

AGENDA
Disaster Fire and Safety Commission
March 23, 2022
7:00 PM

District 1 – Kim-Mai Cutler	District 5 – Shirley Dean
District 2 – Weldon Bradstreet	District 6 – Nancy Rader
District 3 –	District 7 – Tobias Simmons
District 4 – Antoinette Stein	District 8 – Paul Degenkolb

Mayor’s Appointee- Jose Luis Bedolla

PUBLIC ADVISORY: THIS MEETING WILL BE CONDUCTED EXCLUSIVELY THROUGH VIDEOCONFERENCE AND TELECONFERENCE

Pursuant to Government Code Section 54953(e) and the state declared emergency, this meeting of the Disaster and Fire Safety Commission will be conducted exclusively through teleconference and Zoom videoconference. The COVID-19 state of emergency continues to directly impact the ability of the members to meet safely in person and presents imminent risks to the health of attendees. Therefore, no physical meeting location will be available.

To access the meeting remotely: Join from a PC, Mac, iPad, iPhone, or Android device: Please use this URL <https://us06web.zoom.us/j/81595546232> If you do not wish for your name to appear on the screen, then use the drop down menu and click on "rename" to rename yourself to be anonymous. To request to speak, use the “raise hand” icon by rolling over the bottom of the screen.

*To join by phone: Dial 1-669-900-9128 and enter Meeting ID 815 9554 6232 If you wish to comment during the public comment portion of the agenda, Press *9 and wait to be recognized by the Chair. Please be mindful that all other rules of procedure and decorum will apply for Commission meetings conducted by teleconference or videoconference*

Preliminary Matters

Call to Order

Approval of the Agenda

Public Comment on Non-Agenda Matters

1. Fire Department Staff Report
 - a. Measure FF Report Schedule
 - b. Measure GG Report Schedule
 - c. Department Activities
 - i. Overall Call Metrics
 - ii. Special Reports
 - iii. Commission Actions Status

Consent Items

2. Approval of Draft Minutes of Meeting of February 23, 2022*

Action Items

3. Rescheduling the Regular Meeting Scheduled for April 27, 2022 to Another Date in April (Bedolla)

Discussion Items

4. Commission Workplan (Bedolla)*
5. Measure GG and FF report (Staff)*
6. Presentation on Fire Hazard of Eucalyptus, Costs, and Monarch Butterflies by Professor Joe McBride (Rader)*
7. Community Wildfire Protection Plan Core Group Commission Designation Process (Bedolla)
8. Discussion of Proposed Hazardous Vegetation Removal Program & Budget for FY 23-24 Budget* (Rader)
9. FEMA Grants Updates (Bedolla)
10. Discussion of Parking Enforcement Budget Item* (Rader)
11. Outdoor Warning System update/Laguna Beach System (Dean, Bedolla)
12. Process for notifying the Commission of Reports Status (Dean)
13. Future Agenda Items and Next Steps
 - a. Measure GG Tax Rate Increase

Adjournment

Disaster & Fire Safety Commission
Regular Meeting
Wednesday February 23, 2022

Present: Jose Luis Bedolla, Shirley Dean, Weldon Bradstreet, Nancy Rader, Toni Stein, Paul Degenkolb

Absent: Kim-Mai Cutler

Staff: Khin Chin, Keith May

Public: Attendees 12: Alina C. (Berkeley Paths), jmcbride, Henry DeNero, Marcus von Engel, Benay Dara-Abrams, Alec Dara-Abrams, kellyhammargren iPad, Nancy Gillette, Richard Thomason, Toby Simmons, ray yep, Kathleen Kelley

Preliminary Matters

Call to Order

J. Bedolla called meeting to order at 7:01pm

Approval of the Agenda

Approved by Acclamation

Public Comment on Non-Agenda Items

Kelly Hammargren: I had attended the City council agenda committee meeting on Tuesday afternoon. The Disaster and Fire Safety Commission item on parking is listed under action, Mayor Arreguin, Councilmember Hanh, Councilmember Wengraf is referred to the Public Safety committee. The item is no longer on the March 8th City Council agenda.

1. Fire Department Staff Report

T. Stein arrived at 7:10pm

DFSC Staff Report

February 23rd, 2022

1. Measure FF Monthly Report
 - a. Budget Overview –
 - i. Program Review
 1. **Standards of Coverage Analysis** – No new updates.
 2. **Project Management and Subject Matter Expert (SME)** – No new updates.
 3. **Community Wildfire Protection Plan (CWPP)** – No new updates.
 4. **Wildfire Prevention / Mitigation – Vegetation Management Inspections** – See chart below.
 5. **Retired Annuitants** – The newest retired Annuitants have started and are actively doing inspections.
 6. **Emergency Medical Technician (EMT) and Paramedic Recruitment** – No new updates.
 7. **Dispatch Re-Design** – No new updates.
 8. **Recruitments:**
 - a. Shift Fire Inspector Recruitment – Interviews for Shift Inspectors will begin the week of January 24th. These are filled by existing fire department personnel and are used to assist with fire investigations and other inspection related activities in the built environment.
 - b. Sworn Fire Inspector Recruitment – Recruitment is on-going. We will also begin interviewing the first batch of 14 applicants, the week of January 24th.
 9. **Division of Training Property** – No new updates.
 - ii. Implementation & Metrics
 1. **Outdoor Warning System** – We are working through the permitting process with the City of Berkeley and the vendor. Awaiting BUSD final approval.
 - iii. RFP Updates
 - b. Program Specific Reports
 - i. Defensible Space Inspection Updates

Vegetation Management Inspections – Annuitants
--

As of:	2/14/2022	Vegetation Management Inspections						
		AI Inspections						
	Inspected	No Violation Found	Violations Found	Re-Inspection Required	Re-Inspection Completed	Re-Inspection No Violation Found	Re-Inspection w/Violations Found	
Foley	52	23	29	29	3	3		
Frankel	527	478	49	49	2	2		
Greene	44	29	15	12				
Guzman	1		1	1				
Higgins	456	387	69	69	2	2		
Johnson	89	58	31	31				
Lee	118	83	35	35	183	165	18	
Marbury	117	62	55					
McCracken	102	70	32	32	94	65	29	
Pinto	15	7	8	8	91	77	14	
Ward	327	216	111	111	182	86	96	
Williams	953	868	85	85	4	4		
Totals	2749	2258	491	433	558	401	157	
	Administrative Reinspection Personnel							

- ii. Other
- 2. Measure GG Monthly Report
 - a. Emergency Services Coordinator Position
 - i. Recruitment is in process and will close on April 2, 2022.
 - b. Budget Overview
 - i. RFP Updates – No new updates.
- 3. Department Activities
 - a. Fire Prevention Division
 - i. Interviewed 3 internal candidates for Sworn Fire Inspector position with one getting promoted 2/20/2022, depending on staffing will promote the other candidates.
 - ii. 4 external candidates are in background checks, which is a minimum 6 week process.
 - iii. Have one retired annuitant assigned to the Fire Prevention Division. He is helping with annual inspections, citizen complaints, and indoor entertainment inspections

- iv. Interviewed firefighters for Shift Fire Inspectors at the end of January...all were good candidates. Staff is discussing when to start them on the three year program.
- b. FEMA grant administered by Cal OES.
 - i. We submitted 2 Notices of Intent:
 1. Project to develop 2024 Local Hazard Mitigation Plan
 2. Project to create a program to provide vegetation management assistance to create defensible space on private properties in Fire Zones 2 and 3.
 - ii. Submitting a NOI is the first step in the process. Notices of Intent that Cal OES considers promising will be invited to complete second step - subapplication, which is very time consuming, requiring considerable detail and completion of a FEMA Benefit-Cost Analysis to determine project eligibility.
 - iii. We have been invited to the subapplication process for the LHMP project. We haven't heard back yet on the vegetation management project.
- c. We reached out to EBMUD about their vegetation management process at all of their sites in and around the Berkeley area. EBMUD maintains approximately 300 sites according to their internal program along with support from their consultant Blankenship Associates. I have attached the IPM Guidelines in the packet. EBMUD also have decision making documents for each site that are reviewed and updated annually. Each site is inspected monthly. Generally speaking their weed abatement methods include mechanical means such as string trimmers and mowers, goat grazing where appropriate and lastly herbicide applications. they also use Civicorps crews who mainly use string trimmers.
- d. Commission Actions Status

Date of Commission Action	Topic	R e s u l t	Description of result	Notes
9/22/2021	Enforcement of Existing Parking Rules and Regulations			In Agenda Process for 3/8 City Council Meeting
9/22/2021	Long Range Development Plan for UC Berkeley			Staff Review for Response; Fire Department
10/27/2021	Recommendation to identify High Risk Areas that are exempt from State Imposed Housing Increases Due to Public Safety Considerations			In Agenda Process for 3/22 City Council Meeting
12/1/2021	Measure FF Oversight Recommendation- revised			Staff Review for Response; Fire Department

4. Call Volume Report

Fire Department Report by California Incident Type January 19, 2022 – February 12, 2022		
Fires – including Encampment Fires (structures, mobile properties, vegetation, rubbish, equipment, cooking, chimney,	22	
Encampment Fires (structures, warming/cooking, debris)	10	
Explosion - no fire (overpressure ruptures, explosions)	0	
Rescue & EMS (medical assist, vehicle accident)	667	
Hazardous Condition - no fire (combustible spills/leaks, chemical release, radioactive condition, electrical wiring problem, biological hazard, potential accident w/ building/aircraft/vehicles)	76	
Service Calls (person in distress, water issue, smoke/odor problem, animal issue, public assist, cover assignment/standby)	63	
Good Intent (canceled en-route, wrong location, nothing found, steam mistaken for smoke)	69	
False Alarm Calls (malicious, malfunction, unintentional, biohazard scare)	157	
Severe WX (lightening, wind storms)	0	
Special Incidents (citizen complaints)	1	
TOTAL	1,065	

Unit Utilization	Apparatus Count	2,299
-------------------------	------------------------	--------------

Staff will provide the Measure GG and Measure FF presentation at the March Commission meeting.

