



October 19, 2021

Letter from the Chair

Dear Friends:

The HEF was formed in October 1992 in direct response to the need for a coordinated regional approach to wildland urban interface fires. This year our agencies reinforced the importance of HEF members' continued collaboration, albeit remotely in response to Covid-19.

After another dry winter, California set wildfire records, and the Bay area experienced regional impacts. In April, East Bay Municipal Utility District announced a "Stage I Drought." The year progressed with National Weather Service heat advisories and red flag warnings, and air quality smoke alerts. Public interest in wildfire prevention remained high, as indicated by funding support.

Late in 2020, the region observed widespread sudden die-back and severe tree mortality. In 2021, researchers identified the cause as two fungi, and agencies began selective tree removal to respond to increased fire hazard. Alameda County released the ZoneHaven community evacuation interface; encouraging residents to "find their zone" and prepare for potential evacuation by participating in local drills. Planning and research continued with environmental reviews, fire weather research, early ignition detection, biomass utilization and countywide fine scale vegetation mapping.

Active inspection, compliance and abatement programs have improved public safety of both private homes and public lands within Berkeley, El Cerrito, Kensington, Moraga, Oakland and Orinda.

Hazardous fuel reduction projects continued in full force. The University of California, Berkeley completed hazardous fuel reduction along the Claremont Avenue evacuation route, funded through the CAL FIRE California Climate Investments grant program. Members' additional fuel mitigation projects throughout the East Bay hills have expanded our system of strategic fuel reduction zones through use of goats, dedicated fuels crews, machinery, as well as prescribed fire. New grant funds and internal funding increased our capacity for projects.

The 2021 Annual Report serves to document positive changes our agencies have brought to the Oakland-Berkeley Hills region. This report highlights efforts of both Hills Emergency Forum and individual members during the past year. We recognize that our work is by no means completed.

On behalf of all the members of the Forum, I would like to thank the many individuals and organizations whose support and input have enabled us to advance our agenda of emergency preparedness.

Sincerely,

Michael Brandt

Dr. Michael T. Brandt, Deputy Lab Director for Operations
Chief Operating Officer Lawrence Berkeley National Lab
HEF Chair 2020-21

❖ City of Berkeley ❖ City of El Cerrito ❖ City of Oakland
❖ California Department of Forestry and Fire Protection ❖ East Bay Municipal Utility District
❖ East Bay Regional Park District ❖ Lawrence Berkeley National Laboratory ❖
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Hills Emergency Forum (HEF) 2021 Annual Report

2021 Highlights

In fulfillment of its primary mission, the Hills Emergency Forum (HEF) continues to provide a sustainable framework for interagency communication, joint planning and coordinated response to the needs of our member agencies' various constituents. The organization's goals were developed over the years and grouped into the four areas of Assessment, Mitigation, Preparedness and Response. These goals continue to serve as milestones for our collective efforts. However, many of these goals are now in a "maintenance" mode. The following 2021 Annual Report covers the period from October 15, 2020 through October 15, 2021

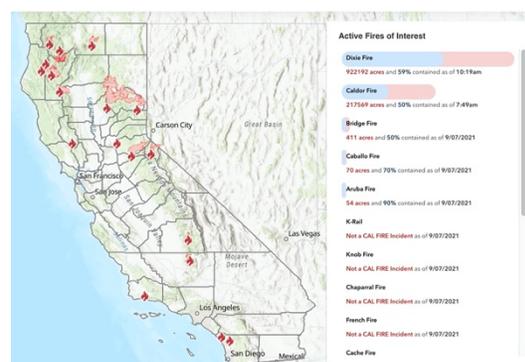
ASSESSMENT

While wildfires are a natural part of California's landscape, the fire season in California and across the West is starting earlier and ending later each year. Climate change is considered a key driver of this trend. Warmer spring and summer temperatures, reduced snowpack, and earlier spring snowmelt create longer and more intense dry seasons that increase moisture stress on vegetation and make forests more susceptible to severe wildfire. The length of fire season is estimated to have increased by 75 days across the Sierras and seems to correspond with an increase in the extent of forest fires across the state.

CAL FIRE 2021 Fire Season¹

Collaboration During Drought and Record Wildfires

2021 established new wildfire records with 7,064 incidents, 1,968,326 acres burned, one confirmed loss of life, and 3,050 structures damaged or destroyed as of October 15, 2021. The Dixie Fire, in Butte, Plumas, Tehama, Lassen and Shasta counties, is now the second largest fire in California history, with 963,309 acres burned and 94% contained after 93 days.² Four of the top 20 largest California wildfires, since records began in 1932, burned in July and August of 2021. Smoke from fires in the Sierra mountains reached the Bay Area throughout the summer and fall resulting in frequent smoke alerts from the Bay Area Air Quality Management District.



A dry winter with less than 59% of typical snowpack, was followed with low fuel moisture readings early in the season. On April 27th East Bay Municipal Utility District announced "Stage I Drought" with 10% voluntary conservation. Subsequently, on May 18, 2021 the National Drought Monitor declared the East Bay in "D4 Exceptional Drought." In addition, National Weather Service issued "heat advisories" and "red flag warnings" several times throughout the year, starting early in May.

Public interest in wildfire prevention remained high as indicated by the support for state and local funding. In November 2020, 74.19% of Berkeley residents approved Measure FF with a parcel tax for \$12.7 million for emergency response and preparedness. During their 2021 two-year budget process, Oakland City Council provided an additional \$500,000 during fiscal year 2021-22 for hazardous fuel

¹ Source: <https://www.fire.ca.gov/incidents/2021/> accessed 10/15/21. Five-year average is 7,581 fires over 1,290,091 acres. 2020 had 9,917 incidents, over 4,257,863 acres, 33 fatalities and 10,488 structures damaged or destroyed.

²Source: <https://www.fire.ca.gov/incidents/2021/7/14/dixie-fire/> Accessed 10/15/21. The largest fire was in 2020. The August Complex burned over 1,032,648 acres in Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake and Colusa counties. The "Top 20 Largest California Wildfires" https://www.fire.ca.gov/media/4jandlh/top20_acres.pdf

reduction. In April 2021, Governor Newsom and State Legislators provided an early budget action with an infusion of \$536 million to improve California’s resilience to wildfire. Additional funds in the regular budget cycle increased to a total over \$1.5 billion. The State Budget also included a \$13.5 million direct allocation to the East Bay Regional Park District to address the sudden increase in tree mortality and to provide fire-fighting equipment.

