



2019 Defensible Space Study

Oakland Firesafe Council

Prepared by Jennee Kuang, MPP, UC Berkeley Goldman School of Public Policy

Dedicated to Dinah Fishbach Benson, a woman of curiosity, intellect, doggedness and compassion who inspired the formation of the Oakland Firesafe Council and spurred us on to think big. We miss her wise guidance.

Table of Contents

EXECUTIVE SUMMARY	4
INTRODUCTION	6
METHODOLOGY	8
RESULTS & DISCUSSION	9
STRICT ENFORCEMENT AND ABATEMENT AUTHORITY	10
COST RECOVERY	10
OUTREACH AND EDUCATION	12
PUBLIC COMPLAINTS	12
COMPLEMENTARY PROGRAMS	12
VARIABLE DESIGN AND IMPLEMENTATION	13
CASE STUDIES	15
VENTURA COUNTY FIRE PROTECTION DISTRICT	15
CITY OF SAN DIEGO FIRE-RESCUE DEPARTMENT	16
ATASCADERO FIRE & EMERGENCY SERVICES.....	17
SAN RAMON VALLEY FIRE DISTRICT	18
MORAGA-ORINDA FIRE DISTRICT.....	19
IMPROVING OAKLAND’S DEFENSIBLE SPACE PROGRAM	22
PREVIOUS ASSESSMENTS OF OAKLAND’S PROGRAM.....	22
RECOMMENDATIONS FOR IMPROVING OAKLAND’S DEFENSIBLE SPACE PROGRAM	24
DESIGNING A NEW PROGRAM	25
CONCLUSION	26
<i>Appendix A – Excerpts from 2nd Follow-up Audit of OFD’s Vegetation Management, City of Oakland, Office of the City Auditor</i>	27
<i>Appendix B – City of San Diego Fire-Rescue Department Brush Flyer</i>	29
<i>Appendix C – Moraga-Orinda Fire District Wildfire Prevention Strategic Plan</i>	31

Executive Summary

California state law requires property owners in high fire hazard, wildland urban interface areas to maintain defensible space. Creating defensible space involves managing vegetation and other combustible materials surrounding a structure to create a buffer that can help slow or stop the spread of wildfire. Adhering to their jurisdiction's defensible space requirements is a critical step that private property owners can take to protect homes and lives.

Unfortunately, fire departments and districts face many challenges to achieving 100% property owner compliance with defensible space requirements. The purpose of this study is to identify best practices for structuring and implementing a defensible space program, with additional discussion specific to the City of Oakland. Through a survey of 49 fire districts, departments, and firesafe councils, as well as follow-up interviews with six of these entities, this study draws lessons learned from existing programs.

This study reveals two key components of a successful defensible space program that reinforce each other: (1) targeted outreach and education that maximizes voluntary compliance and (2) strict enforcement of compliance through substantive penalties and consistent use of abatement authority. Strict enforcement of compliance typically leads to higher rates of voluntary compliance over time, and higher rates of voluntary compliance lead to less work for defensible space inspection and enforcement entities.

At a high level, this study finds that successful defensible space programs that cover areas with characteristics similar to Oakland's complete the following on an annual basis:

- Send notice to all property owners covered by the defensible space program in advance of initial inspections.
- Conduct inspections of properties.
- Notify non-compliant properties and provide additional opportunities to comply.
- Hire contractor to abate properties that continue to be non-compliant.
- Assess a property lien or tax or an invoice to recover abatement costs and associated administrative fees.
- Conduct ongoing outreach and education throughout this process.

Highly successful defensible space programs share the following key characteristics: (1) **strict enforcement** of compliance through eventual use of **abatement authority** to abate non-compliant properties, (2) **cost recovery** of abatement and associated administrative fees from property owners, (3) property owner **outreach and education** to achieve voluntary compliance, (4) pairing annual inspections with **public complaints** to help identify non-compliant properties, and (5) provision of **complementary programs** when appropriate.

Although most defensible space programs are similarly structured, there is nuanced variation among successful programs. This suggests that a number of design and implementation choices, tailored to local contexts, can lead to high compliance rates. Characteristics that vary between the programs achieving 90-100% compliance include:

- Time of year during which inspections occur
- Number of staff available to complete inspections
- Number of re-inspections and associated penalties
- Funding amounts and sources
- Types of complementary programs

The results of this study may be informative to any entity interested in improving an existing or designing a new defensible space program.

Introduction

The increasing threat of wildfire to human life, property, and the environment is a function of a history of fire suppression, the expanding wildland urban interface (WUI), and climate change along with its interactions with insects and disease. WUI refers to areas where structures and other human development meet or intermix with undeveloped, fire-prone wildland. As of 2010, California contains 27,255 km² of WUI, or 6.6% of the total land area in the state.¹ Despite the relatively small land area, 32.6% of homes (about 4.5 million) and 30.2% of the population (over 11 million) in California are located in a wildland urban interface.² WUI expansion has increased the number of people and homes affected by wildfire.³

The Oakland Hills area is a WUI in Oakland, California. Much of the area is classified as a Very High Fire Hazard Severity Zone.^{4,5} The 1992 Bates Bill that required CAL FIRE⁶ to work with local governments to identify high fire hazard severity zones was passed in response to the Oakland Hills Fire of 1991.⁷ This fire destroyed more than 3,000 structures and 2,000 vehicles, killing 25 people and leaving an additional 10,000 homeless. The resulting damages exceeded \$1.5 billion.⁸

Fire management and the causes of wildfire are complex. For example, the 1991 Oakland Fire occurred because a combination of several risk factors, including a five-year drought, highly combustible natural fuels, flammable home building materials, narrow roads, and limited water supply. Entry of fire into homes was closely associated with adjacent wildland or ornamental plant species. Many homes in steeper slope areas had overhanging decks with fuel accumulation underneath, and the location of trees around homes resulted in fuel accumulation on roofs, likely adding to the spread of fire. Fuels in close proximity to the structures exposed them to extreme radiant heat loads, leading to ignition in many cases.⁹

Two factors are key determinants of a home's ability to survive wildfire, both of which are primarily the responsibility of the homeowner – the home's roofing materials and the vegetative

¹ Martinuzzi, Sebastian et al. (2015). The 2010 Wildland-Urban Interface of the Conterminous United States. USFS, USDA. https://www.fs.fed.us/nrs/pubs/rmap/rmap_nrs8.pdf

² Ibid.

³ Bar-Massada, Avi, Volker C. Radeloff, & Susan I. Stewart (2014). Biotic and Abiotic Effects of Human Settlements in the Wildland-Urban Interface. *BioScience*. 64(5) 429-437.

<https://academic.oup.com/bioscience/article/64/5/429/2754252>

⁴ CAL FIRE (2008). Alameda County, Very High Fire Hazard Severity Zones in LRA. Fire and Resource Assessment Program, CAL FIRE. Map. http://frap.fire.ca.gov/webdata/maps/alameda/fhszl_map.1.jpg

⁵ Mapping of Fire Hazard Severity Zones is meant to help limit wildfire damage to structures through planning, prevention, and mitigating activities/requirements that reduce risk.

http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_faqs#fhsz01

⁶ California Department of Forestry and Fire Protection

⁷ CAL FIRE (2019). Very High Fire Hazard Severity Zones (AB337). Last modified on May 10, 2019.

http://cdfdata.fire.ca.gov/fire_er/fpp_planning_severehazard

⁸ FEMA (1991). The East Bay Hills Fire, Oakland-Berkeley, California. USFA-TR-060/October 2991. U.S. Fire Administration/Technical Report Series. Investigated by J. Gordon Routley.

<https://www.usfa.fema.gov/downloads/pdf/publications/tr-060.pdf>

⁹ Ibid.

space surrounding the home.¹⁰ The risk factors from the 1991 fire posed by vegetative fuels surrounding the home can be mitigated through the creation of defensible space – the focus of this study.

