



# SIX YEAR OPERATING PLAN

2019-2025

COUNTY OF SAN MATEO  
**FIRE DEPARTMENT**



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# DISCLAIMER

This plan is intended to serve as a roadmap for San Mateo County Fire Department over the next six years. Adoption and implementation of this plan is contingent on available funding.



## MESSAGE FROM THE FIRE CHIEF

As the San Mateo County Fire Department Fire Chief, it is my honor to present this plan. It is a privilege to lead and represent some of the most talented and dedicated firefighters in California, and arguably the world. As we look forward it has become abundantly clear that we face several challenges including the ever-increasing fire danger throughout California, including here in San Mateo County.

I take great pride in the cooperative fire service arrangement between San Mateo County Fire Department and California Department of Forestry and Fire Protection (CAL FIRE), a model for cooperative fire protection for over 55 years. As the county fire department, we strive daily to protect and serve every member of the community through cooperative, efficient, effective and professional service. This plan is designed to serve as a roadmap of recommendations to navigate the challenges facing the San Mateo County Fire Department over the next six years.

Since our 2015 Master Plan, we have achieved a variety of successes, helped by improved economic conditions and several special tax measures. Some notable accomplishments include:

- Replacement of many front-line fire apparatus with Measure A and K funds
- Achieved an ISO Class 1 rating for the Highlands Community
- Converted an Engine Company to a Ladder Truck Company
- Established a joint training program with Coastside Fire Protection District
- Established a Truck Company training cadre
- Assisted with the replacement of Fire Station 58
- Expanded and continue to support the Highlands Community Emergency Response Team (CERT)
- Completed and distributed the Kings Mountain Evacuation Plan

As we move forward, our efforts will focus on continuing to improve and enhance our services, increase staffing to pre-great recession levels, while continuing to replace facilities and apparatus. We face a variety of significant challenges, including climate change, demographic changes and increasingly restrictive local cost of living, which require us to find innovative ways of responding to the needs of the community. To meet the challenge, I'm proposing a plan with a broad range of recommendations. To achieve the highest level of service possible we are renewing our focus on firefighter safety, department-wide accountability and program sustainability.

With all indications that the wildfire problem is going to get worse, we see wildfire preparedness, prevention, mitigation and response as an ever-increasing area of concern and therefore a critical area of investment over the next six years. From fire apparatus staffing, to vegetation management, to evacuation planning, to ensuring homeowners have access to fire insurance, I'm dedicated to leading the fire department, basing all decisions on the needs of the community and I look forward to bolstering and growing the fire department through collaboration with county staff, cooperators and the community.



## MISSION, VISION & VALUES

### MISSION STATEMENT

The mission of the San Mateo County Fire Department is to serve and safeguard life, property, and natural resources through effective and professional prevention and response.

### VISION STATEMENT

Through cooperation, the San Mateo County Fire Department will be a world-class leader in providing progressive and exceptional fire protection, prevention and emergency response.

### CORE VALUES

#### **Service**

We choose to always selflessly serve the community with integrity while also maintaining professionalism.

#### **Trust**

Our commitment to our customers and each other is based on honesty and trust.

#### **Cooperation**

We act with input and consideration for others, building strong meaningful relationships with the community, cooperators and each other.

#### **Safety**

We commit to the health, welfare and safety of all those who serve others.

#### **Teamwork**

At our foundation we are a team. We work together because we value each other, the community and the organization we work for.



## EXECUTIVE SUMMARY

The 'Six Year Operating Plan (2019-2025)' is the third such plan in the past 20 years and is intended to be a roadmap for continued professional fire preparedness, prevention and response services, throughout the unincorporated areas of San Mateo County. The San Mateo County Fire Department (SMCFD) has significant challenges, including historically low staffing, aging facilities, an increasing workload, and an increasing threat of large wildfire.

This plan addresses each of these challenges with recommended solutions based on employee input, local and national fire department standards, the current threats facing San Mateo County, and newly enacted regulations. Additionally, many of the objectives outlined in this plan are internally consistent and aligned with a variety of existing County plans, ensuring the organization provides high quality public safety service while staying true to established County priorities. The growing demand for services, combined with the ever-increasing costs of service delivery, make it imperative that an effective plan be put into place that will maintain the high standards expected by the community. The intent of this plan is to serve as a guiding document for the County Fire Department for renewing CAL FIRE Cooperative Fire Protection Agreement (known as "Schedule A") contract for fire protection.

Most critically, San Mateo County, like many other counties in California, is faced with a new fire reality, commonly known as "the new normal." The realities of this new normal are grim. California is seeing fires in higher frequency, severity and destructiveness year-round. With the changing climate, San Mateo County is increasingly vulnerable to Wildland Urban Interface (WUI) fires, and this trend looks to only worsen. Using lessons learned from other parts of California, who've experienced large fires, this plan outlines several recommended initiatives to bolster the SMCFD's preparedness, prevention, and response capabilities.

Overall, the following seven objectives have been identified as the goals for the department over the next six years:

1. Improve operational efficiency, effectiveness and staffing by enhancing the current level of service based on current threats and vulnerabilities.
2. Plan, mitigate, and prepare for large-scale wildfires in San Mateo County.
3. Recruit, retain and maintain an effective workforce to support the department's mission, vision and values.
4. Continue to maintain, replace and modernize apparatus, facilities and equipment.
5. Foster and maintain strong positive relationships while supporting local volunteer fire organizations.
6. Continue to expand the fire prevention office, based on an increasing work-load and statutory requirements, to improve consistency and effectiveness.
7. Improve and maintain community preparedness, engagement, education and communication.





# ABOUT SAN MATEO COUNTY FIRE DEPARTMENT

## HISTORY

The San Mateo County Fire Department grew out of the economic expansion, logging and population growth during the late 1800's. In 1887 the San Mateo County Board of Supervisors appointed a Fire Commission to protect the natural resources found throughout the County. This was followed by the establishment of an organized volunteer fire company in 1890. On June 28, 1921, Bert Werder was appointed as the first County Fire Warden for the newly created County Forestry Service. A series of large, devastating fires in the Butano-Pescadero creek drainage plagued San Mateo County in the fall of 1921.



The County Forestry Department would later be known as the County Fire Department and expanded rapidly. Thanks to several large fires and Fire Warden Werder's political influence, by 1936 several new fire stations were established. They included fire stations at La Honda Summit (Skylonda), Saratoga Gap (Saratoga Summit), Pescadero, Montara, Rockaway Beach, and Gazos (Sandy Point). The Redwood City station was moved from Bert Werder's house on Brewster Street to the old Juvenile Hall in Redwood City in 1936.



Photo 1 Skylonda Engine 2

In 1962, the County began contracting with the California Division of Forestry. The San Mateo County Fire Department was placed under the authority of the Santa Cruz Ranger Unit, until 1970 when the San Mateo – Santa Cruz Unit was established. During this period the department evolved from primarily a "wildland" organization (California Department of Forestry) to the 3rd largest all-risk fire department in the United States, known today as CAL FIRE.

Today, the San Mateo County Fire Department (SMCFD) is a "full service all risk" agency, providing fire protection, medical response, hazardous materials response, fire safety inspections, fire marshal duties, community education, emergency preparedness and planning for most unincorporated areas (those not covered by a municipal fire department or local fire district) of San Mateo County. This includes the communities of San Mateo Highlands (CSA #1), Emerald Lake Hills, Palomar Park, Kings Mountain, Skylonda, La Honda, San Gregorio, Pescadero, Loma Mar, Middleton Tract, South San Mateo County Coast, and the Highway 280 corridor between Farm Hill Boulevard and Black Mountain Road. Many of the areas are remote with limited access. Most of unincorporated San Mateo County is highly vulnerable to wildfires. In 2018 San Mateo Highlands (CSA #1) Fire Station 17 achieved an ISO Class 1 rating, one of only two fire departments in the county to achieve this classification.



Photo 2 Firefighters assigned to Highlands Station 17



## ABOUT CAL FIRE

The California Department of Forestry and Fire Protection (CAL FIRE) is an emergency response and resource protection department. CAL FIRE protects lives, property and natural resources from fire, responds to emergencies of all types, and protects and preserves timberlands, wildlands, and urban forests. The department's varied programs work together using ongoing assessments of the condition of natural resources and challenges of an increasing population to plan protection strategies for California. Department personnel and equipment are a familiar sight throughout the state with responsibility for protecting over 31 million acres of California's privately-owned wildlands and providing emergency services of all kinds through local government agreements within 33 of California's 58 counties.



Photo 3 House burns during 2018 Carr Fire

CAL FIRE responds to an average of 350,000 calls per year. The calls include structure fires, wildland fires, traffic collisions, medical aids, water rescues, civil disturbances, search and rescues, hazardous material spills, train wrecks, floods, and earthquakes. Because of CAL FIRE's size and major incident command experience, the department often assists with or commands major incidents or disasters statewide. These emergencies include command of large wildfires and wildfire sieges, assisting local agencies during major fires, earthquakes and floods and other state agencies such as the Department of Public Health during disease outbreaks.

CAL FIRE covers its state emergency response mission with over 800 state and local funded fire stations, 39 conservation camps, 13 air attack bases, and 9 helitack bases. CAL FIRE's emergency response and resource protection mission is accomplished with a force of nearly 4,700 full-time fire professionals, foresters, and administrative employees, 2,500 seasonal firefighters, 5,000 local government volunteer firefighters, 2,000 Volunteers-In-Prevention, 200 Law Enforcement Officers, and 4,300 inmates and wards. The Fire Crews are comprised of 179 adult male crews, 7 female crews, and 4 Division of Juvenile Justice (DJJ) crews. To transport and support these forces, CAL FIRE operates over 1,095 fire engines (336 state and 759 local government), 215 rescue squads, 63 paramedic units, 38 aerial ladder trucks, 58 bulldozers, 5 mobile communication centers, and 11 mobile kitchen units. The department funds, via contract, an additional 82 engines and 12 bulldozers in six counties – Kern, Los Angeles, Marin, Orange, Santa Barbara, and Ventura. From the air, CAL FIRE operates 23 airtankers (1200 gallon), 11 helicopters, and 13 air tactical planes.

The State of California employs a robust mutual aid system that is essential to intervene in the diverse risks Californians face every day. CAL FIRE cooperative efforts via contracts and cooperative agreements between state, federal, and local agencies are an essential aspect of the mutual aid system in California.

CAL FIRE provides fire and emergency response training to its employees locally, regionally and at the CAL FIRE Training Center in Lone. The Office of the State Fire Marshal (OSFM), a member of the CAL FIRE team since 1995, provides education and certification programs to the California fire service and its more than 900 fire departments. Through practical training exercises and classroom courses, every California firefighter is exposed to training standards that have been approved by CAL FIRE and the OSFM, among the best



institutions in the nation for fire training education. Offering more than 1,000 classes annually, State Fire Training programs reach over 24,000 students each year. Over 2,000 CAL FIRE personnel attend the CAL FIRE Training Center in Lone, and Riverside, annually, participating in classes ranging from basic fire control to major incident command training using Incident Command System (ICS) and National Incident Management System (NIMS) principles and practices.