HEF SLC collaboration continued with local and State law enforcement agencies. Over the 4th of July weekend the group collectively closed Grizzly Peak Boulevard from Claremont Avenue to Centennial Road to reduce the chance of wildfire ignition from illegal fireworks. The closure was coupled with roving patrols throughout the East Bay Hills with the result of no wildfires in the area.

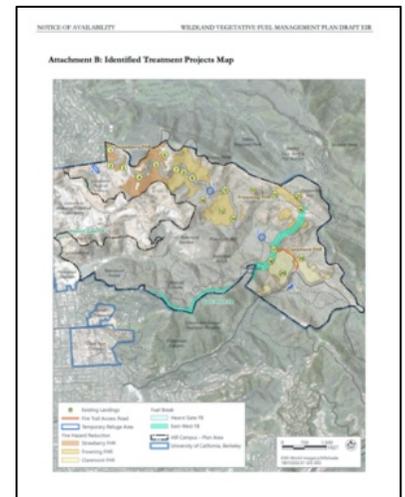
Close interagency coordination is also critical for evacuation orders to be successful. In the late summer, Alameda County announced the completion of the collaborative evacuation planning project, including development of evacuation zones for all the cities in Alameda County. Now, HEF SLC members have their residents covered by the ZoneHaven community evacuation interface³ to facilitate evacuation coordination. AC Alert emergency messages and local Nixel alerts are encouraging residents to “find their zone.” El Cerrito-Kensington, Berkeley and Moraga Orinda Fire District sponsored virtual or live evacuation drills during 2021 utilizing the Zonehaven platform and Contra Costa County CWS (community warning system) or AC Alert. These drills provided not only the opportunity for interdepartmental coordination, but also for the community to familiarize themselves with fire weather and fire evacuation messages, status of home evacuation zones, and to practice their household decision making.

Planning and Research

Planning and California Environmental Quality Act (CEQA) review

On February 9, 2021, the University of California, Board of Regents certified the Final Environmental Impact Report (EIR) for the UC Berkeley Hill Campus Wildland Vegetative Fuel Management Plan.⁴ The Plan identifies two fuel break projects, four temporary refuge areas, and three fire hazard reduction treatments, totaling approximately 600 acres. The planned work expands partner agencies’ efforts to reduce wildfire hazards in the East Bay. The projects’ locations make them an important link in the chain of hazardous fuel reduction projects throughout the East Bay hills, protecting not only the campus, but also the residents of Berkeley and Oakland, East Bay Municipal Utility District’s critical San Pablo watershed, and East Bay Regional Park Districts’ environmentally sensitive parklands.

Lawrence Berkeley National Laboratory completed their comprehensive Vegetation Management Guide for their grounds staff. Developed collaboratively by a multidisciplinary team, the Guide covers both fuel reduction treatments (fire hazard reduction and firewise structure ignition zones), environmental (sustainability, erosion control, stormwater management) and worker safety concerns. The Guide reflects the history of team science and richness of expertise found at Berkeley Lab.



³ <https://community.zonehaven.com/> accessed 10/15/21.

⁴ For more information on UC Berkeley Plan and EIR see <https://capitalstrategies.berkeley.edu/hill-campus> accessed 10/15/21.

City of Oakland continues to develop their Vegetation Management Plan and Environmental Impact Report.⁵ The public comment period on the Draft EIR ended in January 2021. The Vegetation Management (Plan) covers more than 1,400 acres of City property, plus approximately 300 miles of roadside. Vegetation management activities conducted on these lands currently include: goat grazing on nine sites covering approximately 1,300 acres, vegetation clearing along 16 roadways (58 miles), monitoring for vegetation clearance along approximately 300 miles of road within the High and Very High Fire Hazard Severity Zones (16.5 square miles), and brush clearance on critical City-owned properties (~332 acres). The Plan and EIR evaluate these and additional vegetation management practices to reduce fire hazard. The final EIR was expected winter of 2020, with certification scheduled for Spring 2021.

The California Vegetation Treatment Program (CalVTP), completed in 2019⁶, allows CAL FIRE, along with other agency partners, to expand their vegetation treatment activities to treat up to approximately 250,000 acres per year, contributing to the target of 500,000 annual acres of treatment on non-federal lands as expressed in Executive Order (EO) B-52-18. During 2021, CAL FIRE offer training on how eligible project proponents can use the CalVTP to comply with CEQA, if they are proposing vegetation treatments consistent with the CalVTP Program EIR. The CalVTP defines the vegetation treatment activities and associated environmental protections to reduce the risk of loss of lives and property, reduce fire suppression costs, restore ecosystems, and protect natural resources as well as other assets at risk from wildfire. The CalVTP supports the use of prescribed burning, mechanical treatments, hand crews, herbicides, and prescribed herbivory as tools to reduce hazardous vegetation around communities in the Wildland-Urban Interface (WUI), to construct fuel breaks, and to restore healthy ecological fire regimes.



Cal Fire also worked with the Office of Planning and Research to update the 2015 Fire Hazard Planning General Plan guide, released in November 2020 to comply with GC§65040.21.⁷ The document now includes specific land use strategies to reduce fire risk to buildings, infrastructure, and communities. In May 2021, the CAL FIRE Santa Clara Unit updated their 2021 Strategic Fire Plan with input from HEF members.⁸

Research

Widespread Tree Mortality

In October 2020, the East Bay began to monitor widespread sudden tree die-back and increased tree mortality. As of July 2021, the East Bay Regional Park District tracked approximately 1,500 acres of tree die-off in regional parks alone. During 2021, researchers at UC Berkeley, with assistance from US Forest Service, Pacific Southwest Research Station and San Francisco Public Utilities Commission,

⁵ For an updated timeline and draft EIR on the Oakland Vegetation Management Plan see <https://www.oaklandca.gov/projects/oakland-vegetation-management-plan> accessed 10/15/21.