Creating defensible space involves managing vegetation and other combustible materials surrounding a structure to create a buffer that can help slow or stop the spread of wildfire. Defensible space helps mitigate home loss by minimizing direct contact with fire, reducing radiative heating, lowering the probability of ignitions from embers, and providing a safer place for firefighters to defend a structure.¹¹ One study analyzed the role of defensible space by comparing 1,000 destroyed and 1,000 surviving structures for fires where homes burned in San Diego County, finding that structures with defensible space were more likely to survive a fire.¹²

California state law requires high fire hazard areas to maintain 100 feet of defensible space. However, local jurisdictions vary in their enforcement of these requirements. Some jurisdictions fail to enforce defensible space altogether – 20% of survey respondents from this study indicate that their fire department/district does not have a defensible space program. Other jurisdictions regularly achieve close to 100% compliance with defensible space requirements. Oakland's defensible space program performs relatively well compared to other jurisdictions in the state, but would benefit from increased compliance. The purpose of this study is to identify best practices for structuring and implementing a defensible space program drawn from lessons learned from existing programs, with additional discussion specific to Oakland.

This report will first discuss study methodology, followed by study results and discussion. Next, case studies of five defensible space programs will be presented. The report then turns to a discussion of the Oakland Fire Department's defensible space program and provide Oakland-specific recommendations. Finally, the report concludes with best practice design considerations for creating a new, or altering an existing, defensible space program.

¹⁰ Syphard, Alexandra D., Teresa J. Brennan, & Jon E. Keeley (2014). The role of defensible space for residential structure protection during wildfires. *International Journal of Wildland Fire*. 23(8): 1165-1175.

<http://www.publish.csiro.au/wf/pdf/WF13158>

¹¹ Ibid.

¹² Ibid.

Methodology

A survey was sent out to fire departments, districts, and firesafe councils throughout California for a non-randomized sample of defensible space programs. Representatives of 49 different entities who administer or are otherwise familiar with their local defensible space programs responded to the survey. A subset of respondents whose programs achieve 90-100% parcel owner compliance with defensible space requirements and whose WUIs have characteristics similar to Oakland's WUI were interviewed for further details on the design and implementation of their defensible space programs. Oakland's WUI is a Local Responsibility Area, densely developed, with a mix of WUI types¹³ and approximately 25,000 parcels.

The study methodology has some weaknesses that impact the strength of the conclusions drawn from survey results. First, this study is based off a non-random sample that may not be representative of California's defensible space programs. Next, the data is self-reported and may contain inaccuracies. For example, many departments/districts do not thoroughly inspect or track every property covered under their defensible space programs. Therefore, the accuracy of self-reported compliance rates may be ambiguous. Finally, some survey questions were interpreted differently by different respondents, resulting in responses that are not directly comparable. For example, the time frame of inspection was not specified when requesting information on percentage of properties inspected. Obtaining standardized information on funding amounts and sources was particularly challenging.

¹³ The American Planning Association distinguishes between three types of wildland urban interfaces – boundary, intermix, and island/occluded. Boundary WUIs are characterized by areas of development where homes press against wildlands, with a clearly defined boundary between developments and wildland. In intermix WUIs, buildings are scattered and interspersed in wildland areas. Island or occluded WUIs are areas of wildland within predominantly urban or suburban areas.

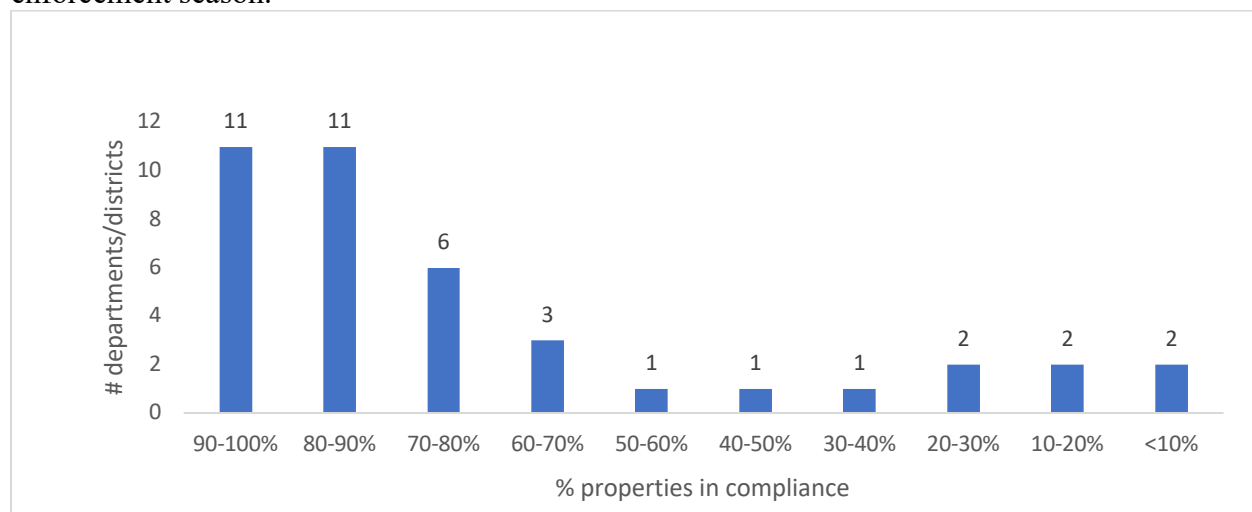
Results & Discussion

Fire departments and districts often face many barriers to achieving homeowner compliance with defensible space guidelines (Table 1). Nevertheless, several survey participants indicated that their department/district achieves 90-100% compliance (Figure 1). This study seeks to understand what characteristics of a defensible space program lead to this high success rate.

Table 1. Most significant challenges to achieving homeowner compliance with defensible space guidelines.

Challenges	% departments/district (n=46) facing challenge
Cost of defensible space maintenance for homeowners	71.7%
Homeowner perception of work involved in maintaining defensible space	56.6%
Lack of homeowner awareness of fire risk	52.2%
Conflicts with homeowners' aesthetic concerns	50.0%
Insufficient funding for inspection and enforcement	45.7%
Not enough inspectors to meet demand	45.7%
Competing priorities with other fire department responsibilities	34.8%
Inadequate community risk assessments	17.4%
Insufficient training for inspectors	17.4%
Other	17.4%

Figure 1. WUI property owner compliance rate at conclusion of annual fire inspection and enforcement season.



At a high level, successful defensible space programs that cover areas with characteristics similar to Oakland's complete the following on an annual basis:

- Send notice to all property owners covered by the defensible space program in advance of initial inspections.
- Conduct inspections of properties.
- Notify non-compliant properties and provide additional opportunities to comply.
- Hire contractor to abate properties that continue to be non-compliant.
- Assess a property lien or tax or an invoice to recover abatement costs and associated administrative fees.¹⁴
- Conduct ongoing outreach and education throughout this process.

Highly successful defensible space programs share the following characteristics: (1) **strict enforcement** of compliance through eventual use of **abatement authority** to abate non-compliant properties, (2) **cost recovery** of abatement and associated administrative fees from property owners, (3) property owner **outreach and education** to achieve voluntary compliance, (4) pairing annual inspections with **public complaints** to help identify non-compliant properties, and (5) provision of **complementary programs** when appropriate.

Strict enforcement and abatement authority

It appears that the strict enforcement of penalties helps create a culture of educated homeowners and voluntary compliance. Programs that indicate strict enforcement of compliance achieved at least 80-90% compliance (n=3), with the majority achieving 90-100% (n=7) compliance. Six programs indicate weak or no enforcement. Twenty-three programs indicate moderate, variable, or unclear enforcement.

All programs that that achieve 90-100% compliance will use their abatement authority to abate persistently non-compliant parcels (Figure 2). Use of abatement authority seems to be a critical aspect of establishing property owner respect for the defensible space program and defensible space requirements. However, property abatement alone will not guarantee high compliance rates. Two programs that use their abatement authority – not accounting for how consistently or often this authority is used – report less than 40% compliance.