CAL FIRE enforces state forest and fire laws by employing P.O.S.T. Certified law enforcement officers. CAL FIRE investigators determine fire causes and origins in all types of fires, interview witnesses, issue citations and vigorously investigate arson cases. The conviction rate of those arrested for arson investigated by CAL FIRE peace officers is very high. As appropriate, CAL FIRE investigators pursue civil and criminal cost collection in cases of negligence or intentionally caused wildfires.



Photo 4 New Firehawk Helicopters

CAL FIRE's mission emphasizes the management and protection of California's natural resources: This goal is accomplished through ongoing assessment and study of the state's natural resources and a variety of resource management programs. CAL FIRE oversees enforcement of California's forest practice regulations which guide timber harvesting on state and private lands. The reviews and inspections ensure protection of watershed and wildlife as well as renewal of timber resources. Department foresters and fire personnel work closely to encourage and implement fuels management projects to reduce the threat of uncontrolled wildfires.

The CAL FIRE Local Government Program provides direction, coordination and fire protection services to local government agencies throughout the state, via cooperative fire protection agreement contracts as outlined in Public Resource Code (PRC) 4142. The contract document is the Local Government (LG-I) and these contracts



Photo 5 CAL FIRE IMT 1

are commonly referred to as "Schedule A" or "Amador Agreements". Local government entities such as cities, counties and special service districts have contracted with CAL FIRE to provide many forms of emergency services for their communities. CAL FIRE provides full-service fire protection to many of the citizens of California, through the administration of cooperative fire protection agreements with Cities, Counties, Fire Protection Districts, Community Service Districts, Indian Tribes, and other Local Government Agencies.

As a full-service fire department, CAL FIRE responds to wildland fires, structure fires, floods, hazardous material spills, water rescues, civil disturbances, earthquakes, and medical emergencies of all kinds. Local governments utilize this diversity and experience through their agreements with the Department. The Local Government Program partnership agreements fall into three categories: Full Service, Amador and Wildland Protection.



Partnership agreements are tailored to suit the desires and needs of the local community and the ability of CAL FIRE to deliver the service. Fire department personnel are CAL FIRE employees. The local agency retains ownership of fire department facilities and equipment. These agreements are normally in effect 12 months per year.

Cooperative Fire Protection Agreements augment CAL FIRE's initial attack capability with resources that are available for wildland fire suppression. Consolidated fire protection, through contracting, is a trend in California that is strongly supported by statute and numerous independent fire protection studies. Since CAL FIRE is frequently involved in major disasters, it is interested in working regionally with local government entities to provide a coordinated response and improve the safety elements of general and disaster plans.

#### ADVANTAGES OF A CAL FIRE CONTRACT

- Four CAL FIRE Type 3 (State-funded) professionally staffed fire engines, one staffed bulldozer, and one Battalion Chief stationed at San Mateo County Fire Department fire stations.
- San Mateo County can draw on statewide resources including staff, ground resources, aircraft and large incident management teams. Additionally, San Mateo County benefits from decades of CAL FIRE experience in planning, staffing and operating fire protection organizations.
- CAL FIRE is a cost-effective service because of joint use of personnel, equipment and facilities. Fire and emergency response services in unincorporated areas of the county are streamlined under one combined agency, avoiding the inefficient situation of having two agencies providing similar services within the same geographic area.
- Improved employee training, experience and promotional opportunities.
- Reduced human resource management at the local level, as all employee services are provided by CAL HR.
- Maintenance of the San Mateo County Fire Department identity and ownership of local agency fire stations and fire apparatus.





## OVERALL PLAN OBJECTIVES

The following seven objectives have been identified as areas of focus over the next six years. They are a direct result of the current challenges, threats and vulnerabilities facing the San Mateo County Fire Department. Each recommended implementation measure throughout this plan is based on one or more of these seven areas of focus. The overall objectives for San Mateo County Fire Department over the next six years are:

1. Improve operational efficiency, effectiveness, and staffing by enhancing the level of service based on current threats and vulnerabilities.
2. Plan, mitigate, and prepare for large-scale wildfires in San Mateo County.
3. Recruit, retain, and maintain an effective workforce to support the department's mission, vision, and values.
4. Continue to maintain, replace, and modernize apparatus, facilities, and equipment.
5. Foster and maintain strong positive relationships while supporting local volunteer fire organizations.
6. Continue to expand the fire prevention office, based on an increasing work-load and statutory requirements, to improve consistency and effectiveness.
7. Improve and maintain community preparedness, engagement, education and communication.



# FIRE SUPPRESSION OPERATIONS AND RESPONSE

## BACKGROUND

### FIRE DEPARTMENT RESPONSIBILITIES

San Mateo County Fire Department (SMCFD) is one of 11 local government fire agencies in San Mateo County with responsibility to provide structural fire suppression, emergency medical response, and rescue services. SMCFD provides these services on both unincorporated Local Responsibility Area (LRA) lands and the State Responsibility Area (SRA) lands. Most of the unincorporated lands in San Mateo County are SRA. On the unincorporated LRA, SMCFD is responsible for wildland fire suppression, while CAL FIRE, the state’s fire agency, provides wildland fire protection on the SRA lands within the county. It is this dual jurisdictional authority to provide fire protection on much of the same land that is at the heart of the symbiotic cooperative agreement between San Mateo County Fire Department and CAL FIRE.

### STAFFING

Fire Department staffing is critically important to accomplish all the work expected of fire responders. This includes early suppression of fires before a fire takes hold of a building and entraps residents, to handling medical emergencies, to removing victims from entangled locations and to controlling hazardous material discharges. Staffing is expensive but what the public really pays for is firefighter availability for immediate, emergency response.



Photo 6 SMCFD firefighters performing a rescue.

The County of San Mateo contracts with CAL FIRE for administration, support services, and line personnel. All personnel are CAL FIRE (State) employees, under contract to San Mateo County. This arrangement delivers efficiency and effectiveness of resources by ensuring redundant services are not deployed. In San Mateo County, CAL FIRE has three staffed wildland fire engines and a bulldozer (State-funded). CAL FIRE provides 24/7 duty chief coverage, mutual aid resource command and control coordination for large incidents, fire investigation, law enforcement and logistical support. Unfortunately, current staffing levels are below where they were in 2003.

<b>FY18/19 Personnel Positions (FTE)</b>			
<b>Positions</b>	<b>County Fire</b>	<b>CSA #1</b>	<b>Total</b>
<b>Line Personnel</b>	31.5	8.5	<b>40</b>
<b>Command &amp; Control</b>	6.1	1.4	<b>7.5</b>
<b>Support Personnel</b>	3.2	1.24	<b>4.44</b>
<b>Total</b>	<b>40.8</b>	<b>11.14</b>	<b>51.94</b>

One regulatory requirement of fire departments is to comply with the ‘2 In – 2 Out’ requirement (Appendix K). Formally, it is called 29CFR1910.134(g)(4)(i)[1]. The requirement mandates that firefighters never go into a dangerous situation (Immediately Dangerous to Life and Health – IDLH) in a fire or rescue incident alone. There must two firefighters to enter the IDLH and at least two firefighters outside the hazard area to initiate a rescue



of the firefighters inside, should they become injured, trapped or incapacitated during the initial stages of the incident where only one crew is operating in the hazard area. If a rescue is suspected or known, firefighters can make or attempt the rescue without complying with this requirement. Many fire departments require 4-personnel staffing to comply with the requirement. SMCFD relies on multiple fire apparatus arriving at scene before making entry into a burning structure, unless a known life is threatened.

National Fire Protection Association (NFPA) provides a recommended national standard for staffing (NFPA 1710-attached as Appendix J). NFPA 1710 recommends 4-persons responding on every engine and for 14 firefighters to respond to a single-family dwelling fire, 27 members responding to an apartment complex and 42 members to a high-rise fire. Currently, San Mateo County Fire Department's staffing standard is a 3-person-staffed, paramedic Type 1 engine company, consistent with other fire agencies in the county. It is important to note that currently SMCFD only operates with three firefighters on the ladder truck, while most agencies in the county require four firefighters to operate a ladder company

In addition to the front-line staff there are several other specialized staff positions. Fire Administration is home to the Fire Chief (CAL FIRE Unit Chief), the Assistant Chief of Administration and the San Mateo County Division Chief. Together, they are responsible for organizational oversight, policymaking, staffing and department management. The Fire Administration is supported by a variety of civilian administrative personnel.

Additionally, the Fire Marshal's Office is staffed with one Fire Marshal (Battalion Chief) and two Deputy Fire Marshals who are responsible for plan reviews and inspections. They work collaboratively with the County Planning and Building Department and the business community and are responsible for updating the Fire Code.

Finally, the Fire Training Division coordinates ongoing training for all sworn and volunteer fire personnel to meet mandated training requirements including: The National Fire Protection Association, Occupational Safety and Health Administration, Emergency Medical Systems Agency and safety standards. The Training Division works in close coordination with the Coastside Fire Protection District and CAL FIRE on multi-company training drills. The Training Division supports the Operations Division by providing essential manipulative and proficiency instruction to ensure all personnel stay current on a wide range of skills. The Training Division is managed by a Battalion Chief, who serves as the County Fire Department Paramedic Supervisor and is supported by a Fire Captain – Paramedic.

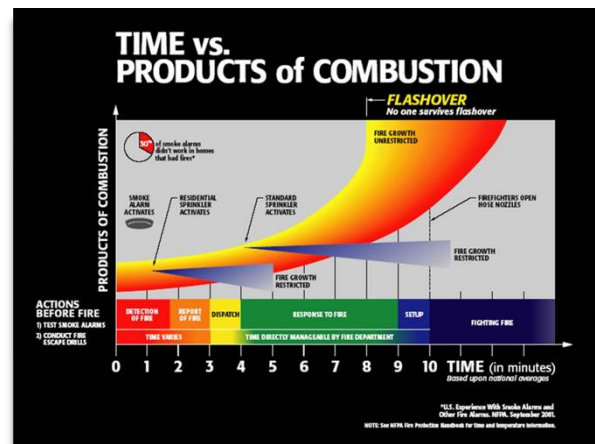


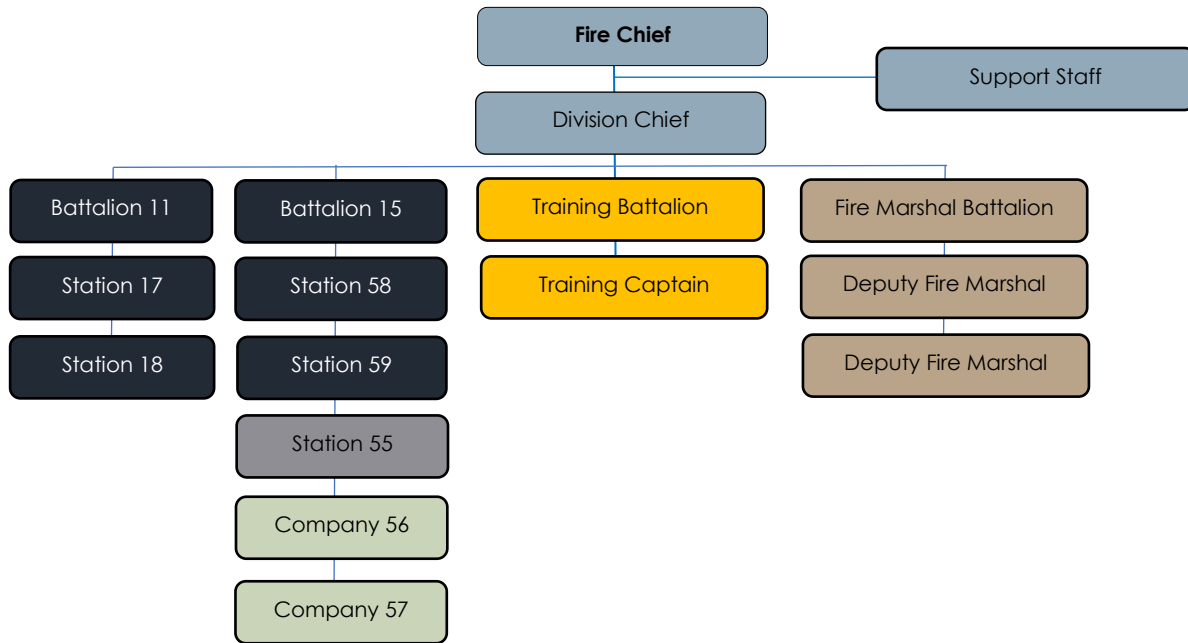
Figure 1 Phases of fire



Photo 7 Firefighters training



## CURRENT ORGANIZATIONAL CHART



## EMERGENCY INCIDENT CALL VOLUME

On average, SMCFD responds to over 2,100 calls for service annually. Most of the incidents are medical-related emergencies (including traffic collisions). SMCFD is a member of Fire Net 6, a Joint Powers Agreement (JPA) for centralized dispatch between the six south county fire agencies. Fire resources are dispatched based on the “closest resource” concept wherein the most appropriate available resource is sent to an emergency, regardless of jurisdiction.