⁶ For more detail about the California VTP see <https://bof.fire.ca.gov/projects-and-programs/calvtp/> and Fire Hazard Planning Guide https://opr.ca.gov/docs/Final_6.26.15.pdf accessed 10/15/21

⁷ Government Code 65040.21 https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=65040.21.&nodeTreePath=10.1.2.4&lawCode=GOV accessed 10/15/21

⁸ <https://www.fire.ca.gov/about-us/strategic-plan/> accessed 10/15/21

investigated the cause of the die-back.⁹ Two fungi, *Diaporthe* and *Dothiorella* were consistently isolated from acacia showing recent dieback. They both start as endophytes, living inside trees without any obvious effect on tree health, then may become pathogens with the onset of predisposing stress factors (for example, drought). This work is preliminary and ongoing. A similar study on declining Eucalyptus is starting up. On April 23, 2021, UC Berkeley provided a workshop on tree mortality to present results and management recommendations. CAL FIRE staff developed additional “Best Management Practices for Management of Trees Impacted by Pests and Drought in the Greater San Francisco Bay Area.”

Sudden Oak Death also continues to be a concern in the region. The 2020 SOD Blitz results released in November indicated noteworthy outbreaks in Tilden Regional Park, Joaquin Miller Park in Oakland, John Muir National Historic Site in Martinez and in Sobrante Ridge Regional Reserve.¹⁰



Framework for Vegetation Treatment Prioritization and Shelter in Place Designation for Wildland Fire¹¹

At the May 2021 International Association of Wildland Fire Conference, Lawrence Berkeley National Lab presented their systematic method used to prioritize risk reduction in a weighted decision matrix. They shared examples of how the Lab used the gathered data to identify safe area for emergency (SAFE) buildings for sheltering in place, to risk bin buildings and to identify future retrofit improvements.

Fire Weather Research Workshop

On April 8 and 9th, the San Jose State University Fire Weather Research Laboratory hosted the second Fire Weather Research Workshop to provide the latest information and current state of knowledge. The on-line workshop, with twenty-eight speakers, was split over two days to address: fuels and fire danger, fire weather and indices, remote sensing of the wildfire environment, coupled fire-atmosphere modeling advances, and smoke modeling and impacts. A wrap up panel session discussed research to operations needs to reduce risk and contribute to improved management and mitigation of the wildland fire effects. Recordings of the workshop are available through the Lab.¹²

Early Ignition Detection

HEF SLC members continue to participate in development of early ignition detection in the region. The HEF area now has thirteen cameras that are linked with others statewide and managed by a consortium of three universities: the University of Nevada, Reno (Seismological Lab), University of California San Diego and University of Oregon.¹³ Eight additional cameras on Grizzly Peak Lookout (2 cameras), Grizzly Peak KPFA, Oakland Coliseum, William Rust Summit, Mulholland Ridge, Rocky Ridge, and Crow

⁹ For results of the research see: *An investigation into the causes of recent widespread Acacia spp. mortality in the San Francisco Bay Area* – Matteo Garbelotto, UC Berkeley. <https://www.suddenoakdeath.org/wp-content/uploads/2021/04/Garbelotto.summary.AcaciaStudy.03.30.21.pdf> and [BayAreaTreeMortality.org](https://www.bayareatree.org) accessed 10/15/21.

¹⁰ Sudden Oak Death results at https://nature.berkeley.edu/matteolab/?page_id=755 see also <https://www.suddenoakdeath.org/> accessed 10/15/21.

¹¹ <https://firesafety-humandimensions2021.com/the-program/> accessed 10/15/21.

¹² San José State University Fire Weather Research Laboratory. <https://www.fireweather.org/> accessed 10/15/21.

¹³ For information on Alert Wildfire lab <http://www.alertwildfire.org/about.html>. For live feed see <http://www.alertwildfire.org/southeastbay/index.html>. accessed 10/15/21.

Canyon joined those on Vollmer Peak, in downtown Oakland (Clorox) and Berkeley, Moraga Alta Mesa, and Round Top. The cameras are part of the South & East Bay camera network.

Additional cameras in Alameda and Contra Costa counties include: Briones-Rancho de la Rosa, Briones Tabletop, Cummings Skyway, Fariview Alameda 1, Fariview Alameda 2, Garin Ridge 1, Highland Peak, Kreger Peak, Lafayette Lucas Drive, Lafayette Highway 24, LPD Mobile (Crow Canyon), Moraga Alta Mesa, Mulholland Ridge, Mt Diablo, Mt Diablo west, Nichol Knob 1, Pinole Ridge, Rocky Ridge 1, SRVFD Station 31, Town of Moraga, Wiedemann Hill, and Wildcat Canyon.

New Technology: Remote Equipment and Biomass Utilization

HEF SLC members continue to share information on new technology and equipment related to hazardous fuel removal. Several of the agencies have utilized remote control mowers. The “green climbing machine” can be used to cut poison oak and otherwise un-penetrable brush fields. A remote-control grapple saw, with its 90-foot boom, allows for cutting and moving large trees.

UC Berkeley’s “Claremont Avenue Evacuation Support Project” spotlights biomass utilization issues in the region. The project generated over 1,000 logs and trucks of wood chips during 2020 and 2021. UC Berkeley requires all biomass remain on campus as part of their Zero Waste commitment. Most of the chips were used throughout the campus in the landscape to reduce irrigation demand, and for weed and erosion control. Other creative repurposing solutions included: engineered flooring, creek restoration, traffic barriers along edge of roadway, planters, furniture, artwork, playgrounds, and firewood. The remaining logs were transported to a co-generation plant. HEF members continue to explore biomass utilization solutions.