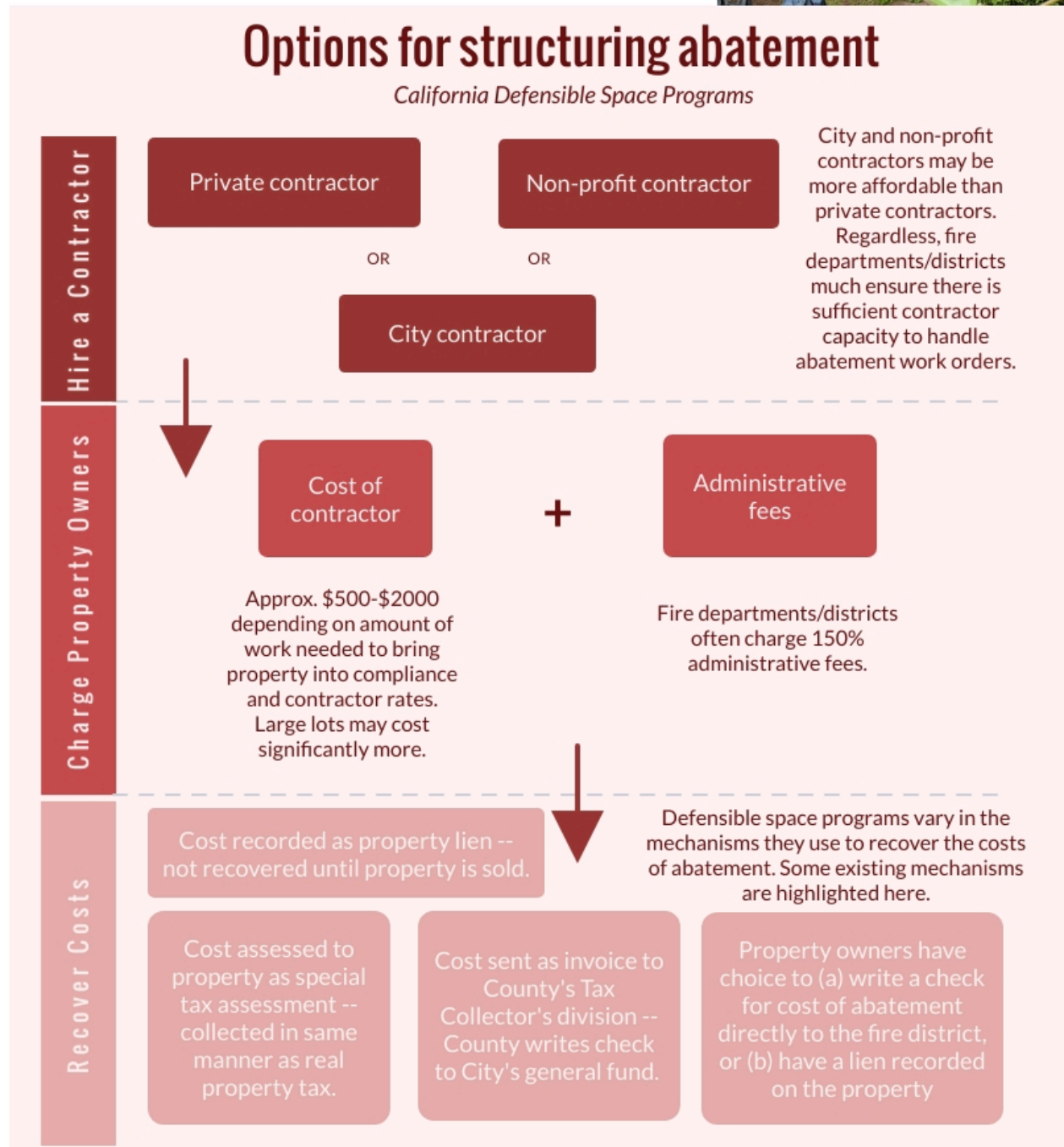
Cost recovery

Five fire departments/districts that achieve high compliance and share characteristics similar to Oakland were interviewed for additional details on their programs. All of these entities will attempt to recover the cost of abatement and associated administrative fees from property owners. Some departments/districts recover their costs in a timely manner, while others have to absorb the near-term costs of hiring a contractor for abatement. Cost recovery is important for two reasons: (1) to apply a penalty of sufficient weight on negligent property owners such that bringing the property into compliance in future years is a more attractive option than continuing to neglect defensible space requirements, and (2) provide some means for fire departments/districts that must use resources to bring properties into compliance to recover the costs of doing so.

¹⁴ Oakland is unique among the programs discussed in more detail below in not using its abatement authority.

Figure 2. Options for structuring use of abatement authority

All highly successful defensible space programs use abatement authority to **hire a contractor** for the purposes of abating persistently non-compliant properties. Property owners are **charged for the cost of abatement**, and **costs are recovered** by the city or fire district.



Outreach and education

The vast majority of departments/districts with a defensible space program conduct outreach and education (n=37), including all but one¹⁵ that achieve 90-100% compliance. Outreach and education is a cornerstone of any defensible space program, as an important goal is to encourage a culture of voluntary compliance to the extent possible. Something as small as a change to the way flyers provide information¹⁶ can significantly influence voluntary compliance rates. Many programs indicate that the most effective aspect of their program is some form of outreach and education, including community meetings and other face-to-face interactions with inspectors.

Public complaints

Establishing a formal public reporting mechanism for non-compliant properties appears to be especially important for departments/districts who do not have the resources to go door-to-door and thoroughly inspect every property. Public reporting helps both identify non-compliant properties that may have been overlooked by initial inspections, and helps with quality control to ensure properties were properly inspected.

For an example of the former, Atascadero Fire & Emergency Services covers properties of varying sizes, from large rural lots to small city lots. The large lots are easier for the inspector to identify, whereas public reporting by neighbors for non-compliant lots are an important inspection component in smaller city lots that are more difficult to inspect individually.

The City of San Diego Fire-Rescue Department uses public reporting for quality control. If the department receives a public complaint about a property within six months of an inspection, the property will be assigned to a supervisor to assess.

Complementary programs

While strict inspection and enforcement combined with strong outreach and education are critical to a successful program, complementary programs that address community-specific barriers can also play a key role in facilitating compliance. Nearly all programs offer some combination of the following complementary programs beyond outreach and education: technical assistance, risk assessment and mapping, wood chipping services, vegetation disposal services, financial assistance, and/or defensible space management demonstrations (Table 2). Even property owners who are well-educated and motivated to comply may face legitimate barriers that can be addressed by complementary programs.

¹⁵ This fire department/district is an outlier in its design, implementation, and number of properties covered.

¹⁶ See City of San Diego Fire-Rescue Department case study.

After implementing strict enforcement along with outreach and education, fire departments/districts should be able to identify parcel owners who continue to face barriers to compliance. Fire departments/districts should work to understand what these barriers are, and to the extent possible, provide services to address them. What services and programs make sense will be specific to both the needs of their communities and the regulations and processes unique to their local jurisdiction.

Table 2. Programs complementary to defensible space inspection and management.

Type of program	# departments/districts implementing program (n=39)
Outreach and education	37
Wood chipping services	18
Risk assessment and mapping	16
Technical assistance	15
Defensible space management demonstrations	14
Vegetation disposal services	13
Financial assistance	9

Variable design and implementation

Although most defensible space programs are similarly structured, there is nuanced variation among successful programs. This suggests that a number of design and implementation choices, tailored to local contexts, can lead to high compliance rates. Characteristics that vary between the programs achieving 90-100% compliance include:

- Time of year during which inspections occur¹⁷
- Number of staff available to complete inspections¹⁸
- Number of re-inspections and associated penalties
- Funding amounts and sources¹⁹

These variations in program design and implementation will be explored in more detail below through case studies of defensible space programs.

Additionally, survey results yield no evidence that WUI characteristics – mix of responsibility areas (LRA, SRA, FRA²⁰), density of development, number of properties covered, or number of significant fires in the past 15 years – are meaningfully associated with compliance rate.

¹⁷ This variation is unsurprising, given that (1) the fire season may vary between jurisdictions and wildland characteristics, and (2) inspectors have varying workloads.

¹⁸ Several programs only employ one full-time employee to conduct inspections and enforcement, while others employ more. For departments/districts with more limited resources for inspection, reported compliance rates may be less certain than departments/districts with the resources to thoroughly inspect each property.

¹⁹ Standard funding information proved difficult to obtain.

²⁰ Local Responsibility Area, State Responsibility Area, Federal Responsibility Area

Table 3. Summary table of case study departments/district.