<b>San Mateo County Fire Department Incident Data (by Type)</b>						
<b>Incident Type</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>5 Yr. Avg.</b>
Other	5	9	6	9	5	<b>6.8</b>
Automatic Aid	5	4	1	2	2	<b>2.8</b>
Automatic Aid - Paramedic	0	1	2	6	2	<b>2.2</b>
Boat in Distress	1	1	1	1	1	<b>1</b>
Cliff Rescue	2	4	3	1	0	<b>2</b>
Decontamination	0	0	0	0	0	<b>0</b>
Medical (EMS)	834	849	881	905	968	<b>887.4</b>
Explosion	1	2	2	3	1	<b>1.8</b>
Fire Alarm	51	52	46	41	31	<b>44.2</b>
Fire Alarm - Smoke	56	39	41	41	39	<b>43.2</b>
Fire Alarm - Manual Pull	4	0	7	11	9	<b>6.2</b>
Fire Alarm - CO2	4	8	4	14	16	<b>9.2</b>
Fire Alarm - Tamper	1	1	0	0	0	<b>0.4</b>





Fire Alarm - Waterflow	5	11	5	3	6	<b>6</b>
Fire Information Advisement	234	254	294	220	160	<b>232.4</b>
Fire - General	7	9	21	43	12	<b>18.4</b>
Fire - Unknown	0	0	0	2	3	<b>1</b>
Full Assignment	9	12	17	17	5	<b>12</b>
Gas Main Break	7	4	0	3	4	<b>3.6</b>
Grass Fire	18	28	16	19	17	<b>19.6</b>
Landscape Fire	0	0	0	0	7	<b>1.4</b>
Hazardous Materials - Consult	0	0	0	0	0	<b>0</b>
Hazardous Materials - Investigation	6	6	8	4	2	<b>5.2</b>
Lock Out	0	2	0	1	0	<b>0.6</b>
Lock Out - Residential	0	2	5	3	1	<b>2.2</b>
Lock Out - Vehicle	16	13	15	17	15	<b>15.2</b>
Odor Investigation	28	46	17	41	33	<b>33</b>
Public Assist	89	75	152	214	116	<b>129.2</b>
Public Assist - Ladder	0	0	0	0	0	<b>0</b>
Public Assist - Water Removal	27	20	16	36	18	<b>23.4</b>
Pole Fire	4	2	4	14	9	<b>6.6</b>
Structure Fire	3	2	6	4	5	<b>4</b>
Smoke Investigation	45	56	47	79	61	<b>57.6</b>
Still Alarm	0	0	0	0	0	<b>0</b>
Sparking/Arching Wires Down	12	7	16	18	5	<b>11.6</b>
Standby	1	2	0	3	0	<b>1.2</b>
Traffic Accident	313	315	363	390	339	<b>344</b>
Traffic Accident - Into a Structure	1	5	1	1	1	<b>1.8</b>
Tree Down	87	74	109	156	51	<b>95.4</b>
Trash Fire	28	23	16	25	33	<b>25</b>
Vehicle Fire	44	33	51	46	40	<b>42.8</b>
Wires Down	18	30	30	46	25	<b>29.8</b>
Water Rescue - Investigation	0	0	3	4	3	<b>2</b>
Water Rescue - Response	0	0	1	0	0	<b>0.2</b>
Water Rescue	3	3	6	0	0	<b>2.4</b>
<b>Total</b>	<b>1969</b>	<b>2004</b>	<b>2213</b>	<b>2443</b>	<b>2045</b>	<b>2134.8</b>



## ADVANCED LIFE SUPPORT (ALS) PARAMEDIC PROGRAM

SMCFD is a member of the San Mateo County's Advanced Life Support Joint Powers Agreement (ALS JPA). This county-wide agreement standardizes the level of Emergency Medical Service pre-hospital care provided by fire agencies. SMCFD has, at minimum, one licensed paramedic on each piece of front-line paid career apparatus (engines and truck). This provides the highest level of emergency medical care before an ambulance arrives, which can mean the difference between life and death, especially in the remote areas of the county. This standardization also allows fire engines to respond across jurisdictional boundaries.

To maintain this level of service, paramedics are required to complete hundreds of extra hours of training each year to ensure medical skill currency. In doing so, these paramedics can administer a variety of drugs and use advanced airway management techniques. For critical patients it is not uncommon for the fire-engine paramedic to ride in the ambulance with the patient to the hospital, providing treatment from first response to physician care. The ALS program is overseen by the SMCFD Paramedic Coordinator Battalion Chief who is responsible for quality assurance and training compliance.



Photo 8 Firefighter-Paramedic checking equipment

## SAN MATEO HIGHLANDS COMMUNITY EMERGENCY RESPONSE TEAM (CERT)



Photo 9 CERT training drill

SMCFD Fire Station 17 in the Highlands provides training for the Highlands CERT Program. The Highlands CERT is a part of the national CERT program where local community members are trained to aid during a disaster. These teams are extremely important during large disaster when local first responders are overwhelmed by the magnitude of the situation. SMCFD conducts training twice each year, with classes taught by firefighters at Fire Station 17. Annually drills are also coordinated and administered by SMCFD firefighters. This program is a great way for the community to become involved in disaster preparedness and it also gives firefighters a chance to make meaningful relationships with the community members.

## FIRE EXPLORER POST 955

The San Mateo County CAL FIRE Explorer Post 955 is a program designed for young men and women from ages 14-21 who are interested in learning about a career in the fire service. The Explorer program is taught by paid professional firefighters at Fire Station 17 in the Highlands and gives young people a unique opportunity to learn about firefighting. The program covers all aspects of firefighting such as structural, medical and hazardous situations. Explorers are also expected to participate in a ride-along on a fire apparatus for up to 12 hours where they build leadership skills as a part of the program. Many of the explorers go on to full time fire department employment with various departments throughout the region.



Photo 10 Explorer post meeting



APPARATUS

The San Mateo County Fire Department (SMCFD) currently owns and operates 29 pieces of fire apparatus, to provide fire and medical services to most of the unincorporated areas of San Mateo County. The fleet includes a variety of apparatus types, including fire engines, ladder trucks, rescues, staff vehicles and chief officer command vehicles.

<b>County-owned Mobile Fire Equipment</b>				
	<b>Front-line</b>	<b>Reserve</b>	<b>Volunteer</b>	<b>Total</b>
<b>Command Vehicles</b>	5	1	0	<b>6</b>
<b>Support Staff Vehicles</b>	3	0	0	<b>3</b>
<b>Fire Engine – Type 1</b>	4	3	1	<b>8</b>
<b>Fire Engine – Type 2</b>	0	0	1	<b>1</b>
<b>Fire Engine – Type 3</b>	1	0	0	<b>1</b>
<b>Fire Engine – Type 6</b>	1	0	1	<b>2</b>
<b>Ladder Trucks</b>	1	0	0	<b>1</b>
<b>Rescue Vehicles</b>	2	0	0	<b>2</b>
<b>Water Tenders</b>	1	0	2	<b>3</b>
<b>Utility Vehicles</b>	2	0	0	<b>2</b>
<b>Total</b>	<b>19</b>	<b>4</b>	<b>5</b>	<b>29</b>

Many of the primary fire apparatus, known as the “front line” or “first out” pieces of equipment, have been replaced over the past four years through Measure A and Measure K funds. Fire apparatus has a recommended lifespan based on National Fire Protection Association 1911 Annex D (Appendix L). Guidelines for First-line and Reserve Fire Apparatus Criteria includes:

- Vehicle road mileage.
- Engine operating hours.
- The quality of the preventative maintenance program.
- Whether the fire apparatus was used within its design parameters.
- Whether the fire apparatus was manufactured on a custom or commercial chassis.
- The quality of workmanship by the original manufacturer.
- The quality of the components used in the manufacturing process.
- The availability of replacement parts.
- The costs associated with maintenance and repair



Photo 11 Newly purchased SMCFD Fire Engine 58

SMCFD has updated the 6-year Mobile Equipment Replacement Plan (MERP-attached as Appendix G) based on the Mobile Equipment Life Cycle Table (MELC-below) and the recommendations in this plan. The plan projects the anticipated replacement year for each piece of apparatus over the next 6 years. Additionally, a large tools and equipment replacement schedule has been established to ensure replacement of outdated tools over the next 6 years (example: Jaws of Life extrication equipment.)



<b>Mobile Equipment Life Cycle (MELC)</b>			
<b>Apparatus Type/Kind</b>	<b>Front Line</b>	<b>Reserve</b>	<b>Total Life</b>
<b>Command Vehicles</b>	6 years	4 years	<b>10 years</b>
<b>Staff Vehicles</b>	6 years	4 years	<b>10 years</b>
<b>Engine (Type I)</b>	10 years	10 years	<b>20 years</b>
<b>Engine (Type II)</b>	10 years	10 years	<b>20 years</b>
<b>Engine (Type III)</b>	20 years	N/A	<b>20 years</b>
<b>Engine (Type IV, V, VI)</b>	20 years	N/A	<b>20 years</b>
<b>Ladder Truck</b>	15 years	10 years	<b>25 years</b>
<b>Water Tender</b>	20 years	N/A	<b>20 years</b>
<b>Rescue</b>	20 years	N/A	<b>20 years</b>
<b>Utility</b>	12 years	N/A	<b>12 years</b>

For most apparatus, after use on the front line, it is placed into “reserve” status. SMCFD retains several pieces of reserve apparatus to ensure emergency response capabilities when front line equipment is unavailable. These reserve apparatuses are utilized for four reasons. First, they are used when front line apparatus is out of service due to routine maintenance and/or repair. Second, reserve fire apparatus is utilized when firefighters are called upon to large incidents under statewide mutual aid, which requires front line fire apparatus to be deployed out of the area. Third, they are staffed with additional firefighters during anticipated weather events such as red flag winds or heavy winter storms. Fourth, they are used during large local disasters when resources are stretched thin. Additionally, CAL FIRE frequently rents SMCFD fire apparatus under an Assistance by Hire (ABH) agreement. Under the terms of ABH, CAL FIRE hires SMCFD fire apparatus and staff, at a pre-established rental rate, for State-mission wildland fire use. CAL FIRE compensates SMCFD each time reserve apparatus is rented, typically totaling several thousands of dollars a year.

