If not, consider passing ordinances. 3. Pursue financial resources for hazard mitigation (based on public or private land tenure). 4. Consider county resolutions to maintain barriers around communities (note that policy exists, but is non-regulatory). 5. Updates to land use ordinance (city council level); reach out to local leadership. 6. Have a reporting system for the community to become aware of problem areas..

Resilient Landscapes	
Concern	**Specific comment and/or recommended action**
Threats to aquatic and terrestrial natural resources (wetlands, forests, endangered species)	1. Concern for threatened and endangered species, and specifically taking measures to prevent the forests and wetlands from burning. 2. The native forests fringing the residential areas of Kailua and Kaneohe are very important for O'ahu Elepaio and other birds, tree snails, and dozens of endangered plant species. 3. Importance of native forest vegetation to stabilize the soil to prevent siltation of the streams and coral reefs (there are endangered damselflies in the streams and threatened and endangered waterbirds in the marshes and lakes). 4. Areas of concern include Diamond Head (habitat for endangered species) and invasive fountain grass found there (It has been detected as far as Wai'alae Nui ridge and it is in Kahala). 5. Protect endangered species habitat. 6. Prevent spread of fountain grass. 7. Plant native plants to reduce erosion.
Vegetation fuels buildup	1. Kaiwi is a problem area: road infrastructure + people + wild vegetation (native/non-native) = more fires. 2. Weed whack non-native grasses to prevent native forests fires. 3. Grazing (goats/sheep) as an option to reduce vegetation. 4. Fuel breaks could be put into Hawai'i Kai Golf course.
Vulnerable fire-prone zones	1. Concern for mountain regions adjacent to where flares might go off. 2. Areas of concern: shooting range at Kokohead park. 3. Partner with Kokohead shooting range to deal with the vegetation right behind targets. 4. Near Marina (not necessarily have the "spark" points in this but have hazards been identified? For example, boats with fuels. 5. Kamilo Nui group can help identify these zones and hazards.

APPENDIX C

COMMUNITY SURVEY RESULTS

Questions	Responses
Please check this box to confirm that you are representing the East Honolulu region as either a resident or other stakeholder group.	Yes
How knowledgable are you about wildfires in Hawai'i?	Somewhat
Select the stakeholder group(s) that best describes you. Select all that apply.	Land landowner and/or resource manager
Describe a concern around "fire-adapted communities" and recommended action(s) to address this concern.	A significant portion of lands vulnerable to wild fire are in a conservation district zone
Describe a second concern around "fire-adapted communities" and recommended action(s) to address this concern.	The conservation districts are a "boundary" area that currently have provisions within there regulations for wildfire protection buffers. Those buffers are NOT obligatory, encouraged, enforced or evident of any implementation anywhere … so why are they not employed?
Describe a third concern around "fire-adapted communities" and recommended action(s) to address this concern.	The Honolulu Urban Core is equally if not more vulnerable to wildfire yet there is no group for this… are any planned? Is there any community interest? Is there a contact person that could assist in spearheading a group for that area of the island?
Describe any additional concerns around "fire-adapted communities" and recommended action(s) to address these concerns.	A "pilot project" or "demonstration site" would be most beneficial for the residents and the fire department staff to "see and test" current strategies for wildfire protection. (Specific to O'ahu)
Describe a concern around "resilient landscapes" and recommended action(s) to address this concern.	I do not have sufficient experience or applied knowledge in this area to be able to make substantive recommendations or courses of action other than as previously mentioned "some test / example" plots / sites.