Consent Items

2. Approval of Draft Minutes of Meeting of January 26, 2022*

Motion to approve the minutes as revised: Dean

Second: Rader

Vote: 6 Ayes: Bedolla, Degenkolb, Dean, Bradstreet, Stein, Rader; 0 Noes; 1 Absent: Cutler; 0 Abstain:

Action Items

3. Annual Election of Officers

Open nomination for Chair.

Motion to nomination Jose Luis Bedolla as Chair: Bradstreet

Second: Dean

Vote: 6 Ayes: Bedolla, Degenkolb, Dean, Bradstreet, Stein, Rader; 0 Noes; 1 Absent: Cutler; 0 Abstain:

Jose Luis Bedolla elected as Chair.

Open nomination for Chair.

Motion to nominate Weldon Bradstreet as Vice Chair: Bedolla

Second: Stein

Vote: 6 Ayes: Bedolla, Degenkolb, Dean, Bradstreet, Stein, Rader; 0 Noes; 1 Absent: Cutler; 0 Abstain:

Weldon Bradstreet elected as Vice Chair.

4. Recommendation to City Council on Frequency of Financial Reporting for Measure GG and Measure FF (Bedolla, Rader)*

Motion to recommend City Council direct the Fire Department and the City Council provide with the following fiscal information regarding Measure GG and FF:

1. Base budget documentation for the 22/23 FY (current year) that was approved by council;
2. Quarterly, preferably monthly, expenditure reports, including a brief narrative describing each line item, with initial reports starting by March 30, 2022, with a published calendar for reporting and
3. The proposed budgets submitted to Council's Budget and Finance Policy Committee in April, each subsequent revision presented to Council, and the budget that is adopted at the end of the budget process.: Rader

Second: Bradstreet

Vote: 6 Ayes: Bedolla, Degenkolb, Dean, Bradstreet, Stein, Rader; 0 Noes; 1 Absent: Cutler; 0 Abstain:

5. Recommendation to City Council on the Cal-OES/FEMA Grant Application (Rader)

Meeting restarted at 8:17pm

Bedolla, Degenkolb, Rader, Stein, Dean returned to the meeting at 8:18p

W. Bradstreet returned to the meeting at 8:22pm

Discussion Items

6. Recommendation to City Council on the Definition of Defensible Space for Wildfire (Dean)
7. Commission Workplan (Bedolla)
8. Commission Plan for Input for the City's Budget Cycle (Bedolla)
9. Community Wildfire Protection Plan Public Engagement and Scope (Bedolla, Rader)*
10. Hillside Fire Safety Group (Community Presentation)
11. Safer from Wildfires Public Education (Rader)*
12. Future Agenda Items and Next Steps

Adjournment

Motion to Adjourn: Dean

Second: Bradstreet

Vote: 6 Ayes: Bedolla, Degenkolb, Dean, Bradstreet, Stein, Rader; 0 Noes; 1 Absent:
Cutler; 0 Abstain:

Adjourned at 9:34p

DRAFT

DFSC Staff Report

March 23rd, 2022

1. Measure FF Monthly Report

a. Budget Overview – Stacie Clarke/Chief Roman

i. Program Review

- **Standards of Coverage Analysis** – The Department is undergoing an in-depth analysis of fixed and mobile resources to determine the best deployment model and to ensure the Department is responding effectively and efficiently.
 - Status: The contractor was provided a large amount of data in January of 2022. Preliminary results indicate that Department resources are being worked above the national standard. There is room for improvement on call processing time and that response times are beyond the established national standard. A more in-depth presentation will be provided to the City Council work session on April 19th?
 - Expected Completion: June 2022.

- **Project Management and Subject Matter Expert (SME)** – Through this contract, the Department has relied on a team of professionals that have varied background including in project management, information technology, videography, marketing and industry specialists that have specific skills in emergency medical service and training.
 - Status: The PMT is has been working to support the Departments NOI for the HMBP grant, helping to develop a recruiting/marketing plan for EMTs and Paramedics and performing a variety of other staff/support work.

- **Community Wildfire Protection Plan (CWPP)** – The CWPP is a comprehensive risk analysis that addresses local target hazards and includes a community-based action plan to mitigate threats, promote preparedness activities, and ensure resiliency. It will serve as the foundation and roadmap for the Departments work to prevent wildfire and limit the spread when they ignite.
 - Update: The contract is almost complete and the project will commence in April.
 - Completion is expected around November 2022

- **Wildfire Prevention / Mitigation – Vegetation Management Inspections** – See chart below.

- **Retired Annuitants** – The retired annuitants are largely focused on performing vegetation inspections for properties in fire zone 2 and 3. They are also looking at transitioning the inspection from paper to mobile technology, re-tooling the re-inspection, citation, and violation process. The Department has also expanded its traditional hazardous fire area program to include all properties in fire zones 2 and 3.
 - Update: Last month we had some challenges with CalPERS which caused us to temporarily suspend the RA program. This resulted in no new inspections to report. We have resolved those issues and all 14 inspectors are back at work as of March 14th.

- **Emergency Medical Technician (EMT) and Paramedic Recruitment – Single Function Job Classifications & Recruitment:**
 - The Division has worked collaboratively with Local 1227 and Human Resources to draft single function EMT and Paramedic Job Classifications which were approved with elation at the December Personnel Board meeting and were approved by the City Council on January 18th, 2022.
 - Update: The recruitment campaign and on-boarding program is being developed. The Department is working through several remaining administrative processes before it can begin to recruit and hire for these jobs.

- **Fire Facilities Master Plan (FMP):** Berkeley Fire Department stations are undersized, in poor condition and in need of remodels or replacement. The Department initiated a long-term replacement planning process to better understand infrastructure needs. This process will provide the City leaders of today and tomorrow with actionable information ahead of future infrastructure bond measures.
 - Update: The planning process has begun with a team comprised of members from the Fire Department, Public Works, and key external experts in fire station and fire training center design. There is a significant meeting scheduled for March 1st where the ball will really get rolling.
 - Expected Completion: September 2022

- **Employee Physicals & Human Performance:** First responders' suffer higher rates of chronic medical and psychological injury and illness than

the general population. These issues are often directly correlated to shift work, traumatic experiences and stress, and exposure to carcinogens. Wellness programs have reduced healthcare and workers compensation costs associated with injuries and illness. Additionally, responders that are healthy (medically and psychiatrically) are more resilient, make better decisions and are more likely to be at work.

- **Update:** After a multi-year solicitation process, two Contractors have been selected that will provide services that include but are not limited to, annual physical examinations, screening for cancer and other chronic diseases associated with the work, one-on-one consultations, managing wellness/fitness initiatives, coordinating awareness and motivational campaigns, mental and health related training, long-term data collection and analysis, and educational seminars. We will have one full time on site Human Performance Coach that will be likely starting by May of this year.
- **Dispatch Study:** Our goal, per Council direction is to enhance the dispatch center so it can triage calls, divert non-emergency calls (including mental health calls) to appropriate resources like the SCU; and provide emergency medical instructions to callers.
 - **Status:** A consultant, Federal Engineering, started work on Phase 1 on January 20th, 2022. Their work will result in a comprehensive plan that we can use to guide the physical (facility) enhancements, adjustments to staffing and training in dispatch over the next 36 months.
 - **Expected Completion of Phase 1:** September 2022
- **Recruitments:**
 - **Shift Fire Inspector Recruitment** –These are filled by existing fire department personnel and are used to assist with fire investigations and other inspection related activities in the built environment.
 - **Update:** Interviews have been completed and six members will begin this three-year assignment on May 1st, 2022.
 - **Sworn Fire Inspector Recruitment** – Recruitment is on-going.
 - **Update:** Staff has promoted one non-sworn inspector to a sworn position. Three external offers have been accepted and expected to start the first week of April.

4. Safe Passage

- Update: We have been working with Transportation and Traffic to repaint existing red curbs and replacing “no parking signs” that have faded as well as painting red in front of hydrants.

5. Laguna Beach Update: “Only great things to report using Genasys to facilitate alert and notifications during our evacuations today. We quickly identified the 3 speaker locations in the evacuation zone and were able to send the pre-recorded Evacuation Order alert. Residents, City Council, City Leadership, and the Media all reported positive things on the use of our Outdoor Warning System.”

Emerald Fire

On February 10, 2022 Orange County Fire Authority (OCFA) and Laguna Beach Fire responded for a report of a wildland fire at 4:10 AM. Multiple Companies responded (Within OCFA and local Fire Departments) • Helicopters • Hand Crews • Water Tenders • Command Officers • Additional Requests • LA County Helicopters/Fixed Wing Aircraft • More Firefighters • Incident Management Team. Evacuation orders included Irvine Cove Residents, Emerald Bay Residents. Evacuation Warnings were given to North Laguna Beach Residents and Highway 1 was closed to traffic.