Front line fire apparatus is generally rotated from front line status to reserve status based on the MELC. SMCFD keeps a minimum of three Type I fire engines and one Chief Officer vehicle in reserve status. Reserve water tenders, staff vehicles or utilities are not necessary.



Photo 12 Truck 17



County Fire-Owned Mobile Equipment Assignments							
Apparatus Type/Kind	Station 17	Station 18	Station 55	Station 56	Station 57	Station 58	Station 59
Command Vehicles	6	0	0	0	0	0	0
Staff Vehicles	3	0	0	0	0	0	0
Engine (Type I)	3	2	0	0	1	1	1
Engine (Type II)	0	0	1	0	0	0	0
Engine (Type III)	1	0	0	0	0	0	0
Engine (Type IV, V, VI)	0	0	1	0	0	0	1
Ladder Truck	1	0	0	0	0	0	0
Water Tender	0	0	0	1	1	1	0
Rescue**	0	0	0	0	1	1	0
Utility	1	0	0	0	0	0	1

\*\* There is currently 1 rescue (R-140) assigned to Coastside Fire Protection District Station 40

## CURRENT CHALLENGES

- Firefighter health: Carcinogen exposure reduction.
- Truck 17 staffing (currently below national standards and some local standards).
- Current staffing model does not have a Fire Captain on every shift.
- Current staffing model does not have a County Fire Battalion Chief assigned to every shift.
- Increased training requirements.
- Aging specialized tools and equipment.
- Aging reserve fire apparatus fleet.
- Increased administrative workload and reporting.
- Limited technology available for data-driven decision making.

## RECOMMENDATIONS

- **Increase Personal Protective Equipment (PPE) safety equipment budget to reduce exposure to cancer causing particulates.** An industry-wide initiative to reduce the rate of cancer amongst firefighters has shown that a second set of Personal Protective Equipment is critical. San Mateo County Fire Service Policies and Procedures have recently been updated with increased focus on toxic exposure reduction and Personal Protective Equipment (PPE) cleaning measures. Based on new research, it has become apparent that firefighters are frequently exposed to high levels of toxic smoke. To reduce this exposure, firefighters are now required to remove all PPE, and have it sent for complete decontamination after each fire. This requires all firefighters to have a second set of PPE turnouts available for use. Each set of PPE is custom made based on each firefighter's height, weight and body type. We recommend a one-time increase in PPE spending to ensure all firefighters have a second set of PPE. Additionally, firefighters will be issued individual self-contained breathing apparatus masks.
- **Convert the Heavy Equipment Mechanic position to a .5 FTE Operations Battalion Chief.** Due to the strong economy and high cost of living, attracting and retaining qualified heavy equipment fire mechanics is extremely difficult. This problem is being experienced by several fire departments throughout the area. Due to this challenge, we have signed a contract with a third-party vendor for all fire apparatus maintenance. Therefore, we recommend converting the Heavy Equipment Mechanic



position to a .5 FTE Battalion Chief, to oversee the fire apparatus maintenance contract. Additionally, this position will help to reduce operational battalion chief overtime costs.

- **Upgrade two Fire Apparatus Engineer positions to Fire Captain positions to ensure all shifts are staffed with a company supervisor.** Each County fire apparatus is staffed with a crew consisting of a Fire Captain (FC) and two Fire Apparatus Engineers (FAE), one of whom is a licensed paramedic (P). Each apparatus has two assigned shifts known as a “module”. In addition are two rotating modules that travel between stations to cover open shifts. They are known as the “relief” shift. Currently, the two rotating relief shifts are not staffed with a Fire Captain. To ensure adequate emergency supervision and crew accountability, we recommend upgrading two Fire Apparatus Engineer positions to Fire Captain positions. This change will bring San Mateo County Fire Department in line with all other local government fire departments in the County.
- **Hire additional firefighters to increase ladder truck staffing (to 4-person staffing) to meet national and local fire service standards.** The recent conversion of an engine company to a ladder truck company at Highlands Fire Station 17 has provided greater depth of service to the Highland area of San Mateo County. The truck is an active resource along the Highway 92 and 280 corridors and provides the necessary tools and equipment for the larger industrial county facilities along Tower Road and Paul Scannell Drive. The addition of this truck helped CSA #1 (Highlands) attain an ISO Class 1 rating, the highest rating possible. One area of concern is the current level of staffing on the ladder truck. With only three people assigned to the apparatus, the standards set forth by the National Fire Protection Association (NFPA) and other local fire agencies is not being met. The recommended staffing for a ladder truck is 4. On a structure fire, this allows for two firefighters to ventilate the roof of a structure while the other two search the structure for victims. Currently, we are unable to split the crew, requiring additional resources to be drawn and potentially delaying critical firefighting functions. To overcome this challenge, we recommend hiring three additional firefighters (2 FAE’s and 1 FAE-P) to meet the national and local standards and realizing the full functionality of this critical resource. This staffing will also help to alleviate overtime costs.
- **Upgrade cellular-based mobile wireless networks and mobile incident command tablets on fire apparatus.** With the implementation of a new PSC CAD system coming online soon, SMCFD needs to upgrade the cellular network systems on all front-line fire apparatus to ensure adequate connectivity to. A dual-carrier “Cradlepoint” wireless network will be installed on fire apparatus to provide incident information to firefighters and location information to dispatchers. This is often called Automated Vehicle Location (AVL). With the inconsistent cellular coverage in many parts of the unincorporated parts of the county, a more robust dual carrier system is required. This ensures a cellular signal is acquired using multiple networks. Additionally, all apparatus tablets, used for incident information and management, are more than 10 years old and in need of replacement.





- **Expand the Remote Area Suppression and Rescue Program (RASR).** Many areas of unincorporated San Mateo County are remote rural mountainous areas. This includes many public lands and parks (such as Mid-Peninsula Open Space District and San Mateo County Parks). These areas pose unique access challenges for firefighters during rescue and fire response missions. Currently, during many remote area incidents, firefighters drive as close as possible before either walking on foot or loading gear into a pickup truck to reach the scene. We recommend the expansion of the newly formed remote area response program to ensure additional remote and inaccessible area access.
- **Purchase an additional backup set Advanced Life Support paramedic first aid equipment.** Currently, SMCFD is capable of staffing one additional piece of fire apparatus at the paramedic ALS service level (special events, red flag warnings, high call volume, winter storms), due to the limited backup equipment available. Purchasing a second backup set of ALS gear will enable two additional fire apparatus to be used at the paramedic service level. This is especially important during special events and when front line apparatus is sent out of the area on mutual aid assignments.
- **Assist San Mateo County Public Safety Communications (PSC) with a CAD-to-CAD software solution, linking PSC with CAL FIRE's regional command center.** When a wildfire breaks out in San Mateo County there are several agencies that automatically respond, depending on the location. San Mateo County Fire is dispatched by Public Safety Communications (PSC) and are the primary point of contact for people reporting fires. When a wildland fire breaks out, it requires resources beyond San Mateo County, including additional wildland fire engines as well as several specialized pieces of equipment such as bulldozers, hand crews, helicopters and fixed wing aircraft. These resources are dispatched by CAL FIRE's Felton Emergency Command Center (FECC). Dispatchers are required to make phone calls between centers to report and update units on fire conditions, frequency changes and potential life safety hazards. This is inefficient as it can lead to confusion and mis-communication by responding resources. This is especially true when the fire is large or escalating. To fix the problem, we recommend working closely with PSC and FECC to foster a "CAD to CAD" computer solution that allows each center's dispatch computers to communicate in real time. The result will be increased firefighter safety, an appropriate number of correct resources being dispatched in a timelier manner and less potential for confusion during a large incident.
- **Hire 3 additional firefighters and increase staffing at Fire station 59, Pescadero (to 4-people per shift), ensuring dual Paramedic coverage and to meet National Fire Protection 1500.** Fire Department staffing is critically important to accomplishing all the work expected of fire responders. This includes early suppression of fires before a fire takes hold of a building and entraps residents, to handling medical emergencies, to removing victims from entangled locations and to controlling hazardous material discharges. A four-person staffed station will allow firefighters in Station 59 to immediately enter a burning structure without having to wait for additional fire crews. Due to Station 59's remote location, a second fire apparatus is 12-15 minutes away. Currently, firefighters in Station 59 must wait this long before they can enter a burning building due to OSHA's 2-in/2-out policy.



Additionally, SMCDF relies on at least one Coastside Fire Protection District apparatus to respond to Station 59 to “cover” when they are dispatched to a medical call. This change in staffing will alleviate the need to call in a resource from Half Moon Bay and decrease Coastside Fire Protection District’s commitment to cover SMCDF area since a second paramedic resource would always be available in Pescadero. This staffing arrangement will also allow for two staffed ALS resources on either side of the frequently flooded Pescadero Creek Road during large storms. We recommend hiring three additional firefighter paramedics (FAE-P’s) to meet the national and local standards and realizing the full functionality of this critical resource.

- **Explore the feasibility of establishing an ocean rescue program.** There are over 40 miles of ocean coastline in San Mateo County, much of which is in unincorporated areas of the county. While ocean rescue is primarily the responsibility of California State Parks and the US Coast Guard, due to their extended response times and limited resources, SMCDF responds to all ocean rescues. Like other parts of California, SMCDF recommends exploring the feasibility of implementing a fire department ocean rescue program in San Mateo County.
- **Explore and implement an analytics software for use in department performance reporting and data-driven decision making.** To ensure the most accurate information is always available to chiefs, administrators, and decision makers, we recommend purchasing and implementing a data management software solution. The information will enable several metrics to be tracked and reporting, including standards of cover, response “hot spots”, and maps in a simple-to-use online dashboard. Critical future fire prevention and response decisions will be based on advanced data analytics to ensure outcome-based changes are made based on verifiable metrics.
- **Review, digitize, and upload target hazard pre-plans, county water district plans, jurisdictional maps and other valuable information.** Use the county’s common operating platform for incident management, to update and upload old pre-fire plans, district water provider boundaries, landing zones, water sources and other valuable data points for all firefighters to have access to. Additionally, look at integrating pre-existing database information, such as locations of residential care facilities and home day cares into the fire department pre-plan system. This could also include adding any existing 3-D digital plans created by homeowner or architects into the fire department program for use by fire commanders at the scene of an emergency.
- **Hire two additional Fire Apparatus Engineer-Paramedics to improve quality standards and reduce overtime costs.** Paramedics who work in some of the remote parts of the county infrequently must use some of their specialized skills (such as child birth, diabetic intervention and stroke intervention). To ensure all paramedics are getting the experience they need to keep their skills current, we propose each paramedic work a shift a month in a busier part of the county. To make this critical training a recurring and long-term success, we will need to hire two additional paramedics to rotate between stations as the primary station paramedic while the assigned paramedic is gaining valuable advanced life support



experience. These paramedics will also be valuable in covering behind employees on vacation and will reduce unplanned overtime costs.