Countywide Fine Scale Vegetation Map and Landscape Database Project

Growing populations, global climate change, altered fire regimes, invasive/non-native plants and animals, habitat fragmentation, plant diseases and pathogens, noise, light, and air pollution, and other human and natural impacts threaten the health of the area’s natural and man-made resources. To effectively care for the counties’ ecosystems and infrastructure, citizens, landowners, politicians, managers, and government agencies must know the location and distribution of resources across the landscape, and they must monitor change over time. To fulfil these needs, several consortia have developed throughout the Bay Area to provide this critical information. Sonoma led the first Bay Area vegetation and landscape program. Shortly after the Sonoma County project was completed in 2017, a network of organizations that steward Mount Tamalpais in Marin County, decided to move forward with a similar project. Shortly after a consortium was able to fund and implement a parallel countywide effort in San Mateo. Primarily because of the usefulness of the Sonoma County data in understanding the behavior of the Sonoma County 2017 Complex wildfires, a fourth consortium expressed interest in a similar mapping project for Santa Cruz and Santa Clara Counties. The addition, the Napa County Firewise Foundation embarked in 2019 on a project to use the existing fine scale vegetation map for Napa County developed by UC Davis (Dr. Jim Thorne) and California Department of Fish and Wildlife to create a 5-meter fuel model for Napa County. All of the map products of these efforts are accessible via a web site and are freely available.¹⁴



During 2021, a consortium of interested agencies, including HEF members, expanded the process to Alameda and Contra Costa Counties. The initial Wildfire Risk Assessment Mapping recently was

¹⁴ Pacific Veg Map hosts the maps <https://pacificvegmap.org> accessed 10/15/21.

selected for funding through CAL FIRE's California Climate Investments grant program. The effort to develop Bay Area Wildfire Risk and Fine Scale Vegetation Mapping will be led by EBRPD, CAL FIRE and Kass Green and Associates. They plan on having the wildfire risk map by Fall 2022, followed by the fine scale vegetation map by Fall 2024 once additional funding is secured. The data is envisioned as being used, in addition to wildfire planning and response, for climate change adaptation, restoration planning, watershed and flood management, wildlife habitat management, open space prioritization, disease monitoring and cannabis mapping.

Continued Impact of COVID -19

The novel COVID-19 pandemic with the rise in Delta Variant continues to affect the HEF in many ways. On March 16, 2020, orders from the health officers of the nine Bay Area counties directed all residents of Alameda and Contra Costa Counties to shelter-in-place and limit commercial activity to essential needs. Reopening and recovery has moved at the "speed of safety," with plans and indicators in continued flux.

In response to the pandemic, HEF members have modified staffing and operations. Some continue to have on-site crews to maintain critical operations (public safety, fire protection, water delivery, etc.). Everyone utilizes the accepted protocols of social distancing, face masks, personal protection equipment and health measures. The pandemic and accompanying shut-downs resulted in "a new normal" with redirected budgets, personnel and programs; periodic park closures; revised university protocols; and work at home adjustments. As public services began to open up and then restrict activities again the emphasis has continued on flexibility.

For the Hills Emergency Forum Staff Liaison Committee (HEF SLC) modifications to the program approved at the October 16, 2019 HEF Annual Meeting included:

- The Covid-19 pandemic did not reduce collaboration among HEF SLC members. Staff continued throughout 2021 with virtual meetings and strengthened remote communications to respond to unprecedented situations.
- Continued reduction of public outreach on wildfire preparedness as media coverage focused on the pandemic. Increased use of social media to reach residents.
- Continued elimination of field tours and international training due to shelter-in-place orders.

Moving forward, the actions approved by the Forum for 2020 will carry over into 2022.

MITIGATION

Inspection, compliance and abatement programs

The cities of Berkeley, El Cerrito (including the unincorporated community of Kensington), Oakland and the Moraga Orinda Fire District all have active inspection, enforcement and abatement programs for vegetative fuel reduction on private properties.

City of Berkeley. In November of 2020 Berkeley voters approved Measure FF, a parcel tax that provides funding for new programs and services within the Berkeley Fire Department (BFD). This includes development of a WUI Division (Wildland/Urban Interface Division) with personnel dedicated to the expansion of FireWise groups in the City, the Safe Passages program (block by block evaluation and planning pertaining to red curbing, signage, and vegetation management) in key areas of the high fire area, a vegetation management program organized by the BFD and an increase in the number of vegetation management inspections. BFD is expanding inspections to include all of Zones 2 & 3. This encompasses the entire Local Agency Very High Fire Hazard Severity Zone. During 2021, fire crews will inspect 1,385 parcels east of Grizzly Peak Blvd., while dedicated inspectors from the new WUI Division will inspect the remaining 6,765 parcels in Zones 2 & 3. Projected total defensible space inspections for 2021 are 8,140.

City of El Cerrito (also serving the community of Kensington) revamped their public outreach materials in the spring of 2020 to provide more user-friendly materials following the CAL FIRE Ready Set Go model.¹⁵ This information was reinforced with inspections of properties within very high fire hazard severity zones : El Cerrito (14,000 properties) and Kensington (3,500 properties). For those homes and vacant lots that were not in compliance, notices were sent to the property owner in April requiring compliance. El Cerrito staff also worked with the East Bay Sanitary to provide free green-waste disposal bags. Abatement followed for those parcels that continued to have hazardous fuels. In 2021, while all parcels were inspected, the focus was put on repeat offenders. Approximately \$100,000 was spent in abatement. The cost of abatement is added as a lien to the property through the Contra Costa County Assessor's office. To further strengthen the regional mitigation strategy, some of the hazardous fuel reduction on El Cerrito private properties was able to connect to the East Bay Regional Park District work in Wildcat Canyon Regional Park, creating a significant reduced fuel zone along the ridge.

City of Oakland inspects over 25,000 homes and vacant parcels in their very high fire hazard severity zone.¹⁶ In 2020, City of Oakland redesigned their annual inspection notice to include the newly adopted codes (Chapters 3 and 49 of California Fire Code and Chapter 15 of Oakland Municipal Code). In 2021, the first round of inspections in June was completed by engine companies. Follow up of non-compliant properties was done by the four inspectors and a supervising inspector in the Vegetation Management Unit of the Oakland Fire Prevention Bureau. Oakland continues to use the ACELA system (adopted in 2019) that allows inspectors to enter information directly into the digital system and homeowners to set up an account and view the specific issues with their properties. In 2020, City of Oakland implemented a pilot program for the re-inspections of properties. Each time an inspector returns to a parcel, the owner is required to pay for that service, whether it is the second, third or fourth time. The pilot program extended an opportunity for parcel owners to mitigate within 45-day and self-report compliance (providing photographic evidence along with an invoice from a contractor). If the parcel owner demonstrated that the deficiency was remedied there was no need for the reinspection and associated \$409 fee (per inspection).