- Fire was active for 4 days
- 1,876 Structure were in Mandatory Evacuation Zones
- 698 Structures were in Evacuation Warning Zones

New Wildfire Mitigation Tools Used in Response:

- New Heli pod Refueling Station
- New Outdoor Warning System
- New Real-Time ArcGIS Evacuation Map

6. Call Volume Report

Fire Department Report by California Incident Type		
February 13, 2022– March 16, 2022		
Fires – including Encampment Fires (structures, mobile properties, vegetation, rubbish, equipment, cooking, chimney,	34	
Encampment Fires (structures, warming/cooking, debris)	7	
Explosion - no fire (overpressure ruptures, explosions)	4	

Rescue & EMS (medical assist, vehicle accident)	837	
Hazardous Condition - no fire (combustible spills/leaks, chemical release, radioactive condition, electrical wiring problem, biological hazard, potential accident w/ building/aircraft/vehicles)	32	
Service Calls (person in distress, water issue, smoke/odor problem, animal issue, public assist, cover assignment/standby)	104	
Good Intent (canceled en-route, wrong location, nothing found, steam mistaken for smoke)	97	
False Alarm Calls (malicious, malfunction, unintentional, biohazard scare)	172	
Severe WX (lightening, wind storms)	0	
Special Incidents (citizen complaints)	1	
TOTAL	1,288	

Unit Utilization	Apparatus Count	2,828
-------------------------	-----------------	--------------

7. Commission Actions Status

9/22/2021	Enforcement of Existing Parking Rules and Regulations	Heard at 3/7 Public safety Committee		Staff Review for Response; Police, Public Works - in Agenda Process for 3/8 City Council Meeting ; referred to Public Safety Policy Committee
9/22/2021	Long Range Development Plan for UC Berkeley			Staff Review for Response; Fire Department - in Agenda Process for 4/12 City Council Meeting.
10/27/2021	Recommendation to identify High Risk Areas that are exempt from State Imposed Housing Increases Due to Public Safety Considerations	City Council 3/22/22 Agenda	Item 24	
12/1/2021	Measure FF Oversight Recommendation- revised			Staff Review for Response; Fire Department
2/23/2022	Request for Timely Fiscal Information on Measures FF and GG			Staff Review for Response; Fire Department

**FY2022 Measure FF
Mid-Year Report**

Total Expenses by Division

Divisions	Sum of AMOUNT
Emergency Medical Services (EMS)	\$ 51,898.99
BENEFITS	\$ 23,578.59
WAGES	\$ 28,320.40
Operations Administration	\$ 71,962.16
NON-CAP - COMP, SOFTWARE & OFE	\$ 28,966.72
PROF SVCS - MISCELLANEOUS	\$ 42,995.44
Suppression	\$ 20,000.00
PROF SVCS - MISCELLANEOUS	\$ 20,000.00
Transfer to Paramedics Tax	\$ 378,962.00
OPERATING TRANSFER OUT	\$ 378,962.00
Wildland Urban Interface (WUI)	\$ 206,568.65
BENEFITS	\$ 11,086.38
SUPPLIES - OTHER	\$ 984.97
WAGES	\$ 194,497.30
Grand Total (6 month)	\$ 729,391.80

Vendor Detail by Division/Expense
--

Divisions/Expense	Sum of AMOUNT
Operations Administration	\$ 71,962.16
NON-CAP - COMP, SOFTWARE & OFE	\$ 28,966.72
B&H PHOTO	\$ 28,966.72
PROF SVCS - MISCELLANEOUS	\$ 42,995.44
CITYGATE ASSOCIATES, LLC	\$ 14,682.94
GANEY SCIENCE	\$ 7,962.50
SILVA BUSINESS CONSULTING	\$ 20,350.00
Suppression	\$ 20,000.00
PROF SVCS - MISCELLANEOUS	\$ 20,000.00
SIEGEL & STRAIN ARCHITECTS	\$ 20,000.00
Wildland Urban Interface (WUI)	\$ 984.97
SUPPLIES - OTHER	\$ 984.97
BLAISDELL'S BUSINESS PRODUCTS	\$ 984.97

**FY2022 Measure GG
Mid-Year Report**

Program	Budget	Actuals		Mid-Year Total	% Budget Available	Available Budget
		Q1 July-Sept. 2021	Q2 Oct.-Dec. 2021			
Disaster Prep	\$ 1,188,442	\$ 210,697	\$ 267,544	\$ 478,241	60%	\$ 710,201
FRALS	\$ 613,172	\$ 11,880	\$ 26,069	\$ 37,949	94%	\$ 575,223
Minimum Staffing	\$ 2,392,254	\$ 303,176	\$ 1,095,836	\$ 1,399,012	42%	\$ 993,242
Radio Interoperability	\$ 670,662	\$ 5,421	\$ 631,869	\$ 637,290	5%	\$ 33,372
Training	\$ 300,742	\$ 121,237	\$ 138,082	\$ 259,319	14%	\$ 41,423
Community Outreach - HHCS	\$ 242,527	\$ 23,389	\$ 22,452	\$ 45,841	81%	\$ 196,686
Totals	\$ 5,407,799	\$ 675,801	\$ 2,181,853	\$ 2,857,653	47%	\$ 2,550,146

Objectives

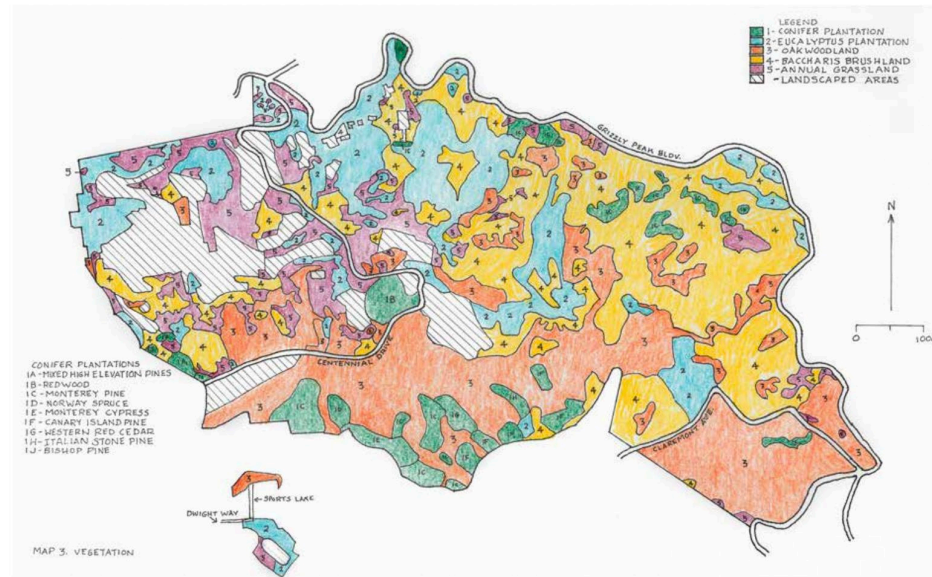
1. Fire hazard of eucalyptus
2. Cost of treatment
3. Monarchs

Fuel management and wildfire mitigation proposal
for the University of California property
in Strawberry and Claremont canyons

Joe R. McBride
Professor Emeritus of Forestry, University of California, Berkeley
California Licensed Professional Forester #1306

September 15, 2019

J.R. McBride, Fuel Management Proposal, September 15, 2019



Fire Hazard of Eucalyptus

J.R. McBride, Fuel Management Proposal, September 15, 2019

Table 2. Fuel loading (Russell and McBride, 2002, Agee et al, 1973)

Vegetation type	Fuel loading (tons/acre)
Annual grassland	1.51
Baccharis brushland	18.7
Oak-bay woodland	3.7
<u>Eucalyptus plantation</u>	<u>60</u>
Conifer plantation	40.7

J.R. McBride, Fuel Management Proposal, September 15, 2019

Table 3. Fire characteristics (Russell and McBride, 2002, Chenny, 1981)

Vegetation type	Ease of ignition	Rate of spread (m/min)	Fire-line intensity (kW/m)	Average flame length (m)
Annual grassland	high	3.8	66	0.5
Baccharis brushland	moderate	1.6	197	0.8
Oak-Bay woodland	low	0.6	36	0.4
<u>Eucalyptus plantation</u>	<u>high</u>	<u>0.6</u>	<u>250</u>	<u>1.0</u>
Conifer plantation	high	0.6	158	0.7

Costs

J.R. McBride, Fuel Management Proposal, September 15, 2019

Table 4. Costs of initial vegetation treatments, UC property in Strawberry and Claremont canyons, 2019.

<u>Management prescription</u>	<u>Treatment</u>	<u>Acres</u>	<u>Cost/acre (\$)</u>	<u>Total (\$)</u>
Conversion of eucalyptus plantations	Tree removal	116	20,000	2,320,000
	Sprout control	116	2,000	232,000
	Conversion of understory oak and bay to shaded fuelbreak	29	3,000	87,000
	Conversion of poison oak understory to grassland	29	3,500	101,500
	Total			2,740,500

Tree Removal and Sprout Control = \$22,000/acre

Maintenance Cost

Table 5. Costs of periodic maintenance, University of California property in Strawberry and Claremont canyons, 2019.