- **Explore and implement the use of landing zone web-cams and weather stations.** Many emergency incidents in the rural parts of San Mateo County involve trauma. This is primarily due to the long rural highways, coastal roads, trails and recreation areas throughout the area. Seconds count during these critical trauma incidents and many times an air ambulance is dispatched to transport the patient to a trauma center quickly. One variable is the weather; pilots frequently request the weather conditions in the landing area. To expedite the flow of information, we recommend installing remote access weather cameras at some of the most utilized landing zones. These cameras give PSC, firefighters, paramedics and flight crews instant weather readings and a visual check on conditions, reducing any delay.
- **Explore and implement an unmanned aerial vehicle program for use during emergency response.** Work with regional partners to explore the uses and implementation model for an unmanned aerial vehicle (UAV or drone) in the unincorporated parts of San Mateo County. This new technology will be especially useful for cliff rescues and water rescues.
- **Explore and implement changes to improve the ISO rating in the rural parts of the county.** The ISO Public Protection Classification System is a nationally recognized third-party rating that evaluates the fire protection services of each jurisdiction throughout the United States. Their evaluation of each department results in a Fire Protection Rating Schedule (1 being the best and 10 being the worst) that is utilized by insurance agencies to determine coverage eligibility. Recently, based on fire department enhancements, CSA #1 attained an ISO rating of 1, resulting in lower insurance costs for homeowners. Currently, the rural unincorporated areas of the county have an ISO rating of 4. We recommend exploring and implementing additional measures that the fire department can take to reduce the ISO rating in the remote areas of the county.



# WILDFIRE THREAT

## BACKGROUND

Devastating fire disasters that have plagued California over the past several years appear to be increasing in severity, frequency, and destructiveness. Fifteen of the 20 most destructive wildfires in the state’s history have occurred since 2000; ten of the most destructive fire have occurred since 2015.<sup>1</sup> The past two years have seen some of the deadliest, costliest and most destructive fires in California’s history. Last year, the Camp Fire killed



Photo 13 Camp fire seen from space

85 people, destroyed over 20,000 structures, scorched more than 1.9 million acres of land, cost over \$120 million to control and became the most destructive fire in California history.<sup>2</sup> This is alarming as only one year earlier the Tubbs Fire in Sonoma County had the title of most destructive fire in California’s history, destroying over 5,000 homes in the Santa Rosa area. Since 2015, approximately 34,300 structures have been destroyed<sup>3</sup> and over 4.6 million acres have burned by wildfire in California. The Insurance Commissioner estimates that the insured losses from the November 2018 wildfires is more than \$11 billion.<sup>4</sup>

These types of fires in California are now referred to as the “new normal”.

Several common denominators have emerged from these recent fires, including: 1) these fires were driven by high winds (many times during “Red Flag” conditions), 2) firefighting was not effective, even at the earliest stages of the incidents due to the rate of fire spread, 3) these fires quickly turned into large rescue and evacuation incidents, 4) effective, timely and accurate evacuation notification warnings were imperative to getting people out of harm’s way, 5) evacuation routes quickly became clogged and blocked due to the number of cars evacuating simultaneously, 6) vulnerable populations (elderly and/or disabled) were overwhelmingly most likely to be seriously hurt or killed.

Top 20 Most Destructive California Wildfires					
Fire Name	Date	County	Acres	Structures	Deaths
<b>Camp Fire</b>	Nov. 2018	Butte	153,336	18,804	85
<b>Tubbs</b>	Oct. 2017	Napa & Sonoma	35,807	5,636	22
<b>Tunnel</b>	Oct. 1991	Alameda	1,600	2,900	25
<b>Cedar</b>	Oct. 2003	San Diego	273,246	2,820	15
<b>Valley</b>	Sept. 2015	Lake	76,067	1,955	4
<b>Witch</b>	Oct. 2007	San Diego	197,990	1,650	2
<b>Woolsey</b>	Nov. 2018	Ventura	96,949	1,643	3
<b>Carr</b>	July 2018	Shasta	229,651	1,614	8
<b>Nuns</b>	Oct. 2017	Sonoma	54,382	1,355	3

<sup>1</sup> Wildfires and Climate Change: California’s Energy Future, Governor Gavin Newsom Strike Force Report, April 12, 2019

<sup>2</sup> CAL FIRE, Camp Fire, Incident Status Summary (ICS-209), November 25, 2018

<sup>3</sup> CAL FIRE, Top 20 Most Destructive California Wildfires, March 14, 2019

<sup>4</sup> <http://www.insurance.ca.gov/0400-news/0100-press-releases/2019/release14-19.cfm>



Recent climate change reports have concluded that the wildfire problem is likely to get worse across the western United States. According to the Hoover Institution:

While no single wildfire can be attributed solely to climate change, new extremes precipitated by the earth’s changing climate can lead to more frequent and aggressive fires. Indeed, as compared to 1986, wildfires in the western United States have begun occurring nearly four times more often, burning more than six times the land area, and lasting almost five times as long. Of the twenty most destructive California wildfires since 1932, when the state began keeping records, eleven have occurred in the past ten years- and four of those took place just in 2017.

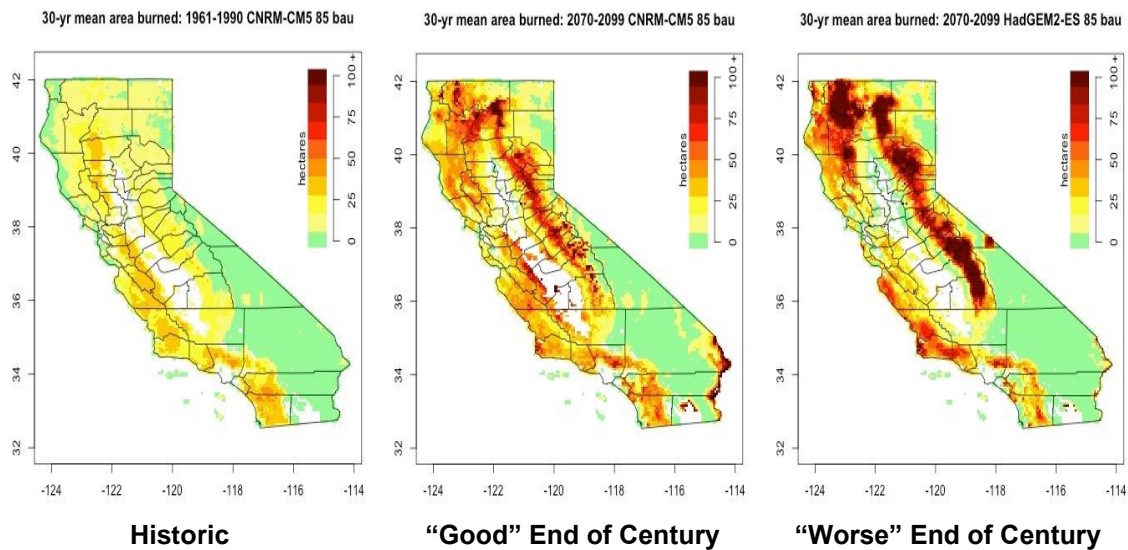


Figure 2 Predicted End of Century Fire Risk, Dr. Leroy Westerling

According to the recently released California’s Fourth Climate Change Assessment:

The Climate change will make forests more susceptible to extreme wildfires. By 2100, if greenhouse gas emissions continue to rise, one study found that the frequency of extreme wildfires burning over approximately 25,000 acres would increase by nearly 50 percent, and that average area burned statewide would increase by 77 percent by the end of the century. In the areas that have the highest fire risk, wildfire insurance is estimated to see costs rise by 18 percent by 2055 and the fraction of property insured would decrease.<sup>5</sup>

Due to the changing climate, mountainous topography and vegetation-types, many areas of San Mateo County are now highly vulnerable to these-type of large wildfires, especially in less developed areas with large lot home sites with extensive areas of un-irrigated vegetation. This wildfire problem is exacerbated by the development in the wildland urban interface (WUI) areas of the county; areas that were traditionally rural summer cabins,

<sup>5</sup> California’s Fourth Climate Change Assessment, Statewide Summary Report, August 27, 2018





located on winding, narrow roads, are now home to year-round residences with increased structure density but pre-existing (and in many cases, insufficient) roads and infrastructure.

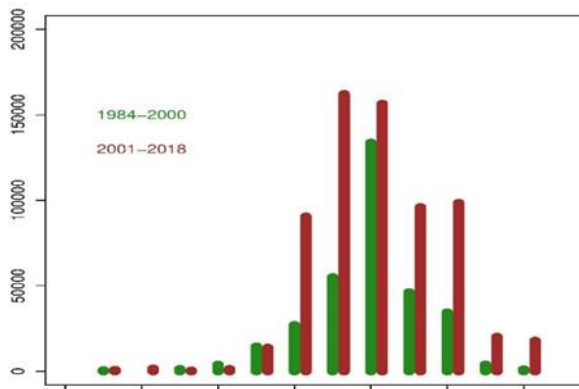


Figure 3 Annual Acres Burned, Dr. Leroy Westerling

According to a 2010 survey of counties in the western US by the Headwaters Economics Institute, San Mateo County is home to 39 square miles of wildland urban interface area (WUI), with 33% of it having homes. As outlined in the 2016 San Mateo County Hazard Mitigation Plan (SMCHMP) there are a combined 6,656 buildings in the fire hazard zones (very high, high and moderate) in the unincorporated areas of the county. Additionally, there are over 21,000 people and 50 critical facilities within these wildfire severity zones. The total exposed value (both buildings and contents) in these zones is over \$12 billion.

Firefighter staffing (firefighters/square mile) in the vulnerable WUI areas is far less than city fire departments. This results in longer response times which gives the fire more time to burn, making these fires difficult to fight. An additional complication for firefighters is the tactical need to quickly switch back and forth from fighting a structure fire to then fighting a wildland fire. It is difficult to balance the two tactics simultaneously. When a WUI fire breaks out, the threat of extreme property and casualty loss often forces firefighters to focus their efforts on protecting homes and structures, sometimes at the expense of protecting wildland resources or working to slow the fire itself. This “triage” firefighting is becoming more common throughout California.



Photo 14 Tubbs Fire aftermath



Photo 15 Firefighters on a wildland fire in San Mateo County.

Unfortunately, there is no silver bullet to quickly and completely reduce the wildfire risk. Efforts must be made at all levels (Federal, State and Local) to minimize the impacts of fire. Unfortunately, the causes of this increased wildfire threat are complex, so are the measures needed to tackle the problem. The National Cohesive Wildland Fire Management Strategy identifies opportunities to address four major challenges, they are: 1) vegetation and fuels management, 2) homes, communities, and values at risk management, 3) human-caused ignitions, and 4) effective and efficient wildfire response. In practice this requires additional resources to focus on expanding fire prevention activity, making communities more resilient and investing in additional suppression and response capabilities. Without implementing additional preparedness, prevention and response measures we can expect to see more homeowners losing fire insurance and an increased chance of a





devastating fire impacting the area. While we cannot eliminate the fire threat, we can take immediate steps to reduce the potential losses.