	Oakland Fire Department	Ventura County Fire Protection District	City of San Diego Fire-Rescue Department	Atascadero Fire & Emergency Services	San Ramon Valley Fire District	Moraga-Orinda Fire District²¹
Level of enforcement	Moderate	Strict	Strict	Strict	Strict	Strict
# properties	~25,000	~17,000	~45,500	~11,000	~21,000	~14,000
How are inspections conducted?	Inspects 100% annually; door-to-door	Inspects 100% annually; door-to-door	Inspects 100% every 4-5 years; door-to-door	Inspects 100% annually; visual inspection from street	Inspects 100% annually; visual inspection from street	Unclear
FTEs: inspection season/outside inspection season	5 + personnel from fire engine companies (3)	9 + personnel from fire engine companies (2)	8 (8)	1 (1)	2 (2)	5.5 (3.5)
Quality control	Inspectors required to take photos of all four sides of each property to document compliance; developed quality assurance plan.	Fire hazard reduction program manager and Battalion Chiefs review inspections for accuracy; internal training manual.	Property assigned to supervisor if public complaint received within 6 months from inspection; twice-yearly training; emphasize quality and consistency over speed.	Same inspector has had sole responsibility for past 15 years. ²²	Same inspector has had sole responsibility for past 5 years.	Anecdotally, inspectors have a track record of consistency and accuracy in compliance reporting.
# inspections before abatement	N/A	2	3	2	3	3
Abatement	Will not use abatement authority	Contractor's cost and administrative fees (~\$1700) assessed to property as special tax assessment. Collected in same manner as real property tax. Fees return to fire district.	Contractor's cost and administrative fees recorded as Special Assessment Lien Tax on property. Costs not recouped until property is sold.	Contractor's cost and 150% administrative fee; invoices sent to county's Tax Collector's Division County will write check to city's general fund.	Cost ²³ recorded as lien on property. Fire department directly paid when and if property is sold.	Parcel owners either write the district a check to cover the cost of abatement or have a lien recorded on the property.
Funding sources	General fund	Property taxes, State funding, District operation account	General fund	General fund	Property tax assessment	Property tax assessment

²¹ Moraga-Orinda's compliance rate is unclear, but has been included as a case study of a program taking rigorous steps to move towards high compliance.

²² This eliminates a primary threat to quality and consistency of inspections – managing multiple inspectors who may have varying levels of expertise and rigor. There is, however, a trade-off with having sufficient resources to more thoroughly inspect each property.

²³ Unclear which costs

Case Studies

Ventura County Fire Protection District

Ventura County's Fire Hazard Reduction program strictly enforces compliance and inspects 100% of its ~17,000 properties annually. Outside of inspection season, the program employs two FTEs. During inspection season, the program employs nine FTEs, as well as additional FTEs from each fire station to conduct inspections. The fire hazard reduction program manager and Battalion Chiefs will review inspections for accuracy.

The program uses aerial maps in pre-season reviews to help determine whether parcels should be added to the program and receive annual abatement notices. The aerial maps are also used to help identify parcel location, property lines, and where buildings are located. The program conducts annual inspection and enforcement from April-June. Notices are sent to covered properties on April 20, with a June 1 deadline for property owners to comply. On June 1, inspectors will conduct initial inspections. If homeowners have not complied at time of first inspection, they will be given a final notice of what actions need to be taken to bring their property into compliance, with a seven to fourteen-day re-inspection date.

If the property is still out of compliance upon re-inspection, the Fire Hazard Reduction program will attempt to contact the property owner. Ultimately, if the property owner fails to comply, a contractor will enter and abate the property. The contractor's cost and fire district's administrative fees (~\$1700) are assessed to the property as a special tax assessment, and collected in the same manner as the real property tax. The program will typically submit a parcel listing to the County Auditor at the beginning of August for any assessments due for the past year. They are then placed on the September/October tax statement, due in November and February. The collected fees return to the fire district.

In 2018, approximately 16,600 parcels received notices at the beginning of inspection season. Upon first inspection, the fire department typically sees a 10% non-compliant rate. After the initial inspection, more than half of those non-compliant homeowners will voluntarily comply. In 2018, 24 parcels were ultimately abated by the fire department, achieving 100% compliance.

Ventura County's defensible space program receives funding from three sources: (1) CAL FIRE contract county funding for the amount it would have cost CAL FIRE to provide defensible space services in the SRA, (2) assessments on abated parcels, and (3) the general operating budget of the fire district, which comes from property taxes.

Program Highlight: Culture of Compliance

Ventura County has had brush abatement ordinances going back to the mid-1920s; the fire protection district was established in 1928. Starting in the 1960s, the district began implementing a program to notify property owners of their abatement responsibilities. The district historically conducted hundreds of inexpensive parcel abatements with cooperative property owners. The culture has evolved since then to shift responsibility to the homeowners through education. Operating in a region regularly hit by devastating fires, Ventura County's Fire Hazard Reduction Program has strong political support. Property owners are largely motivated to voluntarily comply, and will submit formal complaints for non-compliant properties.

City of San Diego Fire-Rescue Department

The City of San Diego Fire-Rescue Department Wildland Management & Enforcement Section under the department's Community Risk Reduction Division strictly enforces compliance and inspects 100% of homes every four to five years.²⁴ They are a boundary WUI, local responsibility area, densely developed, and cover ~45,500 parcels. They employ one Code Compliance Supervisor, six Code Compliance Officers (inspectors), and one clerical support person.

Notably, the department conducts inspection and enforcement year-round; in comparison, most survey respondents conduct inspections annually during a particular "season." During year-round visits, fire department staff conduct brush management inspections and home risk assessments to determine properties' risk factors. Four to six weeks prior to being inspected, property owners receive a brush flyer that informs the owner of the reason their property is being inspected, directs them to Fire-Rescue's website for information on brush management, and provides 11 bullet points on the inspection process (Appendix B). The flyer has resulted in a dramatic increase in voluntary compliance by property owners and a noticeable positive interaction with the homeowner during inspection. During the inspections, homeowners are provided with brush requirements and a Ready, Set, Go! Brochure. Inspections are conducted using iPads, and inspectors are equipped with Rangefinders for accurate distance measuring and to determine the slope gradient.

If a property is found to be in violation, the owner is issued a Notice of Violation outlining what actions are necessary to bring the property into compliance. A non-compliant owner is given two notices to comply, three weeks apart. If the property is still in violation after the final notice, a 10-day Notice to Abate is posted on the property and mailed.

If compliance is still not achieved after the Notice to Abate, a private contractor is hired by the city to bring the property into compliance. All costs incurred during this process are recovered by recording a Special Assessment Lien Tax on the property. The city is capable of absorbing the temporary costs of hiring the contractor. The contractor is a reasonably priced non-profit;

²⁴ A department goal is to inspect 100% of parcels annually. At current staffing levels, 11,000-13,000 parcels are inspected annually, meaning 100% of parcels are inspected on a four to five year cycle.

abatement are typically in the \$500-\$1,000 range, and few parcels require abatement at the end of the inspection process. The County will handle the lien; costs are not recouped until the property is sold.

To ensure consistency in and accuracy of inspection, the Section aims to hold trainings twice a year. In addition, if a complaint is received about a property within six months of an inspection, the property will be assigned to a supervisor to assess. Inspectors are also incentivized to focus on quality and consistency rather than speed in completing inspections. Finally, the Section is considering required certification for inspectors.

The Wildland Management & Enforcement Section's program costs approximately \$1 million for salaries, vehicles, etc. In addition to inspection & enforcement and outreach & education, the Section also provides technical assistance, risk assessments, and Ready, Set, Go! materials.

Program Highlight – Data Collection and Tracking

The Wildland Management & Enforcement Section pre-identifies all private parcels within the city requiring brush management and home risk assessment inspections. This is done using an Esri GIS Collection Data and Intterra Situational Analyst application. The inspection status of each parcel is accurately tracked and mapped simultaneously using color status displays. This ensures each parcel is inspected and eliminates the potential for duplicate inspections. Monthly reports track the total number of inspections conducted, number of inspections conducted no violation found, number of inspections where a violation notice was issued, and the number of violations corrected. The system also tracks parcels inspected found to be in violation but are prohibited from conducting brush management during breeding season.