Management prescription	Maintenance required	Frequency of treatment (yrs)	Acres	Cost/acre (\$)	Total cost/treatment (\$)	Prorated annual cost (\$)
Conversion of eucalyptus plantations	Locate and remove any stump sprouts or saplings	5	116	100	11,600	2,320

Maintenance Cost (once every 5 years) = \$100/acre

Monarch Butterflies and Eucalyptus

Western Monarch butterflies (*Danaus plexippus* L.) overwinter in groves of native and non-native trees along the California coast. Eucalyptus is abundant in coastal counties, and overwintering monarchs utilize this type of tree more than any other. This has led to the belief that monarchs prefer eucalyptus. Yet whether a preference exists has never been tested. We tested the “eucalyptus preference” hypothesis at five California overwintering sites with canopies comprised of eucalyptus and at least one native conifer species. We found that at no time over the course of three years did monarchs cluster on trees in proportion to their availability in the canopy. Overall, they did not cluster on one tree species significantly more frequently than another, indicating that monarchs do not prefer eucalyptus—or any tree species—all of the time. However, more often than not monarchs clustered significantly more than expected on native trees, particularly at midseason when the weather was most inclement. They also clustered disproportionately on native conifers when the overwintering population size was highest. At most sites monarchs exhibited tree switching, shifting from eucalyptus to native conifers in the middle or late winter. Based on these results, we reject the “eucalyptus preference” hypothesis. In its place, we propose the “conditional preference hypothesis”, wherein monarchs are predicted to prefer cluster trees according to microclimate conditions and prefer alternate trees within a site as climatic conditions change. Rejection of the eucalyptus preference hypothesis suggests that sites comprised exclusively of eucalyptus may not offer monarchs a suitable range of microhabitats, and further suggests we should rethink “eucalyptus-centric” management.

Monarch Butterflies and Eucalyptus

Suitable microclimate conditions are often found at sites consisting of roost trees, in which monarchs cluster, surrounded by a larger grove or windrow of trees. The trees most commonly used for roosting are the nonnative blue gum eucalyptus (*Eucalyptus globulus*) and the native Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*) (Xerces Society Western Monarch Overwintering Sites Database 2016). Clusters are also found on nonnative red gum eucalyptus (*Eucalyptus camadulensis*), and the native western sycamore (*Platanus racemosa*), coast redwood (*Sequoia sempervirens*), coast live oak (*Quercus agrifolia*), and others (Xerces Society Western Monarch Overwintering Sites Database 2016). Although it was historically assumed that monarchs preferred to overwinter in nonnative eucalyptus rather than native tree species, recent research has demonstrated that monarchs do not prefer eucalyptus trees, and actually use native tree species more than would be expected, given the low density of native trees relative to eucalyptus in many groves (Griffiths and Villabanca 2015).

Griffiths, J., and F. Villabanca. 2015. Managing monarch butterfly overwintering groves: making room among the eucalyptus. *California Fish and Game* 101:40–50.

Literature Cited- Fuel Management

Fuel Management Report:

McBride, J. R. 2019. Fuel management and wildfire mitigation proposal for the University of California property on Strawberry and Claremont Canyons.

<https://static1.squarespace.com/static/56e612b159827e4b847675c9/t/5df586380027c56344ae6466/1576371769279/fuel-.pdf>

Eucalyptus Fire Hazard:

Agee, J. et al. 1973. Eucalyptus fuel dynamics and fire hazard in the Oakland Hills. California Agriculture 27(9): 13-15. <https://calag.ucanr.edu/archive/?article=ca.v027n09p13>

Cheney, N. P. (1981). Fire behavior. In: A. Gill, R. Groves and I. Noble, ed., Fire and the Australian Biota. Canberra: Australian Academy of Science, pp.151-175.

<https://publications.csiro.au/rpr/pub?list=BRO&pid=procite:13c02405-e8c6-466c-a400-f6137710a651>

Russell, W. H. and J. R. McBride. 2003. Landscape scale vegetation-type conversion and fire hazard in the San Francisco Bay Area open spaces. Landscape and Urban planning. 64(4):201-108.

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.462.2519&rep=rep1&type=pdf>

Management Costs:

Kent, J. 2019. Personal communication. East Bay Regional Park District. (not available in electronic form)

Satomi, R. P. 2016. Mechanized forest fuel treatments: analyzing machine efficiency within variable landscapes. Diss. University of California, Berkeley. (not available in electronic form)

Literature Cited- Monarch Butterfly

Griffiths, J. L. 2014. Monarch Butterfly (*Danaus plexippus*) Tree Preference and Intersite Movement at California Over Wintering Sites. MS Thesis. California Polytechnic State University. San Luis Obispo.
<https://digitalcommons.calpoly.edu/theses/1256/>

Griffiths, J., and F. Villablanca. 2015. Managing monarch butterfly overwintering groves: making room among the eucalyptus. California Fish and Game 101:40–50.
https://monarchjointventure.org/images/uploads/documents/Griffiths_and_Villablanca_2015.pdf

3/23/22 DRAFT DISCUSSION ITEM (3-15 Draft)

Rader Recommendation for Measure FF spending in FY 23 & FY 24 - Hazardous Vegetation Removal Program

To: Honorable Mayor and Members of the City Council
[for Council's Budget and Finance Policy Committee?]

From: Disaster and Fire Safety Commission

Submitted by: José Luis Bedolla, Chairperson, Disaster and Fire Safety Commission

Subject: Measure FF Budget Recommendation - Hazardous Vegetation Removal Program

RECOMMENDATION

Summary. For the FY 23 and FY 24 Measure FF budget, the Disaster and Fire Safety Commission (DFSC) recommends prioritizing wildfire fuel reduction by establishing a Hazardous Vegetation Removal Program and bolstering the fire code to control vegetation across entire properties in Berkeley's Very High Fire Severity Zones (VHFSZs) (Fire Zones 2 and 3). The program would also address hazardous trees outside of Fire Zones 2 and 3.

Funding for this program, together with the Fire Department's existing home inspection program addressing defensible space around structures, would result in devoting 20 percent and 28 percent of Measure FF revenues for FY 23 and FY 24, respectively, on reducing wildfire risk through vegetation removal.

Description. The Hazardous Vegetation Removal Program would incentivize private property owners to allow the City to remove flammable trees and other vegetation throughout the property using Measure FF funds. Flammable vegetation includes eucalyptus, Monterey pine, juniper and limited other species. The initial phase of the program (FY 23) would remove build-up of debris on the ground, remove loose bark, remove tree limbs to 15 feet above ground, and remove saplings and subordinate trees that could ignite upper canopy throughout each property. The second phase (planned in FY 23, implemented in FY 24) would fund removal of hazardous trees (but not stumps) and other hazardous vegetation. Beginning in FY 25, property owners would be required to properly maintain their entire property under expanded Fire Code provisions that the Fire Department and the DFSC would develop for Council's consideration.

In addition, hazardous trees and vegetation on City property could be addressed through this program as needed,¹ and large trees posing public safety hazards on

¹ The City's Parks and Recreation Department is currently addressing these hazards in city parks and may largely complete the effort in FY 22.

private property that have been identified outside of the VHFSZs and should be included in this program.

Funding options for the initial and/or second phases: [\[the Commission can leave this to Council, or recommend one or the other\]](#)

1. Fund 100% through Measure FF to most expeditiously reduce an extreme wildfire risk that, unlike other measures, can be addressed expeditiously.
2. Require a 25% (or more) cost-share by each property owner.² Property owners should be able to pay in installments. Low-income property owners should be assisted through a special program based on existing City models.

In addition, the DFSC recommends maintaining the Fire Department’s existing home inspection program which is focused on creating defensible space by reducing vegetation around structures.

RECOMMENDATIONS - VEGETATION MANAGEMENT		
	FY 23 \$	FY 24 \$
Continue current (FY 22) Spending on Vegetation Removal (Inspection Program, recurring) (Estimated)	\$ 1,000,000	\$ 1,000,000
Hazardous Vegetation Removal Program	\$ 720,000	\$ 1,370,000
Develop new fire safety regulations	\$ -	\$ -
Total	\$ 1,720,000	\$ 2,370,000
Measure FF Annual Revenue	\$ 8,500,000	\$ 8,500,000
TOTAL % FF Funds	20%	28%

FISCAL IMPACTS OF RECOMMENDATION

This DFSC recommendation addresses prioritization of Measure FF funds and will have no impact on General Funds. However, by prioritizing the reduction of flammable vegetation throughout Berkeley’s VHFSZs, these recommendations will reduce the likelihood of wildfire and the intensity and severity of any wildfires that occur in the City, which would have far-reaching negative fiscal impacts.

The Fire Department is currently applying for a CalOES/FEMA grant to address hazardous vegetation. If the application addresses the identified needs, is granted, and sufficient funds can flow timely, those funds could obviate or defray the need to use Measure FF funds for the recommended program. If the application is not successful, however, this immediate wildfire safety risk should be addressed with FF funds.

CURRENT SITUATION AND ITS EFFECTS

The existing home inspection program is limited to addressing a 30-foot radius around structures in the fire zone, and a 100-foot radius on slopes. Areas beyond these

² Regarding the eucalyptus groves: on average, there are 5 trees per property in the groves. The average cost of removing each tree is estimated to \$2,000-\$5,000. A 25% cost share would cost on the order of \$2,500-\$6,200 per property owner to take out 5 trees (significantly more if trees are difficult to access).

boundaries are not addressed in Berkeley's Fire Code (BFC 4907.2). Therefore, the inspection program does not address major areas of vegetation build-up and hazardous trees on private land beyond 30 feet of most structures, which poses an immediate wildfire threat to the City.

BACKGROUND

Measure FF passed on November 3, 2020, with a 74.2 percent "yes" vote and generates approximately \$8.5 million annually. Among other important objectives including improvements to the 9-1-1 dispatch system, training facility improvements, and funding of new ambulances and technicians, the measure supports wildfire prevention and preparedness activities including vegetation management. In a 2020 community survey, a tax for wildfire prevention received 69 percent approval from residents and was the most popular rationale for a new tax to support fire and emergency services.³

Measure FF funds have been used in part to create a home inspection program housed in the Fire Department, which is aimed primarily at creating 30 feet of "defensible space" around structures. Additional clearance may, in some circumstances, such as on steep slopes, be required within 100 feet of structures,⁴ but tree removal is generally not required. Neither the California's nor Berkeley's fire codes require clearance of brush beyond 100 feet of any structure. This means that many private property areas within Berkeley that contain dense vegetation and substantial fuel build-up on the ground will go untreated under current law and practice.