To have a meaningful impact on reducing the impact of wildfires, the WUI risk reduction and response model has been created. This model includes the following 11 interconnected elements: Response Capacity, Fire Hazard Severity Zone Mapping, Evacuation Planning, Emergency Alerting, Community Education, Defensible Space, Fuel Breaks, Vegetation Management, Land Use Planning, WUI Building Codes, and Infrastructure Improvement and Maintenance.



Figure 4 SMCFD WUI Risk Reduction Model

There are numerous existing fire plans, strategies, documents and maps related to wildfire in San Mateo County. These range from broad documents, such as the Safety Element of the General Plan to much more specific project plans like the Community Wildfire Protection Plan. There are several mapping initiatives currently underway looking at 1) mapping the current fuel composition, in detail, 2) mapping the future fire hazard outlook, and 3) statewide effort to update the current fire hazard severity maps.

It's important to understand the existing plans related to wildfire, below is a summary of these plans and maps.

#### COUNTY MASTER PLAN – SAFETY ELEMENT

Notable fire-related items identified in the General Plan include:

- Minimize the potential risks resulting from natural hazards, including but not limited to, loss of life, injury, damage to property, litigation, high service and maintenance costs, and other social and economic dislocations.



- Determination of the existence of a fire hazard. Using the natural hazards map or other information sources considered to be valid by CAL FIRE to determine the general location of hazardous fire areas.
- Appropriate land use and densities in fire hazard areas. The plan outlines recommendations for rural and urban development in fire hazard areas.
- Review criteria for locating development in fire hazard areas. The plan outlines criteria to be considered for new developments in fire hazard areas (i.e., building material considerations, water supply, fire vehicle access, etc.)
- Review criteria for locating development outside of fire hazard areas. The plan recommends review of new development proposed in unincorporated areas located outside of fire hazard areas be referred to appropriate fire protection agencies for review and approval.
- Standards for water supply and fire flow for new development.
- Standards for road access for fire protection vehicles to serve new development.
- Street signage.
- Road patterns. Recommendations to ensure access for fire protection vehicles, evacuation routes for new subdivisions, encourage the participation of Department of Public Works, as well participation of fire protection agencies in the review and development.
- Vegetative clearance around structures.
- Fire resistive vegetation.

#### LOCAL HAZARD MITIGATION PLAN

The San Mateo County Local Hazard Mitigation plan (LHMP) is a multi-jurisdictional document that covers 29 planning partner organizations throughout the area. The plan developed pursuant to the Disaster Mitigation Act of 2000, covers a five-year period with long-term and short-term policies, programs and projects and other activities to alleviate the death, injury, and property damage that can result from a disaster. The plan complies with requirements to maintain eligibility for funding under Federal Emergency Management Agency (FEMA) grant programs. Wildfires are one of the hazard focus areas addressed in the LHMP.

The plan outlines the following major issues associated with wildfire:

- Public education and outreach to people living in or near the fire hazard zones. Should include information about and assistance with mitigation actions such as defensible space and advance identification of evacuation routes and safe zones.
- Wildfires could cause landslides as a secondary natural hazard.
- Climate change could affect the wildfire hazard.
- Future growth into interface areas should continue to be managed.
- Area fire districts need to continue to train on wildland-urban interface events.
- Vegetation management activities – This issue would include enhancement through expansion of the target areas as well as additional resources.
- Regional consistency of higher building code standards such as residential sprinkler requirements and prohibitive combustible roof standards.



- Firefighters in remote and rural areas are faced with limited water supply and lack of hydrant taps. Rural areas are adapting to these conditions by developing a secondary water source. Areas that once were considered rural could become urban with incorporation and annexation, coupled with development.
- Expand certifications and qualifications for fire department personnel.
- Ensure that all firefighters are trained in basic wildfire behavior, basic fire weather, and that all company officers and chief level officers are trained in the wildland command and strike team leader level.

#### COMMUNITY WILDFIRE PROTECTION PLAN

San Mateo County is covered by the San Mateo/Santa Cruz County Community Wildfire Protection Plan (CWPP). The San Mateo/Santa Cruz County Community Wildfire Protection Plan (CWPP) is a guide regarding wildfire hazards and provides strategies to mitigate risk. The plan is periodically updated, with public input, and was most recently updated in April 2018 by CAL FIRE and local resource conservation districts, with input from local stakeholders. The CWPP is used as the guiding document for identifying, expediting, preparing and implementing hazardous fuel reduction projects within the wildland urban interface (WUI).

The CWPP is an adopted documentation intended to reduce the risk to people, property and the environment. The plan also identifies recommendations aimed at preventing and reducing both infrastructure and ecosystem damage associated with wildland fires. Fuel reduction projects identified in the approved CWPP receive priority state and federal grant funding. This plan identifies hazards, assets at risk, and high priority areas in need of fuel reduction. The CWPP is not a legal document and does not satisfy regulatory permitting processes. It is intended to be used as a planning tool.

The CWPP identifies “high priority” areas where fuel reduction projects should take precedence:

- Reduction of fuel in the roadside right of way
- Strategically placed fuel breaks (including shaded fuel breaks)
- Roadside fuel breaks

The CWPP also discusses methods to create fuel breaks, as well as recommendations regarding disposal of removed vegetation.

#### CAL FIRE CZU STRATEGIC UNIT FIRE PLAN

The CAL FIRE San Mateo-Santa Cruz Unit (CZU) Strategic Fire Plan identifies and prioritizes pre-fire and post-fire management strategies and tactics meant to reduce risks to lives and property within CZU. The plan identifies communities at risk within San Mateo County and Santa Cruz Counties, as well as identifying firefighting capabilities and preparedness within CZU. This plan is developed and maintained with input from Federal, State, City, and County agencies, as well as other interested parties, within the San Mateo-Santa Cruz Unit. It is intended for use as a planning and assessment tool only.

Pre-Fire management strategies for San Mateo County include:



- The services of the San Mateo County Fire Marshal's office:
  - Inspecting new & existing building construction
  - Permitting tents, special events and other activities in San Mateo County
  - Applying requirements for roads, driveways, water supply as needed
  - Applying requirements for residential/commercial fire sprinkler or suppression systems, esp. in new construction
  - Reviewing plans for new construction & remodels, applying fire resistive construction as required
- Pre-fire plans (conducted by fire station personnel) for fire operations are completed for commercial occupancies, schools, and larger residential facilities.
- Vegetation management program
  - Perform structural clearance inspections (LE-100) as needed.
  - Assist in the identification of fuel breaks and proposed fuel reduction projects
- Identifying road data:
  - Identify inadequate bridges and plan for fixes
  - Identify existing water supplies in the wildland areas
  - Identify locations for additional wildland water supplies
  - Identify, prioritize and mitigate high risk roads in the Wildland Urban Interface (WUI)
- Participation in community outreach programs:
  - MDA's Fill the Boot campaign
  - Smokey Bear school presentations
  - Station tours for local schools
  - San Mateo Explorer program
  - Touch a Truck pre-school event
  - Disaster Preparedness Day
  - Career Day at the San Mateo County Receiving Facility
  - Working closely with the community of Highlands, as well as participating in Highland community sponsored activities.

## CURRENT CHALLENGES

- Limited evacuation routes in high fire hazard areas.
- Vulnerable population living in high fire hazard areas.
- Varying levels of vegetation management and long-term vegetation maintenance.
- Heightened public concern about overgrown vegetation in neighborhoods.
- Public expectation for timely and accurate information during incidents.
- Completing project requests to minimize the risk of fire.
- Adapting to Public Safety Power Shutoff's during extreme fire weather conditions.



## RECOMMENDATIONS

- **Implement a WUI Risk Reduction Program.** To immediately begin to address the increasing wildfire threat locally, we recommend focusing resources toward operationalizing the recently complete Community Wildfire Protection Plan (CWPP) by implementing a WUI Risk Reduction Program. This program, in accordance with Governor Newsom’s Strike Force wildfire report, will focus on three key areas; 1) expanded fire prevention activity by increasing **vegetation management** efforts, 2) making communities and structures more resilient through **WUI fire protection and planning** by updated codes, leading home hardening initiatives, and expanded fire safe regulations, and 3) **community outreach and education** surrounding fire preparedness, evacuations and defensible space.

### Vegetation Management Crew

Currently, vegetation management work is completed by either contractors or on-duty CAL FIRE engine companies during the fire season months when they are not committed to incidents throughout the state. There is an opportunity for the county to fill in the gaps and continue vegetation and fuel reduction work by hiring seasonal staff between November-June to continue the critical task of reducing flammable material near communities and evacuation routes. To build upon state-funded efforts, SMCDF recommends:

- Employing a WUI Fuel Reduction Operations Coordinator (Forestry Assistant II) to manage the implementation of vegetation management projects on the ground throughout the unincorporated areas of the county.
- Hiring a WUI Risk Reduction seasonal workforce (2 limited term fire captains and 6 seasonal firefighters) to conduct vegetation management work in the winter months. These seasonal firefighters will work closely on priority FireSafe council projects throughout the county, including roadside vegetation clearance and chipping, including along evacuation routes and around populated areas where fuel reduction must be done annually. Additionally, these crews could assist the most vulnerable populations in the county (elderly and those with disabilities) with defensible space clearance around their structures. When not performing vegetation management projects, these crews will be assisting with defensible space inspections.

### WUI Fire Protection and Planning

Employing a WUI Building Code and Planning Officer to focus on developing more robust WUI building codes, fire safe regulations, land use planning, and safety element components. This individual will also be responsible for responding to fire concerns and complaints about over-grown vegetation, and clearance issues.

### Community Outreach and Education

One of the most important ways to prepare a community for wildfire is to educate them on the risk and teach them how they can prepare for the worst. Therefore, we recommend employing a community outreach and education officer. This person will be responsible for building strong local connections in



the community and providing outreach and education surrounding wildfire. This includes fire safety presentation/workshops, speaking with children and community groups, updating websites and staying connected on social media. This individual will also bolster the coordination with County OES for the use of SMC Alerts during emergency incidents and ensure that a fire information officer is readily available in the county.

<b>WUI Risk Reduction Program</b>			
<b>Personnel</b>	<b>Position</b>	<b>FTE</b>	<b>Equipment/Training</b>
WUI Fuel Reduction Operations Coordinator (Forestry Assistant)	Permanent	1.0	(1) WUI Fuel Reduction Operations Coordinator Vehicle
WUI Community Outreach and Education (Information Officer II)	Permanent	1.0	(1) WUI Community Outreach and Education Officer
WUI Building Code and Planning Officer (Fire Captain)	Permanent	1.0	(1) WUI Fire Prevention Building Code and Planning Officer Vehicle
Vegetation Management Project Supervisor	7-month seasonal	-	(1) Type VI Vehicle-Crew Pickup and miscellaneous tools.
Vegetation Management Firefighters	7-month seasonal	-	

- Work collaboratively with San Mateo County Fire Chiefs Association on Standardize Wildfire Evacuation Zone Polygon project.** Presently there is no evacuation standardization in San Mateo County. When a large wildfire breaks out, fire and law enforcement commanders must physically look at a map and determine the areas that need evacuation. This becomes challenging to explain to residents and responders as it usually involves multiple roads and areas. Following the lead of other Bay Area counties, this project will be contracted to a specialized company with scientific expertise in evacuation zone development and will include collaboration with fire and police chiefs and will be informed by topography, evacuation route capacity, population density, and political boundaries. The zones would be created by the hired scientist and will be validated with each individual fire and law enforcement agency in San Mateo county to create a standard set of evacuation zones. Fire agencies will be able to populate a pre-plan worksheet for each evacuation zone with pre-determined resource requests, known vulnerable populations and target hazards. These zones will be available for use by OES for evacuation notification, PSC for information sharing with the public, and fire crews (on the Tablet Command system) and law enforcement agencies. These zones will reduce confusion, ensure common verbiage and reduce radio traffic. The final product will include digital polygons as well as hard copy printed maps (binder size) and wall maps.