Atascadero Fire & Emergency Services

Atascadero Fire & Emergency Services strictly enforces compliance and inspects 100% of its ~11,000 properties annually. They are a boundary and intermix WUI and local responsibility area with both dense and sparse development. The same inspector has had sole responsibility for conducting inspection and enforcement for the past 15 years.

Inspection and enforcement occurs annually from April-June. In April, the inspector will drive by properties to flag those that look problematic. The inspector is typically driven by a firefighter so he can focus his attention on flagging properties. He uses ArcMap, a GIS program with a parcel map and road overlay established by the city's IT program, to track his inspections using a laptop. After going through the entire city, he will send out letters for all property owners who have been flagged, with a June 1 deadline for voluntary compliance.

On June 1, the inspector will visit flagged properties again. If properties continue to be non-compliant, they will be marked to be brought into compliance by a city contractor. The inspector leaves door hangers to notify property owners that their properties have been flagged to be cut by

a city contractor, who may show up at their property at any time. Work invoices are generated using this list and given to the city contractor. If the city contractor arrives at a property and finds that the property owner has abated the property, he will note that and move on to the next property. The fire department will send the invoices for the cost of the contractor and a 150% administrative fee to the County's Tax Collector's Division. The county will then write a check for the invoiced amount to the city's general fund.

The department will spend a significant amount of time answering phone calls after people whose property has been abated by the city receive their tax bills and researching those who contest the bill. The department attempts to recoup the costs of this time through the administrative fees assessed to non-compliant property owners.

Atascadero is characterized by a variety of lot sizes, ranging from 20-40 acres in rural areas down to small city lots. The large lots are easier for the inspector to identify, whereas public reporting by neighbors for non-compliant lots are important in the city. Homeowners have become quite aware and will regularly report non-compliant properties. Over the last 15 years, Atascadero's weed abatement/defensible space program has developed a reputation for serious enforcement. Combined with a public education program, which included a change in the initial notice to make it clear that property owners are in violation, the number of properties that require forced abatement has gone down over time. Typically, a property owner who faces forced abatement once will voluntarily comply in subsequent years.

To make the inspection and enforcement process more efficient, the inspector would like to send a notice to the entire city rather than driving past each property to conduct the initial inspection. However, Atascadero code sections make it unclear whether or not noticing the entire city would be legal.

San Ramon Valley Fire District

San Ramon Valley Fire District strictly enforces compliance and inspects homes in their Exterior Hazard Abatement Program, which covers ~21,000 parcels. They are a boundary WUI, local and state responsibility area with both dense and sparse development. The same inspector has been conducting inspections for the past five years. For the first time this coming year, this inspector will be replaced by two permit technicians, who will be trained by the original inspector. Two district aides will drive the permit technicians for initial inspection.

In March, the district will update a list of properties to be approved by the Board. In April, the district will mail a legal notice to property owners. This is followed up in May with a postcard reminding homeowners to complete abatement by June 1. Active inspection and enforcement occurs June-September. For the first inspection, inspectors will drive by homes covered by defensible space requirements. Non-compliant properties as visualized from the street will be sent a notice and given one to two weeks to abate the property. After that time, inspectors will re-inspect. If properties are still non-compliant, inspectors will take photos of the property and send a second notice, giving property owners an additional two weeks to abate the property.

After a third notice, where property owners are given a final two weeks to abate the property, the district will process a weed abatement work order for the property. In addition to the final work order, inspectors have discretion to give homeowners \$500, \$1,000, or \$1,500 citations for non-compliance. These citation amounts are paid back to the fire district. Property owners also have the option to attend a wildfire class to have the citation waived. Typically, if inspectors are in active contact with the owner, they will work with the owner to voluntarily abate the property. If inspectors must resort to work orders, they will bill the owner the cost of abatement plus an administrative fee. If that fee is not paid, inspectors will log the nonpayment with Contra Costa County. If they still have not paid by the following year, the cost will be recorded as a lien on the property. When and if the property is sold, the fire department will be directly paid the cost of the lien.

As a special district, the fire district is funded through property taxes. It also receives some funding through fees collected from the provision of ambulance services. Each division of the district receives a budget; the defensible space division puts in a budget request for legal notices, postcards, hiring additional inspectors, etc.

Following inspections, the district will receive approximately 125-150 neighbor complaints per year to report backyard non-compliance. Homeowners are fairly well-educated about defensible space requirements; about 75% of these neighbor complaints are valid.

Moraga-Orinda Fire District

Moraga-Orinda Fire District (MOFD) is the only case study department/district that does not self-report 90-100% compliance rates for its ~14,000 parcels. It is included here as an example of a defensible space program taking rigorous, strategic steps to move towards high compliance over the next few years.

They are a boundary, intermix, and island WUI, local and state responsibility area with both dense and sparse development. The district employs 5.5 FTEs during inspection season and 3.5 FTEs outside inspection season. These dedicated inspectors appear to have a track record of consistency and accuracy in compliance reporting.

Inspection and enforcement occurs February-November. MOFD currently prioritizes three categories of properties for inspection and enforcement: (1) properties by complaint, (2) properties along evacuation routes for roadside clearance, and (3) properties along the perimeter that border the wildland. Inspectors will first mail every covered parcel a postcard, as well as a copy of the district ordinance that applies to their parcel. Next, inspectors knock door-to-door for education and outreach. Inspectors return in 30 days for a follow-up, and will issue citations if the property remains non-compliant. Non-compliant properties then receive a “red tag,” and the district will put in a work order for abatement if the property owner does not abate within five working days of receiving the red tag.

MOFD places primary emphasis on outreach and education rather than enforcement. One practical reason for this is cost – it is more cost-effective for the district to educate, including providing free,

non-punitive firewise assessments where property owners are given specific recommendations on how to comply with defensible space guidelines, than to issue time-intensive citations. A second reason is for a strategic shift to higher compliance. After a few years of inspections and issuing citations to achieve voluntary compliance, it will become clear which property owners are either inalcitrant or incapable of complying. Those property owners can then be targeted for forced abatement, or assistance that enables them to comply with defensible space guidelines.

Program Highlight: Targeted Behavior Change

MOFD has been perceptive in identifying targeted interventions throughout the defensible space compliance process that will lead to real behavior change by property owners. For example, MOFD prioritizes enforcing vegetation management along evacuation routes. This is not only important for public safety; the district also recognizes the visibility of these primary traffic routes as an important public relations and messaging platform, as property owners see vegetation management being conducted on the streets they drive every day. MOFD recognizes the power of generating public pressure in the Moraga-Orinda WUI to comply with defensible space guidelines.

MOFD also recognizes that even if property owners are well educated and motivated to comply with defensible space guidelines, they may still face legitimate barriers to compliance. For example, inspectors have observed that although many property owners employ gardeners, providing a low-effort opportunity for firewise landscaping, these gardeners do not haul away biomass. Individual property owners may be unable to remedy this barrier. MOFD has responded by providing free community chipping services, which has enabled these property owners to comply with defensible space guidelines.

Program Highlight: Strategic Plan

Moraga-Orinda Fire District (MOFD) released a wildfire prevention strategic plan (Appendix C) in February 2019, demonstrating the importance of a coordinated, multi-pronged approach to wildfire prevention. Through this plan, MOFD is committed to seven lines of effort over the next five years:

External fuels mitigation projects: MOFD will partner with East Bay Regional Municipal Utility District, the region's water utility company, and East Bay Regional Park District to create a shaded fuel break that encircles most of the district.

Internal fuels mitigation projects; MOFD will work with all parcel owners in the district to conduct fuels mitigation efforts to reduce the probability of spot fires and increase the survivability of structures by complying with defensible space requirements.

Wildfire preplanning: MOFD will prepare to request and employ large numbers of mutual aid suppression resources for future fire events by developing both pre-plans and trained CICCIS qualified Division Supervisors through participation in the California Mutual Aid system.

Evacuation planning: MOFD will continue to refine evacuation plans through exercises and community awareness events.

Building code updates: In partnership with the City of Orinda, Town of Moraga, and Contra Costa County, the Fire Marshal will develop a model code update for the next code adoption cycle to address the new reality of wildfire threat.