Berkeley has many areas of vegetative fuel build-up that are beyond 30 feet of any structure (or 100 feet on slopes). Examples of large such areas include numerous concentrations of eucalyptus and other hazardous trees that exist throughout Fire Zones 2 and 3 and throughout canyons with creeks, such as Cerritos Creek and Codornices Creek canyons. In addition, areas between homes on the long slopes between tiered streets in these fire zones are often untended and overgrown. Eucalyptus trees are a particular hazard, due to their high fuel-loading per acre, ease of ignition, fire intensity and flame length.⁵ The Hillside Fire Safety Group has identified six eucalyptus groves on 98 private properties and two City parks (Remillard and Glendale-LaLoma) that account for most of the approximately 544 eucalyptus trees on the north side of campus.⁶ Additional hazardous trees exist in Fire Zone 3 (Panoramic Hill) and in

³ See p. 5 of the supplemental material for item 13 on the June 2, 2020 Council meeting: https://www.cityofberkeley.info/Clerk/City_Council/2020/06_June/City_Council_06-02-2020_-_Regular_Meeting_Agenda.aspx.

⁴ Berkeley Fire Department, "Fire Prevention Inspection Report, Wildland-Urban Interface Area" (Rev. 05/2020) (included in June 1, 2021, Berkeley Fire Department mailing to Berkeley property owners).

⁵ Russell and McBride, 2002, Agree et al., 1973, and Chenny, 1981, as cited in J.R. McBride's Fuel Management Proposal for Claremont and Strawberry Canyons, 2019. (Available at <https://www.claremontcanyon.org/fuel-management-proposal>.)

⁶ Hillside Fire Safety Group presentation to the DFSC (February 23, 2022).

the Fire Zone 2 area south of campus (areas of which burned in the 1991 Tunnel Fire). Many, if not most, of these areas require clean up.

The consultant recently hired by the Fire Department to prepare its CWPP has explained the “unparalleled” potential of burning eucalyptus embers to create spot fires, which create some of the most destructive wildfires. The consultant noted that “[p]revention of crown fire in eucalyptus in the Berkeley/Oakland hills, and elsewhere in the East Bay is of paramount importance to the fire safety of a very large population.”⁷

It is well understood that ladder fuels can carry fire from ground fuels to tree crowns where it can become a devastating fire that quickly spreads.⁸ Within its “State Responsibility Area,” CalFIRE has embarked on many programs to reduce fuel loads and create horizontal and vertical fuel breaks to protect California’s most wildfire-vulnerable communities.⁹ CalFIRE is not responsible for densely populated areas, however, which falls to local governments such as Berkeley. While CalFIRE addresses fuel loads in areas near or adjacent to vulnerable urban areas, it is obviously at least equally important to address fuel loads *within* dense urban areas to reduce the likelihood and impacts of catastrophic wildfire.

The California Constitution generally prohibits “gifts of public funds” to any public or private person; however, such gifts are allowed for a public purpose, and that public purpose is to be liberally construed.¹⁰ The city and state have numerous programs that spend public funds on private property for the purposes of disaster preparedness. Using public funds to reduce fuels that significantly contribute to the risk of wildfire would likely be considered a public purpose, particularly given the limited incidental benefits that would accrue to landowners. Berkeley’s City Attorney should confirm this view.

ENVIRONMENTAL SUSTAINABILITY

These recommendations will reduce the likelihood, intensity and severity of a wildfire in the City, which could have far-reaching environmental impacts on our City. The proposed program would promote the replacement of flammable, non-native tree and shrub species with natural, more fire-resistant native species. To prevent regrowth of eucalyptus, the program would rely on non-chemical, manual sprouting control for eucalyptus for each of the two years following eucalyptus removal.

RATIONALE FOR RECOMMENDATION

⁷ Carol Rice, Wildland Res Mgt, UC Berkeley [Wildland Vegetative Fuel Management Plan](#) at pp. 25-27 (July 2020 Draft).

⁸ See CalFIRE, Fire and Fuels Treatment 0 <https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/wildfire-resilience/forest-stewardship/fire-and-fuels-treatment/>.

⁹ See, e.g., CalFIRE’s Fuel Reduction Guide (2021) (<https://www.fire.ca.gov/media/4jgerfjh/fuels-reduction-guide-final-2021-interactive.pdf>).

¹⁰ See League of California Cities, “Gift of Public Funds (Spoiler Alert: It’s Illegal)” at p. 1. Available at: <https://www.cacities.org/Resources-Documents/Member-Engagement/Professional-Departments/City-Attorneys/Library/2016/Annual-2016/10-2016-Annual-Forbath-Gift-of-Public-Funds-Spoile.aspx>.

The geography, weather patterns, drought conditions and dense vegetation in the East Bay create ideal conditions for wildfire, which could have devastating consequences to Berkeley. Reducing these fuels wherever they exist has been identified as a high priority in the CWPPs of other East Bay jurisdictions¹¹ that have identified eucalyptus and Monterey pine as a particular hazard “due to their rapid growth, height at maturity, dense foliage, shallow root structure, flammability, breakability or invasiveness.”¹² “[E]ucalyptus ... are subject to torching and crown fires with potential high ember flight rates into residential areas.”¹³

UC Berkeley has also recognized the threat, having cleared eucalyptus trees in Claremont Canyon.¹⁴ UCB is currently in the process of removing eucalyptus and other trees and ladder fuels in the hills behind UC Berkeley along the Jordan Fire Trail, as part of a larger plan entailing the widespread removal of eucalyptus trees.¹⁵ LBNL is currently seeking \$2.9 million from CalFire to remove all 1,500 eucalyptus trees on its property.¹⁶

The areas containing the greatest mass of hazardous fuel build-up in Berkeley exist on private property beyond 30 feet of any structure (or 100 feet on slopes) and thus are not addressed by the city’s Fire Code or the Fire Department’s residential vegetation management inspection program. Removal of hazardous vegetation is the most effective and timely means available to the City for reducing the severe risk of wildfire. In addition, tall trees posing public safety hazards have been identified outside of the VHFSZs and should be included in this program.

The DFSC estimates that all of Berkeley’s hazardous vegetation could be removed by continuing this program for an additional one to three years beyond FY 24, depending on the interest shown by homeowners, the average actual cost of removing trees, and in view of the potential for increased regulation of these areas in the future.

The City could pattern the program after the Parks & Recreation’s vegetation removal program (or expand the program), where Parks conducts competitive bidding and issues umbrella contracts to several firms that are then called upon for specific jobs. Parks may also have procedures to cost share where private property is involved.

Adopting this recommendation will ensure that the City immediately reduces the extreme risk of wildfire, reduces the likelihood of ignition of homes and other structures in the event of wildfire, and meets the City’s obligations under Measure FF.

¹¹ See the CWPPs of El Cerrito-Kensington, Contra Costa County, Alameda County and others available at the website of the Diablo Firesafe Council, www.diablofiresafe.org.

¹² See *El Cerrito - Kensington Wildfire Action Plan*, p. 1.7. Also see *Contra Costa County Community Wildfire Protection Plan Update*, p. 2.5 and *Sunol Wildfire Action Plan* at 4.2.

¹³ Ibid.

¹⁴ See <https://www.dailycal.org/2021/01/19/uc-berkeley-project-removes-claremont-canyon-trees-for-evacuation-route/#:~:text=In%20a%20project%20spearheaded%20by%20UC%20Berkeley%2C%20eucalyptus,November%202020%2C%20according%20to%20campus%20spokesperson%20Janet%20Gilmore>.

¹⁵ See <https://www.berkeleyaside.org/2021/09/06/popular-cal-trail-closes-fire-safety-work/>.

¹⁶ Add cite.

ALTERNATIVE ACTIONS CONSIDERED

The Fire Department may have alternative proposed recommendations for the expenditure of Measure FF funds.

CITY MANAGER

The City Manager [TYPE ONE] concurs with / takes no position on the content and recommendations of the Commission's Report. [OR] Refer to the budget process. **Note: If the City Manager does not (a) concur, (b) takes any other position, or (c) refer to the budget process, a council action report must be prepared. Indicate under the CITY MANAGER heading, "See companion report." Any time a companion report is submitted, both the commission report AND the companion report are Action reports.**

CONTACT PERSON

[Name], [Title], [Department]

DFSC MEASURE FF FUNDING RECOMMENDATIONS - VEG MANAGEMENT

<u>CATEGORY</u>	<u>DESCRIPTION</u>	<u>FUNDING FY 23</u>	<u>FUNDING FY 24</u>	<u>Department-Home Recommendation</u>
<u>Hazardous Vegetation Removal Program</u>				
-- Program Manager	Manage program and consultants; coordinate with inspection program	\$ 170,000	\$ 170,000	
-- Expert consultants	Arborist, erosion control/revegetation guidance, communications	\$ 50,000	\$ 150,000	
-- Healthy Forest Operation Crews	Understory clean-up, includes debris removal and manual re-sprouting control	\$ 200,000	\$ 50,000	
-- Tree removal crews	Tree removal, debris removal, re-sprout control, revegetation (begin program Q4 of FY 23)	\$ 300,000	\$ 1,000,000	
Total Hazardous Vegetation Removal		\$ 720,000	\$ 1,370,000	Parks & Rec
<u>Develop new fire safety regulations</u>				
Expand fire code to address 100% of property areas	Cover through existing FD/OES staff, DFSC Commissioner time, City Attorney	\$ -	\$ -	
Expand fire code to address home hardening upon property transfer	"	\$ -	\$ -	
Total develop new fire safety regulations		\$ -	\$ -	DFSC, FD/OES, City Attorney
Sub-Total		\$ 720,000	\$ 1,370,000	
Estimated FY 22 Budget - Fuel-Reduction-Related		\$ 1,000,000	\$ 1,000,000	

RECOMMENDATIONS - VEGETATION MANAGEMENT			
	<u>FY 23 \$</u>	<u>FY 24 \$</u>	
Continue current (FY 22) Spending on Vegetation Removal (Inspection Program, recurring) (Estimated)	\$ 1,000,000	\$ 1,000,000	
Hazardous Vegetation Removal Program	\$ 720,000	\$ 1,370,000	
Develop new fire safety regulations	\$ -	\$ -	
Total	\$ 1,720,000	\$ 2,370,000	
Measure FF Annual Revenue	\$ 8,500,000	\$ 8,500,000	
TOTAL % FF Funds	20%	28%	

3/23/22 DRAFT DISCUSSION ITEM

Recommendations of Nancy Rader for Parking Enforcement in FY23 & FY24

To: Honorable Mayor and Members of the City Council
[for Council's Budget and Finance Policy Committee?]