The Moraga Orinda Fire District (MOFD) conducts exterior hazard abatement inspections throughout the fire district. A focused approach is used by the Fire Prevention team to first inspect evacuation routes then target high hazard areas within the district. They also sponsor a free chipping program for residents within the Fire District. In 2020, the Fire Prevention team was expanded to include three full time fuels mitigation specialist who inspect and educate the public about fire code requirements and how to make their property safer. In 2021, MOFD began enforcing the changes made to the 2020 fire code, amendments include: a 2-foot noncombustible zone around all structures, fuel mitigation along fire apparatus access roads, under eave sprinklers, removal of Monterey pines and eucalyptus that are within 6 feet of a structure and removal of all bamboo and juniper within 10 feet of a fire apparatus access road by 2023. The Fire Code also streamlined the inspection process from notification through lien hearing. In May 2021, the District passed a citation ordinance to allow for the issuing of citations for violations of all portions of the fire code.

Hazardous fuel reduction projects

The El Cerrito / Kensington Fire Department (ECFD) continues to manage the fire fuel loads, fire trail and the fuel breaks within their 90 plus acres of city owned natural parkland (Hillside Natural Area) and the miles of urban interface with Wildcat and Tilden Regional Parks. This is achieved through multiple partnerships with CAL FIRE, Diablo Fire Safe Council, East Bay Regional Park District and their own community groups. Their fuel management efforts include: prescribed burns, mechanical methods

¹⁵ For more information about the El Cerrito vegetation management program see <https://www.el-cerrito.org/402/Vegetation-Management> accessed 10/15/21.

¹⁶ For more information about the Oakland inspection program see: <https://www.oaklandca.gov/services/wildfire-district-inspections> accessed 10/15/21.

(masticator and mower) and hand crews (weed eaters and chainsaw). The focus continues on dead and dying trees.

East Bay Municipal Utility District (EBMUD) continued their forest management hazardous fuel reduction projects, including: eucalyptus thinning along east side of Grizzly Peak, the ongoing removal of decadent pines on the eastern shore of San Pablo Reservoir, and the augmentation of fuel breaks in Orinda. Combined management tactics, including herded goats, mechanical mowing, hand labor, and pile burning, were used to reduce fuel loading and enhance native plant populations. Continued maintenance of previous fuel treatment areas utilized volunteers to assist in the removal and reduction of noxious weeds and in the enhancement of the diverse and abundant native plant species growing throughout the fuel treatment area. With support from CAL FIRE/ California Department of Correction Fire Crews, EBMUD continued to remove dead Monterey pines along the 330-acre forest on the east side of San Pablo Reservoir. Fuel management activities included pile burning and tree removal by hand crews. The District also completed maintenance to provide ingress for wildfire suppression on over 150 miles of fire roads on watershed lands in Alameda and Contra Costa counties.

East Bay Regional Park District (EBRPD) continues to implement their 2010 Wildfire Hazard Reduction and Resource Management Plan and the accompanying CEQA document which covers hill and shoreline parklands from Richmond to Castro Valley.¹⁷ During 2021, initial treatments were implemented on 1,085 acres in recommended treatment areas (RTAs) in Anthony Chabot Regional Park, Claremont Canyon, Huckleberry Preserve, Redwood Regional Park, Sibley Regional Park, Wildcat Canyon, Miller Knox Regional Park, and Tilden Regional Park. Equipment and techniques used included: weed-eating, mechanical and hand removal of brush, goat grazing, tree thinning and eucalyptus stump re-sprout control. During 2021, they expanded the use of remote equipment with a remote-control grapple saw. Maintenance continues on the projects completed in previous years in all of the parks located in the high fire areas. The work is an integral component of the Park District's Safe and Healthy Forests initiative for wildfire protection. This year, EBRPD also increased its staff capacity for fuel reduction with an additional fuels reduction coordinator and expanded their 8 person fuels crew to a 12-person crew. One of the larger projects completed was the initial treatment of 25 acres along Grizzly Peak Blvd funded by the FEMA Pre Disaster Mitigation grant. This consisted of selective thinning of 1,140 dying Pines and Eucalyptus, removing brush along the roadway, and maintaining and enhancing habitat for sensitive species of different plants and animals.

Lawrence Berkeley Lab (LBL) has completed all of the recommendations in its previous 10-year Wildland Fire Plan. LBL continues to maintain their property using goat herds and hand-labor to reduce annual fuel loads. This year they increased their use of goats with 400-700 goats on the lab for 4-5 weeks, and with additional resources directed to tree removal. Invasive eucalyptus and diseased/dead trees of other species were removed and chipped in conjunction with low-level limb maintenance and other surface fuel removal. LBL staff also is working with their Berkeley neighbors on a perimeter survey to better understand how they expose the adjacent residential properties and how the neighboring homes expose the Lab to fire spread. This has led to joint hazardous fuel reduction efforts that will benefit all.

The Oakland Vegetation Management Unit is responsible for inspecting City owned parcels, and managing fuel reduction in open space and parklands. Fuel breaks are treated and maintained through a variety of means within the City's approximate 1,300 acres of parklands and open space primarily in conjunction with their extensive goat grazing program. In the past year, Oakland has completed 60

¹⁷ For details on fuel management activities, treatment prescriptions and related natural resources stewardship and wildfire prevention, see https://www.ebparks.org/about/fire/fuels_management/default.htm <https://www.ebparks.org/about/stewardship/fuelsplan/> and https://www.ebparks.org/about/fire/wildfire_prevention.htm accessed 10/15/21.

abatement contracts. These abatement contracts, totaling 155 acres of City of Oakland owned undeveloped properties and 85 miles of roadside, reduced the threat of fire. The hazardous fuel reduction enables firefighters to establish a safe anchor point when responding to wildland fire events. Oakland's goat grazing program concluded in late September with approximately 1100 acres of City lands grazed. Oakland combined abatement practices of grazing and contractor hand crews have reduced fuels adjacent to its major neighborhood egress routes. In 2018, City Council approved 5-year goat grazing contract for \$2.6 million to continue the program. The following locations were grazed resulting in achieving the goal of ground fuels vegetation not exceeding 4 inches in height within 100 feet of established fuel breaks and access fire trails for Type III and Type VI apparatus.