Community outreach and education: MOFD will invest heavily in outreach and education; education will be the primary driver of internal fuels mitigation efforts.

Early detection and notification systems: MOFD is developing a Wildfire Information Processor that includes early wildfire detection, autonomous wildfire confirmation, near real-time wildfire spread modeling, and an integrated evacuation decision support tool.

Improving Oakland's defensible space program

In Oakland, adherence to defensible space requirements is moderately enforced by the fire department's vegetation management inspection program. It inspects 100% of its ~25,000 properties annually. The program employs five FTEs during inspection season and three FTEs outside inspection season. In addition to staff dedicated to this program, firefighters from fire engine companies assist with completing inspections.

Program Highlight: Photo documentation

In 2018, Oakland's vegetation management inspection program began requiring personnel from fire engine companies completing annual inspections to take photos of all four sides of the property. This is a useful tool for (1) quality control and liability – using photos, the department maintains a clear record of each property and its compliance upon inspection, and (2) educating property owners and holding them accountable. The department previously noted violations by hand on a form, but this form did not necessarily provide property owners with a clear understanding of the problem. By using visual documentation of violations, the department can clearly explain to property owners how to bring their properties into compliance. Starting in 2019, the program will begin using an electronic platform to allow property owners to access inspection results with photos attached online.

The program sends out annual notices to covered properties in May and conducts the initial round of inspections in late May/early June. Developed properties are inspected by 11 fire engine companies covering ~18,900 properties, while ~2,500 vacant lots are inspected by inspectors from the vegetation management program. Non-compliant properties are given 30 days to abate. However, because of limited inspection resources, not every property will receive re-inspection on day 31. The fire engine companies will complete these re-inspections on developed properties. If properties remain non-compliant after re-inspection, they will be issued a 15-day notice to abate and assessed an inspection fee based on the master fee schedule. The next re-inspection and any subsequent re-inspections will be scheduled to one of four fire inspectors, rather than personnel from fire engine companies. These properties are assessed re-inspection fees until they achieve compliance, although some properties – approximately 10% annually – never achieve compliance.

Previous assessments of Oakland's program

The program has been formally assessed by the Oakland's Office of the City Auditor and informally assessed by the Oakland Firesafe Council (OFSC).

The City Auditor completed an audit of the program in 2013,²⁵ with follow-up audits in 2015²⁶ and 2017.²⁷ The initial audit put forth the following recommendations relevant to this report:

1. Implement clear policies and procedures that include stronger supervision and quality control measures.
2. Consider additional ways to integrate inspectors' expertise to help guide and oversee the quality of inspections performed and data recorded.
3. Implement a tracking mechanism to ensure that all Fire Department staff attend training annually and consider the costs and benefits of amending the training to be more interactive.
4. Work with Fire Department and Human Resources regarding the employment timing of its part-time inspectors to better ensure that inspectors are working during fire season.
5. Increase the efficiency and effectiveness of the abatement process.
6. Consider establishing alternative collection methods, beyond placing liens on property sales, that can be used to ensure the City collects all amounts owed.

The most recent follow-up audit in 2017 closed recommendations 2, 3, 4, and 6, leaving recommendation 1 on implementing clear policies and procedures and recommendation 5 on increasing the efficiency and effectiveness of the abatement process open and unresolved.

A 2017 OFSC Inspection Survey also suggests that recommendation 1 still needs improvement. In 2017, OFSC observed an unofficial sample of properties within two areas covered by Oakland's defensible space program in an attempt to verify Oakland Fire Department's reported compliance rates of 95% or higher. OFSC observed that in the first area, about 33% of private properties appeared to be out of compliance with defensible space guidelines as of July 31. The second area showed many streets with 10-15% non-compliance, with some streets showing as high as 50% non-compliance during the first week of September. At least some of this non-compliance can be explained by re-growth. In other words, properties may have been properly marked as compliant upon inspection, but have since become out-of-compliance. The fire department's vegetation management inspection unit does not have the resources to inspect properties year-round.

The Oakland Fire Department self-reports that abatement authority is not consistently used, confirming that recommendation 5, increasing the efficiency and effectiveness of the abatement process, remains unresolved. Oakland's defensible space program faces real barriers to using abatement authority. It does not have the resources to absorb the costs of hiring a contractor and abating non-compliant properties. The process through which it can recover costs – through a property lien – does not allow the program to recover those costs until the property is sold. In

²⁵ Ruby, Courtney A. (2013). Oakland Fire Department Vegetation Inspection Audit 2011-2012. Office of the City Auditor. City of Oakland. https://www.oaklandauditor.com/wp-content/uploads/2018/06/20131119_Performance_OFDVegInspection2011-12.pdf

²⁶ Lawrence, Stephen & Tracy Yarlott-Davis (2015). Recommendation Follow-Up of the Oakland Fire Department Vegetation Inspection Audit. Office of the City Auditor. City of Oakland. https://www.oaklandauditor.com/wp-content/uploads/2018/06/20151204_FollowUp_OFDVegInspection_1.pdf

²⁷ Kovsdi, Orsolya (2017). Second Recommendation Follow-Up: Oakland Fire Department Vegetation Inspection Audit. Office of the City Auditor. City of Oakland. https://www.oaklandauditor.com/wp-content/uploads/2018/06/20171106_FollowUp_OFDVegInspection_2.pdf

addition, some homeowners, such as seniors who have a fixed-income, are legitimately unable to afford the cost of abatement.

The vegetation management inspection program would ideally like to issue citations as an effective way to incentivize property owners to bring properties into compliance and allow the department to recover some costs in a timely manner. However, the fire department is not equipped with the infrastructure necessary to issue citations for defensible space code enforcement. The fire department is also reluctant to be associated with law enforcement activities.

Recommendations for improving Oakland's defensible space program

Given the shared characteristics of successful defensible space programs and the specific barriers facing Oakland's program, the City of Oakland should address the following – in addition to the open audit recommendations discussed above – to improve compliance with defensible space guidelines in the city's WUI:

1) **Increase staffing:** The City of Oakland should provide additional resources to the vegetation management inspection program and better prioritize fire prevention. Additional staff would allow the program to conduct inspections more frequently and in a timely manner. The vegetation management inspection program currently faces challenges in completing inspections on the specified timeline due to resource constraints and competing priorities.

2) **Conduct inspections year-round:** The City of Oakland should consider providing the program with the staffing it needs to conduct inspections year-round. Currently, many property owners treat defensible space management as a “one-and-done” in response to inspection season. Since vegetation will grow back, managing vegetation for defensible space compliance only once annually results in properties that fail to maintain compliance year-round. Year-round inspections may become even more critical in the future as wildfire seasons are expected to become longer and more frequent.

3) **Use abatement authority & cost recovery:** Oakland's defensible space program currently faces significant barriers to bringing persistently negligent properties into compliance, yet consistent use of abatement authority appears to be crucial to achieving 90-100% compliance rates. Without the resources to absorb the costs of hiring a contractor to bring properties into compliance, use of abatement authority does not appear to be a feasible mechanism for Oakland. Although recommendation 6 from the audit was marked as resolved, no effective alternative to recovering costs via property liens has been identified and implemented. The City and fire department should consider alternative ways to penalize negligent property owners that allow the fire department to recover its costs of abatement in a timely manner. Even if Oakland were to assess liens, payment upon sale of the property currently goes to the City's General Fund rather than directly back to wildfire prevention efforts. Oakland should consider alternative methods that allow wildfire prevention programs to directly recover costs. To increase compliance rates, these penalties must be substantive enough such that voluntarily bringing their properties into compliance becomes the most attractive and least burdensome option for property owners. There must additionally be sufficient contractor capacity to abate persistently non-compliant properties.