From: Disaster and Fire Safety Commission

Submitted by: José Luis Bedolla, Chairperson, Disaster and Fire Safety Commission

Subject: Budget Recommendation for Parking Enforcement

RECOMMENDATION

The Disaster and Fire Safety Commission (DFSC) recommends, for FY 23 and FY 24, funding for parking enforcement in Fire Zones 2 and 3 from the General Fund to allow patrols of at least one full-time-employee-day per week.

Illegal parking in Fire Zones 2 and 3 impedes access by emergency vehicles and will impede evacuation in the event of wildfire. Illegal parking can also block sidewalks. Therefore, the DFSC recently recommended that Council direct the Berkeley Police Department to enforce the existing parking restrictions in the Berkeley Municipal Code in Fire Zones 2 and 3.

FISCAL IMPACTS OF RECOMMENDATION

At its March 7, 2022, meeting, pursuant to an earlier recommendation of the DFSC to enforce parking in Fire Zones 2 and 3, the Council's Public Safety Committee requested information from the Police Department on the budget implications of patrolling these areas. The DFSC recommends that the Council enable significant parking enforcement in Fire Zones 2 and 3 by advancing funds as needed from the General Fund. The fiscal impacts of patrolling these areas are being determined in response to a pending inquiry of the Council's Public Safety Committee.

CURRENT SITUATION AND ITS EFFECTS

Berkeley residents, visitors and delivery vehicles regularly violate numerous provisions of the state and city vehicle codes. Illegal parking can impede access by emergency vehicles, as well as city refuse trucks, on a daily basis. Pedestrian safety can also be placed in jeopardy. The inability to evacuate was a contributing factor to the deaths that occurred in the 1991 Oakland / Berkeley Tunnel Fire.¹

¹ FEMA, *East Bay Hills Fire Oakland-Berkeley Hills*, USFA-TR-060/October 1991.

BACKGROUND

As the City of Berkeley continues its planning process to build more housing, it is even more imperative that existing parking restrictions be enforced, at least on an occasional basis, to encourage individuals not to use a public good for private benefit. We need to build a culture of fire prevention and public safety that allows emergency vehicles to access all parts of the City and promote the ability to evacuate in the event of a wildfire.

ENVIRONMENTAL SUSTAINABILITY

There is no environmental impact to this recommendation.

RATIONALE FOR RECOMMENDATION

To ensure that emergency vehicles, as well as city refuse trucks, can access all properties on the narrow streets in Fire Zones 2 and 3, to promote pedestrian safety, and to promote the ability to evacuate in the event of a wildfire.

ALTERNATIVE ACTIONS CONSIDERED

Alternatives and supplemental actions could be considered as part of the City's Safe Passages program and could include changing streets to one-way only rather than two-way, adding additional red curbing, especially on the smallest width streets in **Zones 2 and 3**, and adding to the Fire District Parking Restrictions. Each of these has the possibility of additional costs, and community involvement and consultation should be sought before implementation.

CITY MANAGER

The City Manager [TYPE ONE] concurs with / takes no position on the content and recommendations of the Commission's Report. [OR] Refer to the budget process. **Note: If the City Manager does not (a) concur, (b) takes any other position, or (c) refer to the budget process, a council action report must be prepared. Indicate under the CITY MANAGER heading, "See companion report." Any time a companion report is submitted, both the commission report AND the companion report are Action reports.**

CONTACT PERSON

[Name], [Title], [Department]

The failure of planning to address the urban interface and intermix fire-hazard problems in the San Francisco Bay Area

Joe R. McBride^{A,C} and Jerry Kent^B

^ADepartment of Environmental Science, Policy and Management, 145 Mulford Hall, University of California, Berkeley, CA 94720, USA.

^BEast Bay Regional Park District, 2950 Peralta Oaks Ct, Oakland, CA 94605, USA.

^CCorresponding author. Email: jrm2@berkeley.edu

Abstract. Post-fire planning following major fires in the San Francisco Bay area has identified problems of wildland fuel management and solutions to these problems; however, the failure to carry out many of the fuel management recommendations has led to increasing fire hazard for the urban interface and urban intermix zones. A proposal for a new state agency to oversee fuel management is presented.

Additional keywords: East Bay Hills, eucalyptus, 1991, Oakland fire.

Received 8 April 2018, accepted 20 November 2018, published online 7 January 2019

Areas of urban development in the San Francisco Bay Area are flanked by areas of wildland vegetation and agriculture. This juxtaposition results in urban interface and intermix zones where residential housing is faced with wildland vegetation and agricultural land or is commingled with open-space vegetation. Fire has been an important part of the environment of these hills since Native Americans migrated into the region about 6,000 years ago. Three fires of large proportion occurred in this urban-intermix zone in the 20th century. They burned portions of Berkeley in 1923, Oakland and Berkeley in 1991 and Santa Rosa in 2017. Property damage caused by these fires resulted from open-space areas supporting flammable vegetation, lack of fuel mitigation in the interface and intermix zones, and exceptional fire weather. Reports by various agencies after major fires offered recommendations for improving fire suppression and mitigating fuel conditions. However, various circumstances have prohibited complete enactment of those fire-hazard reduction recommendations in these reports.

The mosaic of vegetation types occurring over the San Francisco Bay Area in pre-settlement times consisted primarily of perennial grasslands, coastal scrub, chaparral, oak/bay woodlands, and riparian woodlands. Perennial grasslands dominated south facing slopes, while whereas oak/bay woodlands were common on the lower portions of north facing slopes. Coastal scrub tended to occupy the upper slopes, areas of north facing slopes, and chaparral occurred on shallow, rocky soils, often on south facing slopes. The native perennial grasslands were replaced by annual grasslands in the late 18th century because of due to the inadvertent introduction of Mediterranean annual grass seeds during the Spanish/Mexican period.

Beginning in the late 19th century and extending into the early 20th century, plantations of eucalypts (primarily

Eucalyptus globulus), Monterey pine (*Pinus radiata*) and Monterey cypress (*Hesperocyparis macrocarpa*) were established in many parts of the Bay Area.

The potential for wildland fires to burn in urban portions of the San Francisco Bay Area was given little recognition until the 1923 Berkeley Fire. This fire burned 65 ha, destroyed 640 structures, but fortunately no one was killed. In 1991, a fire started above Oakland and consumed 615 ha of intermix land and destroyed 3276 structures and 25 people died in the fire. More recently, the Tubbs Fire, part of the complex of Wine Country fires in 2017, burned 14,895 ha, destroyed 5636 structures, and killed 24 people, while the Camp fire in Butte County burned 620 square kilometres and killed 86 people.

Several conditions contributed to the spread of these fires including (1) high velocity wind during a period of low humidity and high temperatures, (2) the existence of flammable vegetation, (3) residential neighbourhoods with many homes having wood-shingle roofs, wood siding and wood decks, (4) areas of steep topography and narrow roads, and (5) lack of multi-agency preparedness for large-scale fire suppression under extreme conditions (this included inadequate communication devices, different fittings for fire hoses, and insufficient water storage facilities for fighting fire in the case of the 1991 Oakland Fire).

Many fire reports and fire-hazard reduction plans were written in response to fires and fire danger in the San Francisco Bay Area (1923 Berkeley Fire (National Board of Fire Underwriters 1923); 1980 Berkeley–Wildcat Fire (Blue Ribbon Fire Prevention Committee 1982); Berkeley–Oakland Fire, 1991 (National Fire Protection Association 1992); Berkeley–Oakland Fire, 1991 (East Bay Hills Vegetation Management Consortium 1995); and wildfire hazard in general (LSA 2010)). The preparation of repeated plans for parts of the San Francisco Bay Area

indicate a problem of the implementation of fire-mitigation planning. Common to many of these plans are recommendations for creation of defensible space around structures, removal of ridgetop plantations of *Euclayptus globulus* and Monterey pine (known for the production of flaming embers), strategically located fuel breaks, fuel mitigation based on topography and wind direction during Diablo wind events, modification of architectural features that contribute to structural fires in the intermix zone (i.e. wood siding, shake roofs, vents allowing flaming ember to enter attics), and improvements in interagency preparedness and cooperation in fire suppression.

Problems confronting fire suppression became evident in the attempts to suppress the 1991 Oakland Fire. They included a general lack of experience of the first responders (from urban fire departments) to suppress wildland fires, inability of responding fire departments to communicate with each other to coordinate fire suppression activities, the failure of fire-hose connections used by different fire departments and CalFire to fit existing fire plugs in the areas, and the lack of water for firefighting in the hilly region of the fire. CalFire and local fire departments subsequently addressed these problems.