- Sheffield Village
- Joaquin Miller Park
- Shepherd Canyon Park
- Kings Estates
- Grizzly Peak Open Space
- Dunsmuir Heights
- Castle Canyon Open Space
- Knowland Park
- Oak Knoll Naval Redevelopment

In January 2021, University of California, Berkeley (UCB) completed the "Claremont Canyon Evacuation Support Project." The 18-acre project removed over 900 stems, pruned 100 trees to remain and removed understory brush. The trees that were removed were selected as those that could block evacuation or emergency egress along this critical connection from Grizzly Peak Boulevard downhill to the City of Berkeley road network. In August, UCB also completed a selective tree removal project on "Tightwad Hill" (above the football stadium) to remove aging, hazardous pines. This Fall, UCB began fuel reduction along the 8 mile "Jordan Fire Trail." The 62-acre project will remove trees and shrubby fuels to support emergency evacuation. UCB also completed their annual defensible space work around the 15 buildings in the Hill Campus, as well as follow up maintenance on the Centennial Drive evacuation route project completed in 2020.



Before and after fuel reduction on Claremont Avenue. Evacuation route protection by selective thinning of forest.

Goats Reduce Hazardous Fuel Loads.

Use of goat herds continues to be an effective technique for vegetation management to reduce hazardous fuel loads. City of Oakland, East Bay Municipal Utility District, East Bay Regional Park District, and Lawrence Berkeley National Laboratory all have ongoing contracts with the various herds that work in the East Bay. During 2020, University of California, Berkeley, working with their Office of Laboratory Animal Care, acquired a small herd of goats. In 2021, the herd was matched to small projects on the Hill Campus and at Russell Reserve.

Additional Fuels Reduction Coordinator and Fuels Crews.

On August 10, 2021, the EBRPD Board approved funding a third full-time fuels reduction coordinator to allow the District to continue to advance fuel vegetation management and the expansive tree die-off on regional parklands. The District Fuels Crew, authorized in 2020, continued to work throughout the District with thinning of the dead pine and acacia in Redwood and Miller Knox Regional Parks. The EBRPD has increased the size of the fuels crew to 12 people.

Use of Prescribed Fire

Use of prescribed fire continues to expand throughout California. In 2021, EBRPD planned a prescribed fire for Tilden Regional Park. However, the District postponed the prescribed fire when the prescriptions for weather and fuels conditions were not met (too dry). Several HEF members continue to use prescribed fire to manage vegetative fuel loads.

Moraga Orinda Fire District completed several prescribed fires during the end of 2020 - 2021:

- December 2020 three prescribed fires at Painted Rock on John Muir Land Trust property, Wagner Ranch Elementary School, and at Bear Ridge.
- In March 2021, in Pinehurst Canyon near the Town of Moraga, with East Bay Municipal Utilities District and CAL FIRE along Pinehurst Road near the Canyon Y.
- In April 2021, EBMUD and MOFD conducted a test burn on Flicker Ridge (in Canyon) to see if the knobcone pines would open. They were successful; observing some follow-up germination in this stand of the rare pine.



In May the prescribed fire planned by EBRPD had to be postponed.

These successful prescribed burns provided both hazardous fuel reduction and opportunities for fire fighter training.

East Bay Municipal Utility District, East Bay Regional Park District, El Cerrito and Moraga Orinda Fire District also conducted pile burns to process cut materials from their hazardous vegetation removal projects on San Pablo Reservoir, in Tilden Regional Park, Wildcat Canyon Regional Park, Claremont Canyon, Reinhardt Redwood Regional Park, Briones Regional Park, the Hillside Natural Area in El Cerrito and near Sleepy Hollow in Orinda.

Funding

Grant Funding

During 2021, HEF SLC member collaborated on applications to several grant programs. The California Climate Initiative provided grant programs in Forest Health and Fire Protection. Moraga Orinda Fire District was awarded \$6.38M from the Governor's "early action" fire prevention funding (more detail under Legislation and Policy of Interest) to develop the Tunnel East Bay Hills Fuel Break. City of Oakland Public Work Department also was awarded \$224,000 for the Skyline Boulevard Evacuation Route project.

University of California, Berkeley continues to utilize the California Climate Initiative grant funds provided through CAL FIRE in 2018 for hazardous fuel reduction along evacuation routes, CEQA review and implementation of their Wildland Vegetative Fuel Management Plan. The UCB grant ends in March of 2022.

East Bay Regional Park District continues to expend grant funding from their FEMA grant and California Climate Initiative grant from the California Natural Resource Agency through the State Coastal Conservancy for forest health, demonstration projects and community outreach. In 2021, they received a total of \$13.5.M from the State budget: \$10M to address sudden tree die-back and increased tree



mortality and \$3.5M for new firefighting equipment.¹⁸. They also received \$773,929 to develop wildfire risk mapping (see the Countywide Fine Scale Vegetation Map and Landscape Database project).

Increased Internal Funding.

During 2021, a number of HEF member agencies dedicated internal funding increases and new programs related to wildfire hazard reduction. East Bay Regional Park District provided permanent funding for a third fuels reduction coordinator. The Facilities Services Department of UC Berkeley successfully received “Be Safe” internal funding to remove aged pine trees on Tightwad Hill and signage throughout the hill area. They also were awarded funds to increase “student public safety officer” patrols of the hill area during red flag weather. City of Oakland provided additional funding to increase the pace of hazardous fuel reduction along roadsides and on city owned parcels.

Parcel Tax

In November 2020, Berkeley residents voted for Measure FF to create a parcel tax generating \$12.7 million for emergency response and preparedness. The funds will be used for an enhanced vegetation management inspection program, development of a Community Wildfire Protection Plan (CWPP), the City’s Safe Passages program focused on evacuation, and risk reduction in collaboration with adjacent agencies. Funding also will be used for emergency response and 911 upgrades.