Designing a New Program

If a fire department/district were to have the opportunity to design a new defensible space program or significantly alter their existing defensible space program, the following features should be considered:

- Emphasize outreach and education to maximize voluntary compliance before resorting to penalties. Make it clear that property owners have a legal responsibility to comply with defensible space guidelines.
- Once voluntary compliance has been maximized, departments/districts should assess what barriers beyond lack of knowledge are preventing property owners from complying, and address these to the extent possible.
- Utilize abatement authority for all non-compliant properties; ensure there are sufficient contractors available to take on abatement work.
- Recover the costs of abatement and associated administrative fees in a timely manner if possible.
- Ideally, a fire department/district should have the staffing resources to ensure there are enough inspectors to thoroughly inspect each property and go door-to-door.
- Ensure consistency and accuracy in inspections by developing training manuals, required trainings, oversight by managers or Fire Battalion Chiefs, random inspections to verify compliance status, etc. Additionally ensure consistency and accuracy by retaining fire inspectors and their associated expertise to the extent possible.
- Implement streamlined tracking and reporting mechanisms to consistently and accurately track inspections and compliance.
- Inspection results should be made known to non-compliant property owners in a timely manner. Consider making inspection results publicly available for transparency and accountability.
- Coordinate defensible space program efforts with other wildfire management efforts in a strategic plan so that the role of the defensible space program is clear.

Conclusion

Property owners reduce wildfire risk and protect lives and property when they adhere to defensible space requirements. Although many fire departments and districts in California face challenges to running robust defensible space programs to enforce these requirements, several entities have seen great success.

The results of this study show that successful defensible space programs share strict enforcement, typically through the use of abatement authority combined with cost recovery from the property owner, as well as an emphasis on conducting outreach and education to encourage voluntary compliance to the extent possible.

However, many defensible space programs are under-resourced, hindering their ability to effectively enforce compliance. Many jurisdictions lack a defensible space program altogether, leaving their WUIs more vulnerable to wildfires. This reflects a larger trend of prioritizing fire suppression rather than proactive fire management and mitigation.²⁸

Although this study identifies best practices for structuring and implementing a defensible space program in California, fire departments and districts would benefit from further research on this topic. Future areas of research might include a closer examination of:

- How to address home hardening²⁹ for new and existing structures.
- Common administrative, legal, and other process-related challenges facing defensible programs.
- Opportunities to secure additional funding and other resources for defensible space work.
- Strategies to generate a cultural and political shift towards comprehensive wildfire planning that prioritizes proactive management – from both fire departments/districts and private property owners – rather than reactive fire suppression.
- How best to define and operationalize defensible space, including an examination of codes throughout California and in other states.
- Emergency preparedness planning and programs more broadly in the WUI.

²⁸ USFS (2015). The Rising Cost of Wildfire Operations: Effects on the Forest Service's Non-Fire Work. USFS. USDA. <https://www.fs.fed.us/sites/default/files/2015-Fire-Budget-Report.pdf>

²⁹ On many properties, the structures themselves are the major source of fuel. Any property owner who wishes to mitigate the risk of wildfire must consider this source of risk.

Open Recommendations

RECOMMENDATION 1: STATUS: **OPEN**

Implement clear policies and procedures that include stronger supervision and quality control measures to ensure inspections are performed accurately including, but not limited to:

- Oversight of inspection performance and inspection forms for accuracy and completeness.
- Stronger controls over the accuracy and monitoring of information in the inspection database.
- Inspection performance as part of written performance evaluations for Fire Department staff.

Actions taken:

In late 2015, the Fire Department developed a quality assurance plan, the objective of which is to ensure that all inspections are performed accurately, consistently and in conformance with inspection standards. This assurance program includes a reperformance by Fire Battalion Chiefs, of approximately 3% of all annual inspections.

The results of these reviews are then used in the continuous improvement of the inspection training curriculum and to clarify requirements in outreach materials to the public. The results of the most recent assurance review of inspections showed 19 as 'noncompliant' – the inspector had incorrectly noted these properties as 'compliant'. The department could not provide us with the procedures or follow up they applied to these exceptions to show that property owners were advised of needed remediation to comply with defensible space regulations, or that specific training was provided to the inspector to avoid repeated errors. The department will have greater confidence in the integrity of the vegetation inspections once the quality assurance plan is fully implemented.

OFD Management Action Plan

- Implement the Quality Assurance Program.
- Expand the quality assurance plan to address the accuracy of inspection results into the department's database: One-Step system, or other designated systems.
- Develop a formal written process for the sworn OFD personnel and the Vegetation Management Inspectors to ensure accurate, consistent and complete data entry to One-Step.
- Document how personnel will be held accountable for incomplete forms and inaccurate information in One-Step, or its successor system database.
- Document follow-up procedures for failed quality assurance inspections.
- Continuously evaluate the department's process controls to ensure they are well designed, operate effectively, are appropriately updated to meet changing conditions and provide reasonable assurance that department objectives are being achieved.

RECOMMENDATION 5: STATUS: OPEN

The 2013 audit report issued the following recommendations related to the abatement process:

1. Adjust the non-compliance notification process so that abatements occur earlier in the fire season.
2. Establish blanket contracts and on-call service contracts that can be used for common types of abatements, rather than going through a competitive contracting process for each property requiring abatement.
3. Ensure OFD annually invoices non-compliant property owners for all abatement costs, re-inspection fees and administrative costs.
4. Increase the effectiveness of the OFD billing system by programming it to produce automated notices for outstanding amounts due.
5. OFD should work with the Revenue Division to implement a collections process that will ensure timely cost recovery for properties abated by the City.

Actions taken:

- OFD amended the Fire Code in 2016 to include stronger and clearer language regarding the application of fees and the ability to place liens on properties for abatement and related costs.
- OFD and the Revenue Division worked together to compile information to bill property owners for inspection fees and the expenses for abated properties. All collections are now managed by Revenue. The City had approximately \$251,000 of unpaid invoices as noted in our December 2015 recommendation follow-up report. Approximately \$28,000 of those invoices remain outstanding for that period after collection, liens and write-offs due to statute of limitations.
- In 2017, OFD issued invoices from the prior 2 fiscal years to property owners for inspection fees and abatement costs. These totaled nearly \$420,000. Approximately 98% were subsequently voided due to input errors on the inspection forms of fire code violations and descriptions, or because inspections were conducted before property owners had the opportunity to remediate the violations. Unrecovered costs totaled more than \$409,000.

OFD Management Action Plan:

- Provide training on the inspection and citation-writing process so that mistakes and input errors are minimized and all inspectors are working under standardized procedures.
- Ensure invoices are prepared accurately and submitted timely, using automated features from the billing system if feasible.
- Adjust the inspection scheduling so that notifications of non-compliance and abatements occur earlier in the fire season.
- Establish blanket contracts and on-call service contracts.

Proactive Brush Management Program



The Fire-Rescue Department responds to hundreds of vegetation fires annually involving excessive vegetation not maintained by property owners. In February 2008, the Fire-Rescue Department expanded its Proactive Brush Management Program City wide. Door to door brush inspections are being conducted of properties located within the Wildland Urban Interface (WUI) areas for compliance.

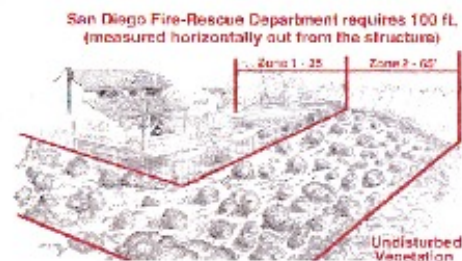
Starting in the next 4 to 6 weeks the Fire-Rescue Department's Fire Prevention Bureau staff will begin conducting door to door brush inspections of canyon rim homes or homes that abut native vegetation within your community. The purpose of the inspections is to assure properties are in compliance with the City's Brush Management Regulation. Property owners are required by the California Fire Code and the City of San Diego Municipal Code to keep their property free of any potential fire hazards at all times.