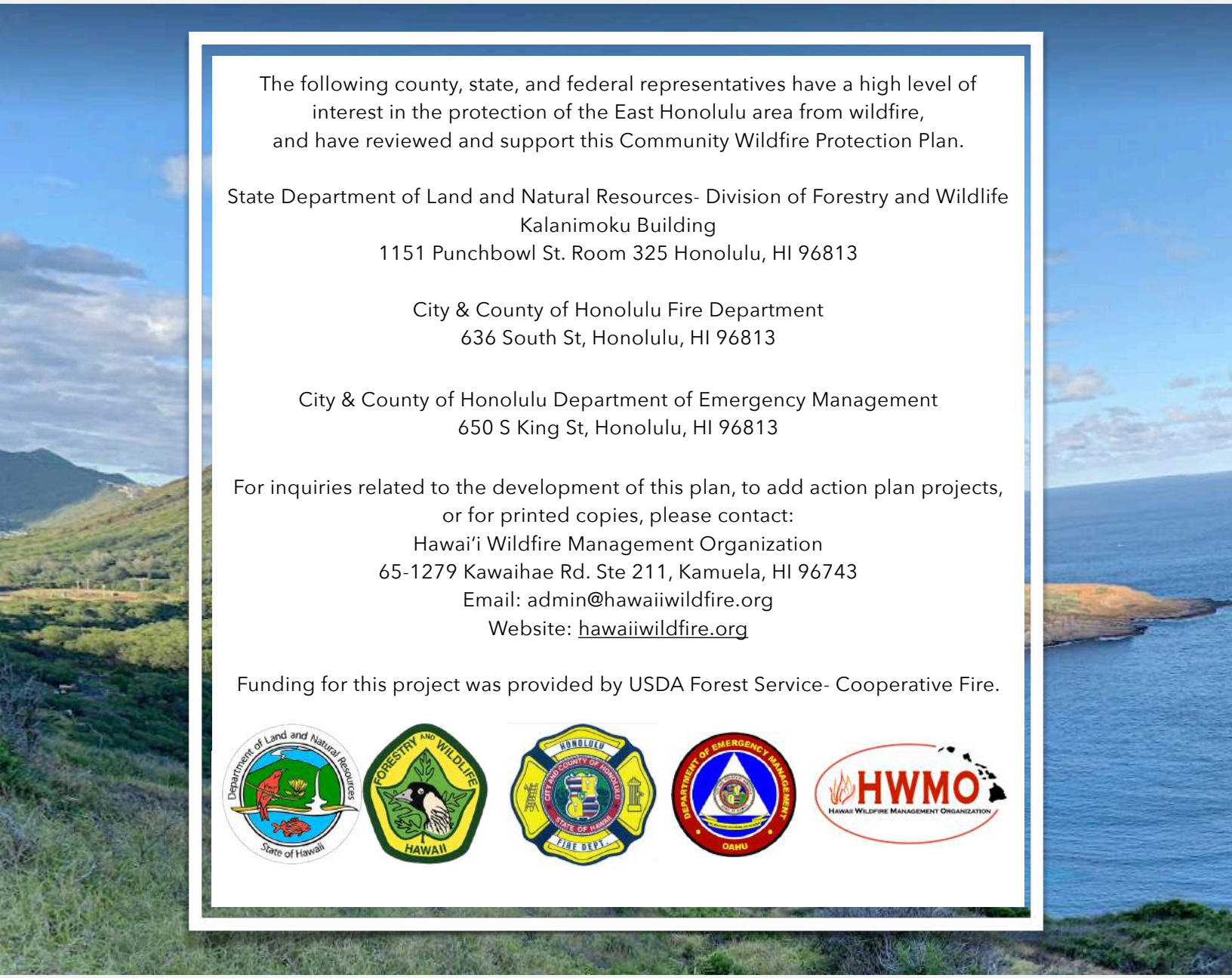
Describe a concern around "safe & effective firefighting" and recommended action(s) to address this concern.	Access for fire department crew should be reviewed and commented on by their more experienced and professional fire suppression teams… including a review of fire suppression water sources specific to each access point for fire suppression. Specific to the “undeveloped conservation district lands adjacent the urban / residential areas.
What types of wildfire-related information and/or technical assistance do you think your community needs? (Examples: We need more public outreach about defensible space around homes. We need more understanding about current perceptions of wildfire risks. We need more opportunities to connect with our fire agencies/departments.)	I would hope to see or have a “contact person” at the DLNR / OCCL specifically assigned to help coordinate concerns regarding “urban boundary areas” bordering the Conservation District interface.
What specific ideas and/or additional details can you provide regarding any or all of the items you listed above?	I would hope to be contacted regarding some of these specific concerns expressed so that further clarifications might be gleaned on how our Honolulu Urban Core boundary with the Conservation District areas might addressed further.

APPENDIX D

2024 CWPP UPDATE: ADDITIONAL PROJECT PRIORITIES IDENTIFIED

Project	Anticipated Costs	Anticipated Project leads and partners
Fuels management and/or perimeter fuelbreaks around high risk subdivisions throughout East Honolulu CWPP area, at the WUI interface, to reduce ignition and rapid fire spread risks and to provide firefighting access and/or additional egress options	Varies per community, per method. TBD per project. Ranges $30K- $4M	At-Risk Communities, HWMO, Firewise Communities, HFD, DLNR-DOFAW, Dept. of Hawaiian Homelands (DHHL), Board of Water Supply, Watershed Partnership, Hawaiian Electric
Defensible Space Inspection Program for large land parcels and subdivisions in high risk areas	$Up to $2M per year depending on number of inspectors and area covered by program	HFD, City & County of Honolulu and other partners
Firewise Communities Program Coordination for area- to support communities pursuing or maintaining Firewise recognition, and to offer educational programming and mitigation assistance	$100K/year	DLNR-DOFAW, HWMO, HFD, DEM
Community Mitigation & Defensible Space-vegetation removal projects and home hardening mini-grants	$200K/year	At-Risk or Firewise Communities, DLNR-DOFAW, HWMO, HFD, DEM
Wildfire Resilient Landscapes Program Coordinator for area- to support mitigation projects and activities, provide technical guidance and trainings, coordinate multi-partner project implementation	$100K/year	HWMO, DLNR-DOFAW
Wildfire preparedness education via community workshops and educational campaigns (PSAs, printed materials, etc.)	$100K/year	DLNR-DOFAW, HWMO, HFD, DEM
Community mitigation projects for defensible space	Varies per community, per method. TBD per project. Ranges $30,000- $4M	At-Risk Communities, HWMO, Firewise Communities, HFD, DLNR-DOFAW, Dept. of Hawaiian Homelands (DHHL), Board of Water Supply, Watershed Partnership, Hawaiian Electric