Unfortunately, many of the proposals for fuel mitigation and architectural changes have not been addressed. In spite of the recommendations for fuel management put forth in more than 30 plans since 1923, no region-wide action has taken place. Individual agencies and local Fire Safe Councils have, in part, followed up on recommendations for fuel management on land they administer, but often a complete adoption of recommendations has not taken place. The failure to enact all of the recommendations of these is due to various combinations of the following reasons:

- lack of funding;
- barriers to cooperation on the part of agencies, municipalities, and property owners in fuel management;
- the failure of cities to enforce fuel-mitigation regulations;
- opposition of individuals and groups to vegetation management to reduce fire hazard; and
- loss of a sense of urgency about the problem as time passes following a destructive fire.

Fire remains a factor in the urban interface in the San Francisco Bay Area. Fuel conditions and fire weather, exacerbated by global warming and decreased precipitation, will contribute to an increasing fire danger. Addressing this danger will (1) require the establishment of state oversight for hazard-abatement authority with management, fire and natural-resource staff positions to provide stability during agency transitions, set standards to monitor local and regional fuels-management programs, and for coordinating local, regional and state mutual-aid fire-suppression efforts; (2) provide the leadership to educate the public and achieve a more viable consensus about the reality of fire hazards and need for fuel mitigation; (3) establish and enforce clear policies about the vegetation to be managed or preserved in both residential and wildland areas in very high fire severity zones in the hills; (4) seek technical improvements in linking wildland-fire science to urban-fire science; and (5) establish zoning restrictions on construction in high fire-hazard areas. These issues are addressed in the following paragraphs.

Development of a state-wide or regional authority to coordinate fuels management and fire suppression could contribute to solving the fire problem in the San Francisco Bay Area. The area is complex in terms of topography, fuels and potential fire behaviour. Agencies and cities have their own approach to the many issues that contribute to fire-hazard reduction; however, fire has the potential to spread across jurisdictional boundaries. Progress has been made in the coordination of fire suppression, but a better coordination of fuel mitigation continues to be required. A regional fire authority, like the California Coastal Commission, would have the potential to address the fuel-management problem on a regional basis. Since its inception in 1972, the California Coastal Commission was given authority over construction and development along the coast. Its objective has been to protect the scenic quality of the coast, maintain public access to the coast, and prevent construction in hazardous areas along the coast. It has state-wide responsibility for the coastal zone and authority over counties and cities with regard to coastal development. Another model for coordinating fire-hazard reduction across multiple jurisdictions is the Sierra Nevada Forest and Community Initiative Regional Coordinating Council established in 2011. Should a region-wide or state-wide authority be established to mitigate the fuel hazard, we recommend a parcel assessment to support the cost of fuel management. As can be seen from the 1923 Berkeley, 1991 Oakland, 2017 Tubbs and 2018 Camp fires, the threat of fire extends beyond the interface and intermix zone. All residents and businesses in high fire prone areas must share in the cost of fuel mitigation.

The views of various individuals and organisations opposed to fuel management that included removal of eucalypts and pine trees and the use of herbicides as measures to reduce fire hazard were not appropriately addressed early on in fuel-mitigation planning in the East Bay Hills. A more reasoned debate about fire safety and overall vegetation management must include the opposition early in the fuel-mitigation planning process. Leadership will be required in future to educate the public and achieve a more viable consensus about the reality of fire hazards and need for fuel mitigation. Good examples of the value of public education in the development of fire-hazard reduction programs are seen in the approach taken by the Prescribed Fire Councils in the south-eastern United States and on federal land in the southwest. In some cases, consensus may not be reached with some groups or individuals, and in those situations decisions must be made based on the best available science (Parsons 1993).

Many regulations currently exist to address fire hazard around structures in the San Francisco Bay Area interface and intermix zones. Enforcement of these regulations concerning fuel mitigation has often been limited by an inadequate number of enforcement personnel. Cities have yet to enforce clear residential fire-safety policy or provide leadership to reduce obvious residential fire potential. Based on completed local hazard-mitigation plans posted on agency webpages, it is apparent that land-management agencies understand their role in reducing fire hazard on their lands, but the cities in the interface zone have often failed to enforce regulations. Fire-resistant architecture standards must also be enforced to minimise fire danger to structures. The regulations adopted by the city of Hillsborough (<https://www.hillsborough.net/DocumentCenter/View/2737/Exhibit-H—Hillsborough-Fire-IS—Public?bidId=>, accessed

12 December 2018) on the San Francisco peninsula may serve as a viable model for such needed regulations.

Improvements in linking wildland-fire science to urban-fire science will require the development of fire models that better represent conditions in the urban intermix zone. We do not believe that fuel models for predicting flame length, fire rate of spread and fire-line intensity that have been developed for wildland fuels are applicable to the urban interface in the San Francisco Bay Area. Physics-based wildland fire models, such as those developed by the US National Institute of Standards and Technology (Mell *et al.* 2010), should be linked with urban-fire models to provide an improved method for modelling intermix fires in the San Francisco Bay Area.

This history of planning to mitigate the fire hazard in the East Bay Hills suggests we are in, what Burton (2015) referred to as, a **Cassandra Zone**:

‘...that time period from the voicing of the first credible warnings of foreseeable future disaster until society either awakens to the threat and proactively mitigates against it, or chooses to ignore such warnings and subsequently suffers the consequences when the foretold disaster comes to pass.’ (p. 15)

Burton concludes:

‘Whether or not that society manages to learn from its own history of disaster and use the power of state to mitigate against foretold future ones is one of the definitive criteria for determining whether such a society can be deemed to constitute a moral community.’ (p. 15)

Maybe the Wine Country fires and the 2018 summer wild-fires indicate that we have already passed the Cassandra Zone, but it is hoped that California and the San Francisco Bay Area will finally awaken to the growing need to mitigate interface and intermix fuels around our cities.

Conflicts of interest

The authors declare that they have no conflicts of interest.

Acknowledgements

This research did not receive any specific funding.

References

- Blue Ribbon Fire Prevention Committee (1982) Report of the Blue Ribbon Urban Interface Fire Prevention Committee. Report to the East Bay Regional Park District. (Oakland, CA, USA)
- Burton L (2015) The “Cassandra Zone” and law’s moral purpose. *Studies in Law, Politics and Society* [Special issue] **68**, 15–32.
- East Bay Hills Vegetation Management Consortium (1995) Fire hazard mitigation & fuel management plan for the East Bay Hills. East Bay Hills Vegetation Management Consortium. (Oakland, CA, USA)
- LSA (2010) East Bay Regional parks District Wildfire Hazard Reduction and Resource Management Plan. 2010. LSA. (Point Richmond, CA)
- Mell WE, Manzello SL, Maranghides A, Butry D, Rehm RG (2010) The wildland–urban interface fire problem – current approaches and research needs. *International Journal of Wildfire* **19**, 238–251. doi:10.1071/WF07131
- National Board of Fire Underwriters (1923) Report on the Berkeley, California Conflagration. National Board of Fire Underwriters. (Washington, DC, USA)
- National Fire Protection Association (NFPA) (1992) Oakland/Berkeley Hills Fire. National Wildland Urban Interface Fire Protection Initiative report. (Quincy, MA, USA) Available at <https://www.ggweather.com/firestorm/Firewise%20Oakland-Berkeley%20Hills%20Fire.pdf> [Verified 12 December 2018].
- Parsons DJ (1993) Restoring fire to giant sequoia groves: What have we learned in 25 years? In ‘Proceedings: Symposium on fire in wilderness and park management’, 30 March – 1 April 1993, Missoula, MT. (Eds JK Brown, RW Mutch, CW Spoon, RH Wakimoto) U. S. Department of Agriculture, Forest Service, Intermountain Research Station, pp. 256–258. (Ogden, UT, USA)

Eucalyptus: Addressing the Hazard



Joe McBride
Professor Emeritus
Forestry
UC Berkeley

Fuel management and wildfire mitigation proposal for the University of California property in Strawberry and Claremont canyons

Joe R. McBride

Professor Emeritus of Forestry, University of California, Berkeley
California Licensed Professional Forester #1306

September 15, 2019

CSIRO PUBLISHING

International Journal of Wildland Fire 2019, 28, 1–3
<https://doi.org/10.1071/WF18107>

Communication

The failure of planning to address the urban interface and intermix fire-hazard problems in the San Francisco Bay Area

Joe R. McBride^{A,C} and Jerry Kent^B

^ADepartment of Environmental Science, Policy and Management, 145 Mulford Hall, University of California, Berkeley, CA 94720, USA.

^BEast Bay Regional Park District, 2950 Peralta Oaks Ct, Oakland, CA 94605, USA.