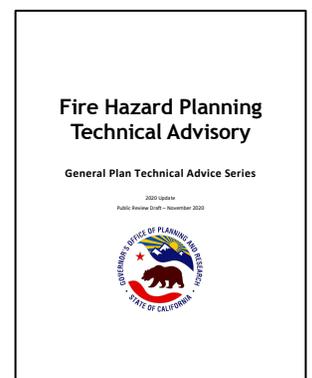
Legislation and policy of interest.

HEF SLC members received regular updates on 53 pieces of legislation related to wildfire during 2021. Updates included legislation on: local grant assistance, tax credits or bond measures; home hardening and defensible space; planning and development; public safety power shutoffs; biomass, environmental review, risk modeling and climate change; and miscellaneous topics. such as conditions of immunity related to prescribed burns.

HEF SLC members reviewed the draft Fire Hazard Planning Technical Advisory¹⁹ from the Governor’s Office of Planning and Research. This update of the 2015 document addressed new topics such as: regulatory background, engagement and outreach, climate related hazards, environmental justice and policy development. The update also provides example policies ranging from minimizing risks to existing and new land uses, to disaster response, recovery and maintenance.

The Governor’s Forest Management Task Force released their comprehensive strategy in January 2021 with “California’s Wildfire and Forest Resilience Action Plan.²⁰” The plan identifies four goals that closely tie with the Governor’s 21-22 budget proposal. Several of the goals to reduce wildfire risk for vulnerable communities, improve the health of forests and wildlands and accelerate action to combat climate change also closely align with HEF member activities:

- Increase pace and scale of forest health projects (building a network of fuel breaks around vulnerable communities).
- Strengthen protection of communities (expanding home hardening, defensible space and preparedness planning to create wildfire adapted communities).
- Manage forests to achieve the state’s economic and environmental goals.



¹⁸\$10 Million Dedicated to Addressing Sudden Tree Die-Off in Regional Parks.

<https://www.ebparks.org/civica/press/display.asp?layout=11&Entry=674> accessed 10/15/21.

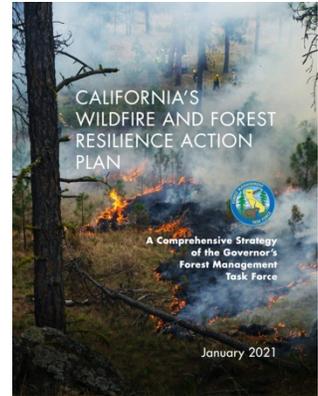
¹⁹ https://opr.ca.gov/docs/20201109-Draft_Wildfire_TA.pdf accessed 10/15/21.

²⁰ <https://www.fire.ca.gov/media/ps4p2vck/californiawildfireandforestresilienceactionplan.pdf>

- Drive innovation and measure progress.

The Coast Regional Prioritization Group, a subset of the Governor’s Forest Management Task Force, meets bimonthly to address fire hazard reduction, biomass etc. The group is a link to the Governor’s Office and legislature. CAL FIRE staff provided periodic updates of the activities that were pertinent to HEF members.

In April, the Legislature and Governor signed an Early Action funding of \$563M (SB85 and AB79) in recognition of the extremely dry year and high fire risk. In addition, Governor’s Newsom’s 2021 budget included under the Climate Change²¹ section of the budget, \$1.5 billion over three years to support the Forest Management Task Force Plan and priority wildfire prevention and forest resilience activities. The Emergency Response section of the budget included \$12 million for the Wildfire Forecast and Threat Intelligence Integration Center²², \$100 million for community hardening to build disaster resilient communities and for \$181.7 million for CAL FIRE response and equipment.

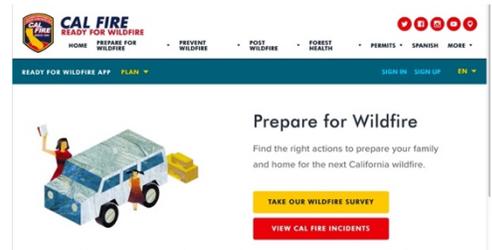


PREPAREDNESS

Outreach and education

In 2021 CAL FIRE app continued to help residents prepare for wildfire. The web based *Ready for Wildfire* app enables homeowners to create a personalized wildfire readiness plan. After answering a series of questions, the homeowner receives a detailed report on actions they can take to improve their defensible space, harden their home and get ready for wildfire.

HEF SLC members updated their outreach information to residents, including information related to inspections and defensible space. Oakland’s Vegetation Management Unit received a \$15,000 grant for public education on vegetation management and evacuation/ emergency preparedness. This included an update website, postcard notification of an early season, as well as other outreach throughout the season.



<https://www.readyforwildfire.org/more/ready-for-wildfire-app/>.

Red Flag Watches and Warnings

A Red Flag Warning means that critical fire weather conditions are either occurring now...or will shortly. A combination of strong winds...low relative humidity...and warm temperatures can contribute to extreme fire behavior.

National Weather Service.

The East Bay Hills experienced numerous red flag watches and red flag warnings in 2021, beginning with an early event from May 8 through May 11th. The National Weather Service announcement triggers HEF member fire agencies to add staffing, increase fire patrols, and pre-position equipment to enhance response effectiveness for potential fires. When weather conditions increase the risk of ignitions and uncontrolled wildfire, East Bay Regional Park District and East Bay Municipal Utility District both close



²¹ 2021-22 Budget sections. <http://www.ebudget.ca.gov/2021-22/pdf/Enacted/BudgetSummary/ClimateChange.pdf> and <http://www.ebudget.ca.gov/2021-22/pdf/Enacted/BudgetSummary/EmergencyResponse.pdf> accessed 10/15/21.

²² Wildfire Forecast and Threat Intelligence Integration Center (SB209). https://esd.dof.ca.gov/Documents/bcp/2021/FY2021_ORG8940_BCP3879.pdf accessed 10/15/21

trails and recreation areas, and increase park and watershed patrols to reduce the chance of ignitions. Oakland also closes their popular Joaquin Miller Park and restrict barbecues in any city park during red flag warnings. Fortunately during 2021 the conditions were not severe enough to warrant closures. The most recent addition to the region's red flag protocols was the restriction of parking along Grizzly Peak Boulevard from 9PM to 6AM during these periods of critical fire weather.