For information on how to provide a proper defensible space and to assure your property is in compliance, can be found on the Fire-Rescues Departments website at: <http://www.sandiego.gov/fireandems/inspections/brush.shtml>

Check your local directory assistance or websites for potential landscapers or tree contractors. The Fire Rescue Department cannot provide or recommend landscape or tree contractors. It is the responsibility of the property owner to assure all brush management work is conducted within the requirements of the City's Brush Management Regulation / City Landscape Regulation 142.042: <http://docs.sandiego.gov/municode/MuniCodeChapter14/Ch14Art02Division04.pdf>



Before Brush Management



After Thinning and Pruning

What a property owner can expect:

- A uniformed Code Compliance Officer with the Fire-Rescue Department's Brush Management will be inspecting the property.
- Because of an extremely high volume of inspections all initial inspections are unannounced.
- If no one is home at the time of the initial inspection or the property cannot be viewed from an adjacent property, the Code Compliance Officer will leave a door hanger requesting the property owner to contact the Fire-Rescue Department within 5 business days so arrangements can be made to inspect the property.
- It is the goal of the Fire-Rescue Department to minimize any inconvenience to the property owner. We will attempt to reasonably accommodate the property owner's schedule.
- All properties must be inspected; failure to contact the Fire-Rescue Department within 5 business days may result in legal action to gain access to the property.
- The inspections consist of evaluating all vegetation conditions within the property boundaries for compliance of the California Fire Code and the City's Brush Management/Landscape Regulation.
- If the property is found to be in violation and the property owner is home, compliance requirements will be discussed at that time. All Notices of Violation will be mailed to the legal property owner within 3 business days of the inspection.
- If the property is found to be in violation, the re-inspection date will be indicated on the Notice of Violation. Usually 30 days from the date of the initial inspection will be given to bring the property into compliance.
- If compliance is not achieved after the initial 30 days, the property owner will be given an additional 2 weeks to comply.
- A \$300 non-compliance fee will be incurred by the property owner for the 3rd and subsequent visits.
- If compliance is not achieved after the 3rd visit, the inspection will be forwarded to the City's Attorney's Office for abatement action to bring the property into compliance.

It is the goal of the Fire-Rescue Department to reduce the wildfire risk to the community by providing a proper defensible space. A proper defensible space allows the fire department time to arrive and space to fight the fire.

If you have any questions contact the Fire-Rescue Department's Brush Management Hotline at (619) 533-4444.



Moraga-Orinda Fire District

TO: President, MOFD Board of Directors
FROM: David Winnacker, Fire Chief
DATE: 02/20/2019
SUBJECT: MOFD Wildfire Prevention Strategic Plan

Introduction

Large portions of MOFD's jurisdiction lie within recognized High and Very High Wildfire Hazard Severity Zones. As a result of topography, infrastructure, weather patterns, and the systematic exclusion of fire from this area for over 100 years, there is no simple solution to the problem of reducing the risk of catastrophic wildfire. Recognizing this fact, MOFD is committed to a sustained, multidisciplinary effort organized along seven lines of effort over the next five years. This effort will require engagement by all elements of MOFD and key partner agencies as well as the community as a whole. This effort is designed to be perpetual as all work completed will require maintenance to sustain in out years.

Lines of Effort

1. External fuels mitigation projects
2. Internal fuels mitigation projects
3. Wildfire preplanning
4. Evacuation planning
5. Building code updates
6. Community outreach and education
7. Early detection and notification systems

Line of Effort #1: External Fuels Mitigation Projects (Fuels Mitigation Manager)

In partnership with EBMUD and EBRPD, MOFD will create a fuel break that largely encircles the district in order to reduce the risk of regional wildfire spreading into populated areas. This effort will build upon the existing fire and paved road network to expand the 8-30' roads to fuel breaks up to 100' in width. Initial work will be conducted with hand crews and mechanical maceration in fuel models 2 and 6, and with prescribed fire in fuel models 1 and 3. Sustainment will be via the use of prescribed fire on a 3-5 year cycle in fuel model 2 and 6 and via the use of prescribed fire on an annual basis in fuel model 1 and 3. This use of prescribed fire aligns with the natural 3-5 year fire cycle that existed in this area prior to development and the implementation of modern fire suppression techniques.

MOFD will continue to aggressively pursue state and federal grant opportunities to fund this work and will partner with HOAs and large private landowners on the periphery of the district's

residential areas to ensure fuels work is coordinated and mutually supporting. Coordination with PG&E, County Roads, and CalTrans will ensure regional agencies are meeting their internal requirements and schedules within the district's boundaries.

Line of Effort #2: Internal Fuels Mitigation Projects (Fuels Mitigation Manager)

Recognizing that the perimeter fuel break will slow a ground fire but will not be effective against three dimensional fire spread propagated via ember cast, MOFD is committed to working with all parcel owners in the district to conduct fuels mitigation efforts to reduce the probability of spot fires by eliminating receptive fuel beds throughout the district and to increase the survivability profile of structures by complying with defensible space requirements. MOFD Ordinance 16-02 identifies the requirements for all parcels, but is poorly understood and enforcement efforts have been inconsistent. As a result, a significant investment in education and outreach is required to inform all parcel owners of their obligations. MOFD will fundamentally rethink the notification and outreach methods used to inform parcel owners of their fuel reduction requirements. Prioritized outreach, education, and enforcement will be conducted on the periphery and major evacuation routes. A second priority will be the mitigation of large undeveloped parcels inside the city and town limits. Efforts will be made to enroll neighborhoods in the FireWise program in order to sustain and document work completed. This LOE has significant overlaps with LOE #6.

Line of Effort #3: Wildfire Preplanning (Operations and Training Chiefs)

Given MOFD's small size and the potential for a large scale event that exceeds the capacity of on-duty resources, the district must be prepared to request and employ large numbers of mutual aid suppression resources during the first operational period. In order to meet the command and control requirements, MOFD will recruit, train, qualify, and maintain interested members to become CICC recognized Division Supervisors. These members will gain valuable experience through OCMA deployments that will build the requisite skills to rapidly employ mutual aid resources for a future fire in the MOFD jurisdiction. The preplanning process will include the designation of identified and marked division boundaries, associated communications plan, water supply, suppression objectives, and evacuation considerations. Understanding that responding agencies will not be familiar with MOFD's operational area, this LOE will focus on the development of internal leaders who will exercise command and control of incoming units to make the most efficient use of these resources during the initial attack stages of large fire.

Line of Effort #4: Evacuation Planning (Emergency Preparedness Manager)

Building upon the work done in partnership with Moraga and Orinda PD, MOFD will continue to refine evacuation plans to include notification, time phased evacuation orders, surface street capacity, and the identification of Temporary Refuge Areas in both North Orinda and Moraga. These plans will be captured in automated tools that will make near real time recommendations in the event of an evacuation. These efforts will be integrated with LOE #7.

Line of Effort #5: Fire Code Updates (Fire Marshal)

In partnership with the city of Orinda, Town of Moraga, and Contra Costa County, the Fire Marshal will develop a model code update for the next code adoption cycle to address the new reality of wildfire threat. This code will include requirements for all new construction and major remodels/additions to comply with ember resistant building standards, under eave sprinklers for all construction that meets the district's current interior sprinkler requirements, and other measures that are currently being developed.

Line of Effort #6: Community Outreach and Education (All)

Recognizing the community's interest in addressing the wildfire threat and the tremendous capacity latent within our population, the district will invest heavily in outreach and education to inform the populace of both the overarching plan and their role in its implementation. New and creative methods will be employed in recognition of the diverse nature of the community and varieties of ways they receive and process information. The overarching intent of this LOE specific to LOE #2 is that no resident will be cited until the district can demonstrate that they were aware of the requirements and given adequate time to bring their parcel into compliance. Education will be the primary driver of internal fuels mitigation efforts. This LOE will provide the connecting file that informs residents of the outputs of LOE #'s 2 and 4 in order to improve outcomes through awareness.

Line of Effort #7: Early Detection and Notification Systems (Fire Chief)

In an effort to leverage available technologies to reduce delays in wildfire reporting, increase location certainty, and automate the processing of evacuation decisions, the district is currently developing a Wildfire Information Processor (WIP) that includes the following components:

1. Early wildfire detection
2. Autonomous wildfire confirmation
3. Near real time wildfire spread modeling
4. Evacuation Decision Support Tool
 - a. Time phased evacuation recommendations shared via a common operating picture
 - b. Dynamic surface street capacity modeling
 - c. Google/Apple maps integration
 - d. Traffic optimization via contraflow traffic systems and traffic control recommendations

Budget

Budget requirements are largely met by the current budget and pending or potential grants.

RECOMMENDATION

- 1) Information Only