^CCorresponding author. Email: jm2@berkeley.edu



ELSEVIER

Landscape and Urban Planning 64 (2003) 201–208

LANDSCAPE
AND
URBAN PLANNING

This article is also available online at:
www.elsevier.com/locate/landurbplan

Landscape scale vegetation-type conversion and fire hazard in the San Francisco bay area open spaces

William H. Russell^{a,*}, Joe R. McBride^b

^a USGS/BRD Western Ecological Research Center, Golden Gate Field Station, Fort Cronkhite, Building 1063, Sausalito, CA 94965, USA

^b Forest Science Division, Department of Environmental Science Policy and Management, 145 Mulford Hall,
University of California, Berkeley, CA 94720, USA

Received 24 September 2002; accepted 13 November 2002

Fire Hazard

J.R. McBride, Fuel Management Proposal, September 15, 2019

Table 2. Fuel loading (Russell and McBride, 2002, Agee et al, 1973)

Vegetation type	Fuel loading (tons/acre)
Annual grassland	1.51
Baccharis brushland	18.7
Oak-bay woodland	3.7
Eucalyptus plantation	60
Conifer plantation	40.7

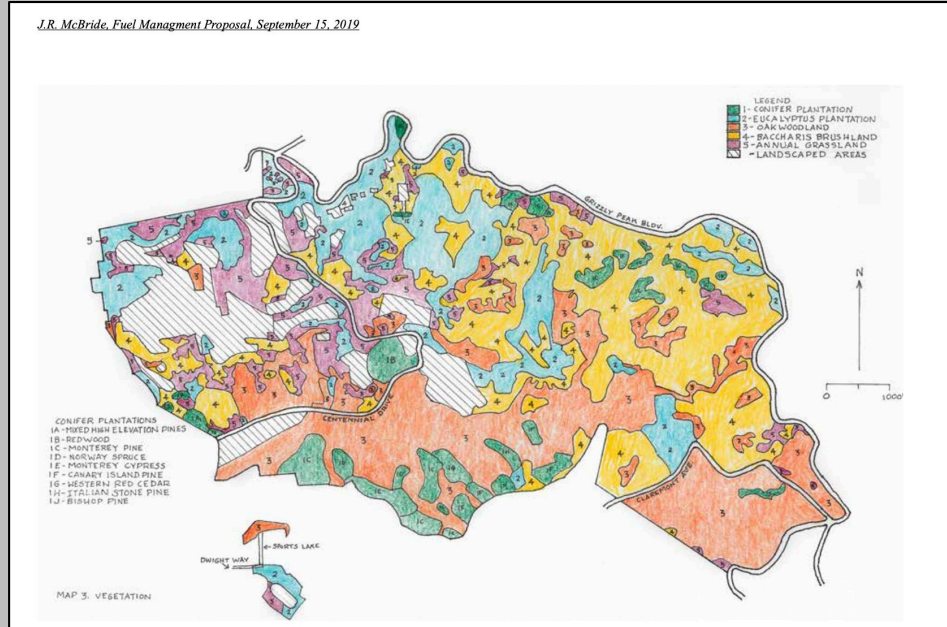
J.R. McBride, Fuel Management Proposal, September 15, 2019

Table 3. Fire characteristics (Russell and McBride, 2002, Chenny, 1981)

Vegetation type	Ease of ignition	Rate of spread (m/min)	Fire-line intensity (kW/m)	Average flame length (m)
Annual grassland	high	3.8	66	0.5
Baccharis brushland	moderate	1.6	197	0.8
Oak-Bay woodland	low	0.6	36	0.4
Eucalyptus plantation	high	0.6	250	1.0
Conifer plantation	high	0.6	158	0.7



Recommended Treatment



Proposals for fuel management in Strawberry and Claremont canyons

Several fuel management prescriptions need to be applied on University of California and Lawrence Berkeley National Laboratory properties in Strawberry and Claremont canyons in order to reduce fire risk and fire hazard. These include (1) conversion of all eucalyptus plantations to naturally occurring vegetation types, (2) conversion of conifer plantations on ridges to naturally occurring vegetation types, (3) establishment of roadside fuel breaks, (4) establishment of shaded fuel breaks in areas adjacent to property boundaries and structures, (5) maintenance of conifer plantations, and (6) fuel maintenance along power lines.

Estimated Costs of Removal

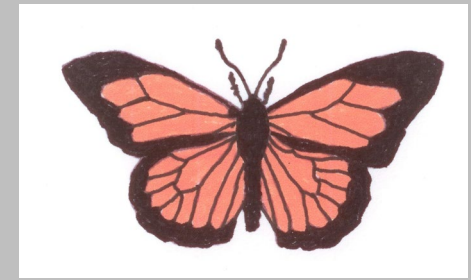
1. Tree removal = \$2000/tree

(estimate based on 3 local arborists - HomeBlue Contractors, GoTreeQuotes, LGTree Service)

2. Manual control of eucalyptus Sprouts = \$1000/acre

(estimate provided by Glen Schneider, Skyline Gardens)

Monarch Butterfly Questions



from: Griffiths, J. L. 2014. Monarch Butterfly Tree Preference*

canopy. Overall, they did not cluster on one tree species significantly more frequently than another, indicating that monarchs do not prefer eucalyptus—or any tree species—all of the time.
However, more often than not monarchs clustered significantly more than expected on native trees, particularly at midseason when the weather was most inclement. They also clustered

from: Griffiths, J., and F. Villablanca. 2015. Managing monarch butterfly overwintering groves **

Sites Database 2016). Clusters are also found on nonnative red gum eucalyptus (Eucalyptus camadulensis), and the native western sycamore (Platanus racemosa), coast redwood (Sequoia sempervirens), coast live oak (Quercus agrifolia), and others (Xerces Society Western Monarch Overwintering Sites Database 2016).

* Griffiths, J. L. 2014. Monarch Butterfly (*Danaus plexippus*) Tree Preference and Intersite Movement at California Over Wintering Sites. MS Thesis. California Polytechnic State University. San Luis Obispo.

**Griffiths, J., and F. Villablanca. 2015. Managing monarch butterfly overwintering groves: making room among the eucalyptus. California Fish and Game 101:40–50.

Literature Cited

Eucalyptus Fire Hazard:

Agee, J. et al. 1973. Eucalyptus fuel dynamics and fire hazard in the Oakland Hills. California Agriculture 27(9): 13-15.

<https://calag.ucanr.edu/archive/?article=ca.v027n09p13>

Cheney, N. P. (1981). Fire behavior. In: A. Gill, R. Groves and I. Noble, ed., Fire and the Australian Biota. Canberra: Australian Academy of Science, pp.151-175.

<https://publications.csiro.au/rpr/pub?list=BRO&pid=procite:13c02405-e8c6-466c-a400-f6137710a651>

Russell, W. H. and J. R. McBride. 2003. Landscape scale vegetation-type conversion and fire hazard in the San Francisco Bay Area open spaces. Landscape and Urban planning. 64(4):201-108.

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.462.2519&rep=rep1&type=pdf>

McBride, J. R. and L. Kent. 2018. The failure to address the urban interface and intermix fire- problems in the San Francisco Bay Area. International Journal of Wildland Fire (28)(10 1-3.

<https://www.publish.csiro.au/wf/Fulltext/WF18107>

McBride, J. R. 2019. Fuel management and wildfire mitigation proposal for the University of California property on Strawberry and Claremont Canyons.

<https://static1.squarespace.com/static/56e612b159827e4b847675c9/t/5df586380027c56344ae6466/1576371769279/fuel-.pdf>

Estimated Costs:

Kent, J. 2019. Personal communication. East Bay Regional Park District. (not available in electronic form)

Satomi, R. P. 2016. Mechanized forest fuel treatments: analyzing machine efficiency within variable landscapes. Diss.

University of California, Berkeley. (not available in electronic form)

HomeBlue Contractor Net <https://www.homeblue.com/tree-service/bay-area-ca-tree-removal-cost.htm>

GoTreeQuotes <https://www.gotreequotes.com/how-much-does-tree-removal-cost/>

LGTree Service <https://www.lctrees.com/cost-of-tree-removal-services/>

Monarch Butterfly:

Griffiths, J. L. 2014. Monarch Butterfly (*Danaus plexippus*) Tree Preference and Intersite Movement at California Over Wintering Sites. MS Thesis. California Polytechnic State University. San Luis Obispo.

<https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=2308&context=theses>

Griffiths, J., and F. Villablanca. 2015. Managing monarch butterfly overwintering groves: making room among the eucalyptus. California Fish and Game 101:40–50.

https://www.monarchjointventure.org/images/uploads/documents/griffiths_and_villablanca_2015.pdf

**SUMMARY OF RECOMMENDATION
MEASURE FF SPENDING FY 23 & FY 24
HAZARDOUS VEGETATION REMOVAL PROGRAM**

Nancy Rader
DFS Commissioner
March 23, 2022



BACKGROUND

NOAA: elevated risk for 2022 California spring and summer wildfires

CalFire: 613 fires have burned 5,876 acres so far this year - more than the five-year average

CWPPs of East Bay Communities all identify removal of eucalyptus and other flammable vegetation as a priority activity requiring funding

Berkeley has funds via Measure FF

BFD's consultant Carol Rice: "Prevention of crown fire in eucalyptus in the Berkeley/Oakland hills, and elsewhere in the East Bay is of paramount importance to the fire safety of a very large population."

PROPOSAL

Devote 20%, 28% of Measure FF Funds to Removal of Hazardous Vegetation in FY 23, 24

Maintain existing home inspection program

Address areas beyond 30' of homes where property owners are willing:

FY 23: Clean up of ground fuels & ladders

FY 24: Remove hazardous trees

FY 25: As needed to complete

Consider cost-sharing requirement:
expedient reduction of risk vs. private benefits

Develop regulations for vegetation management of entire properties by 2025

○



OTHER NOTES

Neither California's nor Berkeley's fire codes require clearance of brush beyond 30-100 feet of any structure

Budget includes program manager, expert consultants (erosion control and re-vegetation), and crews

Assumes \$2,000/tree removed x 500 trees

Manual (not chemical) re-sprouting control

Costs are reasonably estimated but may vary, and public participation is unknown– Program Year 3 may or may not be needed

“Gifts” of public funds are allowed for a public purpose, and that public purpose “is to be liberally construed” (League of CA Cities)

Wildfire prevention polled highest in public support for Measure FF (69%) – **reducing hazardous vegetation is the most timely and impactful thing we can do!**