The East Bay Regional Park District owns and maintains four Remote Automated Weather Stations (RAWS) within Alameda and Contra Costa counties. RAWS stations from other agencies, including ones maintained by the Oakland Fire Department, Cal Fire, and others form a network providing essential real time readings to aid in predicting high fire danger in the region. This information is used by EBRPD as well as other agencies, to determine communities daily fire danger, as well as impose fire restrictions such as restrict campfires, cooking fires, and equipment use in the wildland. EBRPD is also in the process of updating the fuel models used in calculating fire danger. Adopting these newer fuel models will provide more accurate predictions as well as incorporating the most recent weather data to ensure that they are able to keep the parks safe for their visitors, employees, and neighbors.



Spot forecasts allow the local fire departments to request a forecast specifically for the conditions in their local. For instance, the Berkeley Fire Department requested a spot forecast for the Berkeley Hills when there was a Red Flag warning on August 17th. The spot forecast did not predict fire weather, and the Department was also able to confirm that the Pacific Gas and Electric (PG&E) public safety power shut off would not affect the Berkeley Hills.

During high fire danger conditions, PG&E may pre-emptively turn off power to threatened areas. Public safety power shutoffs create a double threat - a potentially multi-day power outage combined with high fire risk. In a fire-prone area such as the Berkeley hills, it is critical to prepare for these events. Shutoffs may last as long as six days. Once the fire danger has passed, PG&E must inspect all power lines and electrical infrastructure before restoring power. If power goes out during a PSPS event, everyone needs to be prepared for an extended outage.

Air Quality

The Bay Area felt the impact of the large fires in the Sierra region to the east throughout the summer and fall. The Bay Area Air Quality Management District issued multiple "smoke alerts" due to the shifting winds that brought wildfire smoke into the region. Fortunately on many days the smoke remained high aloft causing hazy skies. However, there were periods that the smoke impacted elderly persons, children and individuals with respiratory issues.

Firewise Communities

The National Fire Protection Agency (NFPA) program, Firewise Communities, has provided a framework for communities to develop and implement local solutions for wildfire preparedness. El Cerrito, Moraga, and Orinda all have Firewise USA neighborhoods active in 2021. Several of the other member agencies are interested in supporting development of similar programs in areas of high wildfire risk.

RESPONSE

2021 response activity

Throughout the year, HEF SLC members received regular updates on significant fire potential and drought conditions²³ to be able to respond to the heightened potential for wildfires. After May 18, 2021 Alameda and Contra Costa Counties were under the highest level - D4 Exceptional Drought” - following a very dry winter. Fortunately, in spite of the dry fuels and high temperatures, much of the year saw “normal significant fire potential,” with a caution of increased initial attack expected during dry breezy weather. During to September through November, the Predictive Services North Ops Monthly Outlook increased to “above normal” for the East Bay region.

The wildfire year in the area managed by HEF members was benign compared to the rest of the state. As of October 15th, the largest fire in the region was the 128 Acre “Diablo Fire.” It started at 4:22PM on July 11, 2021 on Vasco Road in eastern Contra Costa County, and was controlled by 9:30 PM. Early in the season there were two small fires along the roadside of Interstate 580, near Keller Avenue and Mountain Boulevard in Oakland. Several times during the year, monsoonal moisture from the southwest region of the United States created concerns over dry lightning; increasing fire watches and warnings. However, throughout California there were over 7,000 incidents burning almost 2 million acres.²⁴ HEF members provided support on many of the out of area fires. El Cerrito alone provided over 12,000 personnel hours to 12 different fires. EBRPD supported the suppression efforts on the Dixie Fire with EBRPD firefighters working 54 continuous days, as well as overhead to other fires throughout the state.

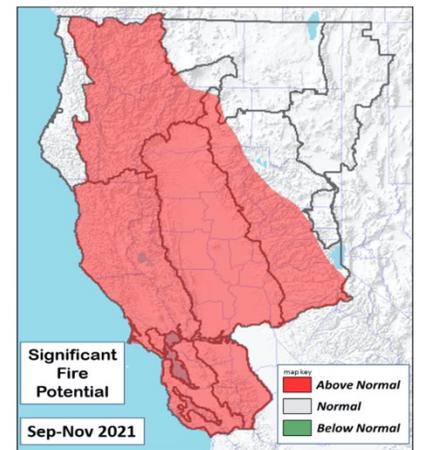
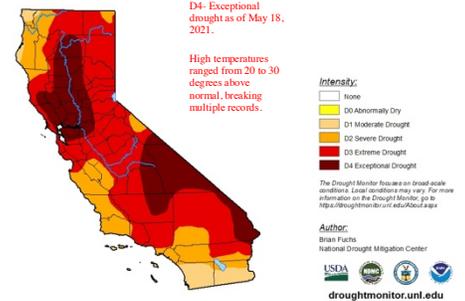
Beginning in May 2021, illegal firework activity was above the level of previous years; starting earlier and extending over a longer period of months. A small grass fire in the Crestmont neighborhood of Oakland was apparently caused by illegal firework activity on May 20th. Over the 4th of July weekend, the City of Oakland, with cooperation of partner HEF members, Cal Trans and the California Highway Patrol, closed Grizzly Peak Boulevard to through traffic. This allowed members to patrol the area to monitor for potential ignitions. Fortunately, there were no ignitions, structure or loss of life in the HEF member jurisdictions on 4th of July. The HEF SLC members continued to work together to block vehicular access to the popular scenic look-out areas, as well as coordinate continued enforcement to reduce the potential for ignitions in critical locations.



OAKLAND, CA – JULY 4: Illegal fireworks light up the sky during Fourth of July celebrations in east Oakland seen from Lake Merritt in Oakland, Calif., on Sunday, July 4, 2021. (Ray Chavez/Bay Area News Group)¹

U.S. Drought Monitor
California

June 1, 2021
(Released Thursday, Jun. 3, 2021)
Valid 9 a.m. EDT



²³ North Ops Fire Forecast: https://gacc.nifc.gov/oncc/predictive/outlooks/Outlook_NOps.pdf accessed 10/15/21.

US Drought Monitor: <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA> accessed 10/15/21.

²⁴ <https://www.fire.ca.gov/incidents/2021/> accessed 10/15/21.