Project	Anticipated Costs	Anticipated Project leads and partners
Evacuation planning per community	Cost TBD	At-Risk Communities, HWMO, Firewise Communities, HFD, DLNR-DOFAW, Dept. of Hawaiian Homelands (DHHL), Board of Water Supply, Watershed Partnership, Hawaiian Electric
Develop secondary egress and/or safety zones for communities with limited ingress/ egress	Varies per community, per method. TBD per project. Ranges $50K– $20M	DEM, DLNR-DOFAW, HWMO, HFD, at-risk communities
Fuels management and/or perimeter fuelbreaks auto protect sensitive natural resource areas	Varies per community, per method. TBD per project. Ranges $30K- $10M	Impacted Communities, HWMO, Firewise Communities, HFD, DLNR-DOFAW, Dept. of Hawaiian Homelands (DHHL), Board of Water Supply, Watershed Partnership, Hawaiian Electric
Install fencing and water infrastructure to support grazing of fire prone grassland areas	TBD per project. Ranges $50K- $4M	Impacted Communities, HWMO, Firewise Communities, HFD, DLNR-DOFAW, Dept. of Hawaiian Homelands (DHHL), Board of Water Supply, Watershed Partnership, Hawaiian Electric
Install water cisterns, helicopter dipatnks, or other water resources to improve suppression capacity	TBD per project. Ranges $50K- $10M	HFD, DLNR-DOFAW, Dept. of Hawaiian Homelands (DHHL), Board of Water Supply, Watershed Partnership, Hawaiian Electric, HWMO
Harden electrical infrastructure, make grid more resilient, enhance community educational programs, minimize impacts of power shutoffs through micro gridding and back up power options for sensitive municipal and medical operations	$10-$50M	Hawaiian Electric, in partnership with agencies and communities
Establish a fuels management partnership for All Hands All Lands approach to reducing fire fuels	$100K/year	HWMO, DLNR-DOFAW, Univ. of Hawaii
Fuels conversion through reactivating agricultural production/operations or through ecological restoration on fire prone unmanaged landscapes	Varies per project. Ranges $25K- $4.5M	At-Risk Communities, HWMO, Firewise Communities, HFD, DLNR-DOFAW, Dept. of Hawaiian Homelands (DHHL), Board of Water Supply, Watershed Partnership, Hawaiian Electric



The following county, state, and federal representatives have a high level of interest in the protection of the East Honolulu area from wildfire, and have reviewed and support this Community Wildfire Protection Plan.

State Department of Land and Natural Resources- Division of Forestry and Wildlife
Kalanimoku Building
1151 Punchbowl St. Room 325 Honolulu, HI 96813

City & County of Honolulu Fire Department
636 South St, Honolulu, HI 96813

City & County of Honolulu Department of Emergency Management
650 S King St, Honolulu, HI 96813

For inquiries related to the development of this plan, to add action plan projects, or for printed copies, please contact:
Hawai'i Wildfire Management Organization
65-1279 Kawaihae Rd. Ste 211, Kamuela, HI 96743
Email: admin@hawaiiwildfire.org
Website: hawaiiwildfire.org

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Project	Anticipated Costs	Anticipated Project leads and partners
Establish a fire weather forecasting coordinating group, weather stations, and a technological system to increase fire weather monitoring and red flag warning resolution. Develop necessary technology and data collection/analysis.	Some costs TBD. Coordination and planning costs $150K. Research costs TBD. Technology and weather station costs TBD.	Univ. of Hawaii, NOAA-NWS, HFD, DLNR-DOFAW, HWMO, HECO,

Project	Anticipated Costs	Anticipated Project leads and partners
Establish wildfire mitigation plans for City and State Lands not managed by DOFAW, to include Department of Education (all campuses), Department of Hawaiian Homelands (DHHL), City Parks, etc.	Cost varies per site and project	Agency leadership, facilities managers, communities at risk, DLNR-DOFAW, HFD, HWMO
Implement mitigation plans and projects on DHHL lands and Homestead Communities	$500K/year	Agency leadership, facilities managers, communities at risk, DLNR-DOFAW, HFD, HWMO
Implement mitigation plans and projects on school campus	Cost TBD	Agency leadership, facilities managers, communities at risk, DLNR-DOFAW, HFD, HWMO
Implement mitigation plans and projects on State and City parks	Cost TBD	Agency leadership, facilities managers, communities at risk, DLNR-DOFAW, HFD, HWMO