- **Actively participate in San Mateo County FireSafe Council.** Currently, SMCDF staff is working closely with San Mateo FireSafe Council and the Resource Conservation District (RCD) to ensure cross-jurisdictional vegetation management project coordination and wildfire prevention efforts.
- **Participate in the county-led Fire Risk Strategy Team.** SMCDF is participating in the county-led Fire Risk Strategy Team (FRST), a group of stakeholders looking into the overall fire risk in San Mateo County with the intent of potential strategy recommendations. Utilize this team to apply for state and federal grant funding earmarked for wildfire risk reduction.
- **Enhance the County Fire Weed Abatement Program.** Ensure an annual weed abatement ordinance is signed, properties are inspected and follow up occurs. Explore additional requirement of the program and a reporting mechanism is established.
- **Create, publish and distribute evacuation plans/maps for high fire risk areas of the county.** Continue to develop emergency evacuation plans for the high fire threat areas of the county, specifically ensuring that the most vulnerable populations receive them.
- **Work collaboratively to explore the deployment of early detection cameras in remote areas.** Explore the feasibility of installation of a network of strategically placed state-of-the art Pan-Tilt-Zoom (PTZ) fire cameras and associated tools for early fire detection in the highest fire risk areas of the county. Over 40 of these cameras have already been installed throughout the state as a part of the ALERTWildfire system, and have been instrumental in helping firefighters: (1) discover/locate/confirm fire ignition, (2) quickly scale fire resource requests, (3) monitor fire behavior through containment, (4) during fire storm, help evacuations through enhanced situational awareness, and (5) ensure contained fires are monitored appropriately through their demise. These 360-degree cameras can see 5,000 square miles during the day and more than 11,000 square miles at night using its near-infrared capabilities. The ALERTWildfire system is a consortium of universities, including Scripps Institution of Oceanography at UC San Diego, Sonoma State University and Oregon State University. There are over 40 cameras in clusters throughout California with the latest cluster being installed in Sonoma County after the damaging 2017 north bay fires. These cameras will send location data to dispatch centers and enable firefighters to see what is happening as they respond. The system will also link to the EDSMT to provide first responders with a model of predicted fire behavior as well as recommended evacuations. These cameras would be available for viewing on the public wildfire evacuation map.
- **Conduct wildfire safety townhall meetings annually.** Due to the current increased level of concern about wildfires, we believe an annual wildfire safety townhall in each County Supervisor's district would be a good way to bring all stakeholders together to discuss prevention, preparedness and evacuation.



- **Offer subject matter expertise on any update to the Safety Element of the General Plan to ensure additional focus on fire hazard planning.** Explore applying for a state grant to update the fire section of the Safety Element with focus on the following areas:
  - Identify and adopt the latest fire hazard severity zones in the County
  - Develop goals and policies that minimize new residential development in VHFHSZ's
  - Keep essential public facilities outside high fire risk areas
  - Plans for identifying and mitigating existing non-conforming development to contemporary fire safe standards and road standards
  - Re-evaluation of policies after a large fire
  - Fuel modification requirements around new homes and subdivisions
  - Fire protection plan requirements for new development
  - Long term maintenance of fire hazard reduction projects
  - Adequate ingress/egress to new development
  - Minimum standards for evacuation of residential areas in high fire hazard zones
  - Policies and programs to promote public outreach about defensible space and evacuation routes
  - Identification of future water supply for fire suppression needs
  - Adequate fire protection for new development
  - Adequate infrastructure for new development
  - Future emergency service needs
  - Outline of inter-agency preparedness coordination and mutual aid agreements
  
- **Assist in attaining a local ordinance certification that meets or exceeds the SRA Fire Safe Regulations for new development in high fire areas.** Develop Fire Safe Regulations for San Mateo County that exceed the SRA Fire Safe Regulations and attain certification by the California Board of Forestry and Fire Protection.
  
- **Explore the feasibility of establishing a 14-person WUI handcrew for fuel reduction and wildfire response.** Firefighting hand crews are a valuable and important resource for vegetation management and fire suppression across California. Traditionally, this work has been performed by California Department of Corrections and Rehabilitation (CDCR) inmates, supervised by CAL FIRE employees. Due to the increased focus on fuel reduction state-wide these crews have become a limited resource and are stretched thin. Locally, this results in higher costs and longer projects. To overcome this issue, we recommend exploring the feasibility of establishing a 14-person WUI handcrew, like the Marin County Fire Department 'Mt. Tam Crew'. This crew will require additional staff, crew transport vehicles, and housing. It is worth exploring potential collaboration with other local agency land owners on potential collaboration. This crew will be a highly valuable workforce for FireSafe fuel reduction work and for responding to fires within the county.



- **Coordinate with San Mateo County FireSafe Council to update local fire prevention literature and resources.** Work to get fire prevention and preparedness information as locally-based as possible. This includes short social media videos, mailers and roadside signs.



# FIRE MARSHAL, PREVENTION, AND PLANNING

## BACKGROUND

San Mateo County Fire Department has a comprehensive fire marshal, fire prevention and planning office program which combines pre-fire structural fire prevention and wildland fire safety programs. The primary mission of the office is minimizing the threat of fire across the unincorporated areas of the county. Under the authority of the California Office of the State Fire Marshal (OSFM) the SMCDF Fire Chief or authorized representative has the authority to enforce building standards for fire and public safety adopted by the OSFM. This is accomplished through a variety of methods, including:

- Fire Code development (CFC), review and enforcement
- Structural plan reviews (fire) for all construction in the unincorporated areas
- Residential Fire Sprinkler inspections
- Title 19 Mandatory Fire Inspections
- Representative at San Mateo FireSafe Council
- SRA Fire Safe Regulations (PRC 4290) for all properties in the wildland areas
- Defensible Space inspections (PRC 4291) around all structures in the wildland areas
- Weed abatement program
- Water supply flow testing
- Public outreach and education
- Special projects/event fire permits

## CALIFORNIA FIRE CODE

The California Building Standards Code is the building code standard for all of California, a part of Title 24 of the California Code of Regulations. These codes, under the control of the California Building Standards Commission are based on national model codes that are adapted to meet the specific needs of California. Part 9 of the California Building Code is the California Fire Code, which is based on the International Fire Code. New editions of the code are published every three years and require adoption (by ordinance) by local jurisdiction with any local changes that the fire marshal deems necessary.

## RESIDENTIAL FIRE SPRINKLERS

As a part of the 2019 California Building Standards Code adoption, and beginning in January of 2011, residential sprinklers are now required in all new one, and two, family dwelling and townhouse construction statewide. This was a major change as prior to 2011 sprinklers were only required for large commercial and office buildings. These residential fire sprinkler requirements are vital for enabling occupants to evacuate a burning building by keeping fires small. These sprinkler systems must be documented on all construction building plans submitted to the County building department for review by the SMCDF Fire Marshal's office.

## TITLE 19 MANDATORY INSPECTIONS

There are several building occupancy types that require mandatory fire inspections:



- Public and private schools are required to be inspected annually
- Local jails are required to be inspected every two years
- Hotels, motels and apartments are required to be inspected annually
- High-rise buildings are required to be inspected annually

#### VERY HIGH FIRE HAZARD SEVERITY ZONES (VHFHSZ)

Because of the Oakland Hills Fire (Tunnel Fire) in 1991, the Bates Bill (337) was passed in 1992 requiring CAL FIRE to work with local governments to identify High Fire Hazard Severity Zones within Local Responsibility Areas throughout each county in the state. Over the years CAL FIRE has updated the maps and provided new recommendations to local governments. CAL FIRE publishes two different maps for each county; One map shows all the Fire Hazard Severity Zones in the SRA and the other is a recommended map for LRA lands. Since most of the unincorporated land in San Mateo County is in the SRA, additional fire safe construction is automatically required. These maps are currently being updated at the state-level; a new version for San Mateo County is anticipated in the coming years.

#### CHAPTER 7A of CALIFORNIA BUILDING CODE

For all new construction in any fire hazard severity zone within the SRA or any WUI area of the LRA, Chapter 7A of the California Building Code must be applied. This is a minimum standard for protection of life and property by increasing the building material requirements to resist the intrusion of flame or embers projected by a vegetation fire. In San Mateo County, almost all new construction is required to meet the Chapter 7A requirements for fire resistant exterior building materials.

#### FIRESAFE COUNCIL

SMCFD and CAL FIRE are active participants in the San Mateo County Fire Safe Council. Growing out of an initiative by local fire chiefs, the council has expanded into a regional wildfire hazard reduction organization. Since fire knows no boundaries, Fire Safe is an important mechanism for agencies and governments to meet and work holistically on vegetation management, defensible space, fire education and fuel reduction.

#### SRA FIRESAFE REGULATIONS (PRC 4290)

CAL FIRE uses the term “firesafe” to describe measures that can be taken to protect homes and developments from wildfire. The California Public Resource Code (PRC 4290) requires that each county in California meet the state SRA Firesafe regulations (or adopt more restrictive requirements) for all new development in the SRA. These regulations, commonly referred to as the “SRA Firesafe Regulations”, include standards for road and driveway widths, building materials, water supplies and addressing.

#### DEFENSIBLE SPACE INSPECTIONS (PRC 4291)

CAL FIRE inspects all properties in the SRA of San Mateo County under the authority of PRC 4291, Clearance Around Structures. This code requires anyone who owns, leases, controls, operates, or maintains any building or structure in the SRA to maintain 100’ clearance of defensible space and includes removal of debris from the roof and clearance around chimneys. CAL FIRE conducts these inspections using digital mobile devices and maintains a robust, map-driven database of compliant and non-compliant properties.



## PUBLIC OUTREACH AND EDUCATION

Providing the public with information about fire prevention has been validated to be an effective method for reducing the number of fires and other common emergencies. This includes targeted fire prevention messaging to children, the elderly and other vulnerable populations. Public education is typically done at the engine-company level, through formal class instruction, school presentations and CPR classes. Additional initiatives include highway prevention signage and online prevention information.

## RURAL WATER SUPPLY

As with many counties in California, rapid growth in the unincorporated areas of San Mateo County began before the necessary infrastructure could be established. This impacts firefighters' ability to access (road standards) certain parts of the county, as well as the water supplies available for fighting fires. Some community water systems exist in the unincorporated areas. Except for The Highlands, most of these systems are inadequate either regarding available fire flows or fire hydrant distribution. Additionally, a vast area of the county has no community water system at all. In these areas, private wells and storage tanks provide the only available water supply.

## CURRENT CHALLENGES

- An increasing number of plan reviews
- New legislative requirements for fire inspection reporting
- New technology requirements for plan reviews
- Heightened concern about overgrown vegetation in neighborhoods
- Public expectation for timely and accurate information

## RECOMMENDATIONS

- **Hire a consultant to update fire marshal policies and procedures.** Due to the increased focus on state-mandated fire inspections, as well as an upcoming local fire code update/adoption, we recommend SMCFD hire a consultant to streamline and standardize the fire marshal office's processes and procedures.
- **Update occupancy database for inspection tracking.** To ensure reporting and inspection compliance of all occupancies within the jurisdiction, we recommend hiring an outside contractor to review San Mateo County Tax Assessor Office records to update the occupancy database. This information will be the foundation for ensuring all state-mandated fire inspections are being conducted, and eventually reported back to the Board of Supervisors, pursuant to Section 13146.4 of the Health and Safety Code.
- **Utilize an online platform for plan reviews.** San Mateo County is currently transitioning to an online submittal system of construction plans. SMCFD will be purchasing hardware and completing training to meet this new requirement, enabling fire comments to be completed electronically.
- **Implement a cloud-based mobile fire inspection and record system.** With the recent required reporting changes for Title 19 fire inspections, SMCFD will be implementing a cloud-based fire inspection and reporting system.





- **Upgrade a part-time office technician position to a part-time Staff Service Analyst to address Title 19 fire inspection reporting requirements.** SMCFD plans to add administrative staff to the department, restoring cuts that were made during the great recession. SMCFD needs additional administrative support, specifically to assist with the increased fire inspection and planning requirements.
- **Train and utilize Fire Marshal office staff for on-call fire investigations.** Bolster the fire investigation capacity of the department by training all staff assigned to the Fire Marshal's office in origin and cause determination as well as arson investigation.



# FIRE STATIONS AND FACILITIES

## BACKGROUND

### FIRE STATIONS

SMCFD has five strategically located fire stations in the unincorporated areas of San Mateo County, they are: San Mateo Highlands (Fire Station 17), Cordilleras (Fire Station 18), Skylonda (Fire Station 58), Pescadero (Fire Station 59), and Loma Mar (Volunteer Fire Station 55). SMCFD staffs four Type-1 Structural Fire Engines and one Ladder Truck with three professionally trained firefighters. One of these three firefighters is a licensed Paramedic.



#### Highlands Fire Station 17

(Paid Professional Career Staff)

320 Paul Scannell Dr., San Mateo, CA 94402



#### Cordilleras Fire Station 18

(Paid Professional Career Staff)

300 Edmonds Rd., Redwood City, CA 94602



#### Loma Mar Fire Station 55

(Volunteer Firefighters)

8870 Pescadero Creek Rd., Loma Mar, CA 94060



#### Skylonda Fire Station 58

(Paid Professional Career Staff)

17290 Skyline Blvd., Woodside, CA 94062



#### Pescadero Fire Station 59

(Paid Professional Career Staff)

1200 Pescadero Creek Rd., Pescadero, 94060



## CURRENT CHALLENGES

- Outgrown the aging Highlands Fire Station 17, requiring replacement
- Continue to contend with flooding at Pescadero Fire Station 59, working on replacement
- Lack of adequate fire training facility
- Lack of department operations center (DOC), needed for larger fires/disasters
- Lack of security measures at most facilities
- Lack of exposure reduction and decontamination systems at each fire station

## RECOMMENDATIONS

- **Explore the feasibility of replacing Highlands Fire Station 17.** Multiple issues exist at Fire Station 17 (FS 17), located in the San Mateo Highlands, requiring replacement of the facility. Station 17 (built in 1953) serves multiple functions, including serving as San Mateo County Fire Department administrative headquarters, office of the fire marshal, training division, as well as housing a county fire engine and ladder truck, a state-funded fire engine, and a state-funded bulldozer. The facility also serves as the department operations center during large disasters or fires in the county. With lack of space at the facility, SMCFD has recently been forced to move administrative and training staff to other locations in the county. Due to the critical role this facility plays and due to the current condition of the facility we recommend exploring the use of a significant amount of county fire and CSA#1 fund reserves to begin the process of establishing a feasibility plan to replace the station, in conjunction with the County's Project Development Unit (PDU).

Identified issues with the station include:

- Asbestos throughout the structure
- Lack of adequate bed space for peak staffing
- Unable to staff additional resources during critical fire weather (red flags)
- Lack of bathrooms
- Inadequate kitchen facilities
- Inadequate dining area
- Lack of office space for command, control and support staff
- Inadequate security
- Plumbing failures are common
- Electrical system is at capacity
- Fire apparatus parked outside due to lack of garage space
- Flooding inside station

During the replacement process, we recommend incorporating and maintaining a training center facility to serve as a regional fire service resource. This is important to ensuring firefighters remain well trained for a variety of emergencies, vital to providing superior service. Currently, all tactical "hands on" training is conducted at Half Moon Bay Fire Station 40. This requires engines from San Mateo County Fire to go "out of service" as they train on the coast. Traffic routinely slows fire companies returning



from training as they transit over Highway 92. This is not an ideal location for such vital training and the reason we strongly recommend building and maintaining a County Fire training center at Fire Station 17 on Paul Scannell Drive. This regionally available center is critical to keep County Fire crews local for emergencies, as well a place for the volunteer fire companies to practice their firefighting skills.

- **Fire Station 59 upgrades and enhancements.** Perform some minor upgrades to Pescadero Fire Station 59 as they await the new fire station. Items to be added are primarily cosmetic and will ensure the station is livable for several more years. The following projects have been identified:
  - New carpeting throughout the living areas
  - New flooring in the kitchen and dining areas
  - Minor bathroom remodel
  - Fix concrete apron in front of apparatus bays
  - Fix fencing around the living quarters
  
- **Conduct a facility security assessment at all County Fire facilities and implement recommendations.** Ensure that adequate security is in place to keep potentially violent individuals out of firefighter living areas.
  
- **Fire Station 55 upgrades and enhancements.** Perform a minor remodel and upgrade to Loma Mar Volunteer Fire Station 55. Items to be added are primarily for exposure reduction and increased safety. The following additions to the station are necessary:
  - Vehicle exhaust ventilation system
  - Apparatus bay heaters
  - Automatic rollup apparatus bay doors
  - Expanded training and sitting area
  - Installation of a shower
  - Interior shelving and storage area
  - Turnout storage
  - Replace dispatch station alerting system
  
- **Explore a location for a Department Operations Center (DOC).** When a large incident breaks out a DOC is necessary to coordinate the incident command, resources, logistics and media inquiries. Currently, these activities are coordinated from the back of a pickup truck at the incident. The department needs a secure, centralized room with reliable telecommunications to maintain command and control of large incidents. Ideally, this DOC will be a part of the Fire Station 17 replacement project.



## VOLUNTEER FIRE COMPANIES

### BACKGROUND

Volunteer firefighters are essential in providing first response services in several remote areas of the county. SMCFD has one volunteer fire company (Company 55), located in the community of Loma Mar. Additionally, SMCFD supports two independent volunteer fire companies in the communities of Kings Mountain (Company 56) and La Honda (Company 57). These two companies have strong community support and are important local organizations. Due to increased training, fitness, and time requirements, recruitment and retention of volunteers is challenging.



Photo 16 Loma Mar Volunteer Firefighters practice medical skills.

### CURRENT CHALLENGES

- Recruitment and retention of volunteer firefighters
- Increased training requirements

### RECOMMENDATIONS

- **Continue to improve administrative support and training for volunteer fire brigades.** Ensure that the two independent fire companies are provided with administrative support and assistance with training.
- **Develop and implement a volunteer firefighter recruitment and retention campaign for Loma Mar Company 55.** Identify ways to attract and retain new volunteer firefighters in the Loma Mar area. Explore mechanisms and best practices for recruiting new volunteers.
- **Meet twice annually or as needed with volunteer fire chief's (VFC) to ensure they are being sufficiently supported.** The intent of this meeting will be for the volunteer fire chiefs to have an opportunity to meet with SMCFD Chiefs to address any issues/ideas/concerns/needs.
- **Develop and implement a Volunteer Handbook.** Create a document with a variety of topics for use by SMCFD and volunteer companies.



## TRAINING DIVISION

### BACKGROUND

The SMCFD training division is a dedicated team that is responsible for coordinating and administering fire service training to all the members in the department. This includes online training, company drills, multiple-company drills, EMS training, and a variety of other classes. In 2018 SMCFD spent 7,932 hours training. Due to the risks involved with firefighting, training is the single most important activity to prepare for a variety of different situations.

### CURRENT CHALLENGES

- Increased training requirements
- Limited training facilities
- New technology
- Age and condition of many training tools and devices



Photo 17 Firefighters training on ladders

### RECOMMENDATIONS

- **Establish and implement an expedited paramedic accreditation program for County Fire paramedics.** When new firefighter paramedics report for duty in San Mateo County, they are required to complete a rigorous paramedic accreditation program, known as the “five call”. The new paramedic must have patient contact with at least five patients suffering from a variety of issues. While SMCFD responds to several trauma incidents throughout the rural parts of the County, many medical call types are not experienced frequently by new paramedics. This results in a lengthy process for getting a new paramedic “accredited” in San Mateo County. To solve this problem, we recommend establishing and maintaining an expedited paramedic accreditation program, enabling newly hired paramedics the opportunity to get more patient contact in a shorter amount of time.
- **Continue to standardize training procedures with Coastside Fire Protection District.** Work collaboratively with Coastside Fire Protection District on specialized training standardization related to ladder truck and rescue operations.
- **Update the truck qualification policy for the firefighter, operator and officer ranks.** With the requested fourth firefighter assigned to Truck 17, SMCFD plans to update the truck qualification policy for all ranks. This will include training and requirements for firefighters not normally assigned to the truck.
- **Support employees in attaining professional certifications.** Utilize the employee’s annual development plans to support them in attaining professional certifications.





## COMMUNITY OUTREACH, EDUCATION AND COMMUNICATIONS PROGRAM

### BACKGROUND

Community outreach, education and communications program is an essential component of SMCFD. This includes the CERT program, community CPR program, fire station tours, school visits, speaking engagements, disaster presentations, and a variety of other community events.

### CURRENT CHALLENGES

- Increased demand for real-time information
- Increased requests for information about wildfire prevention
- Limited fire prevention messaging in the unincorporated areas of the county

### RECOMMENDATIONS

- **Continue to expand the San Mateo County Fire Department website.** SMCFD plans to use the [cfsfire.org](http://cfsfire.org) website as the central point of department information. Expansion of resources for the community will include news releases and monthly call data. The website will also get an internal staff component, allowing documents to be centralized between stations. Additions to the website should include maps, relevant plans, news release signup, prevention resources, feedback, and burn permit information.
- **Complete fire apparatus re-branding with new San Mateo County Fire logo.** With the recent adoption of a new SMCFD logo, a plan is being developed for replacement of all old logos including fire station signs, apparatus, website, business cards and letter head.
- **Host an open house annually at fire stations 17, 58 and 59.** Invite the community to meet their local firefighters, tour the fire station, get up-close with fire apparatus and learn about fire safety during an annual open house.
- **Install a bicycle safety and repair station at Fire Station 58 Skylonda.** Provide a safe area off the roadway where cyclists can repair their bicycles.
- **Offer fire safety presentations and classes to interested community groups or schools.** Continue to offer insights and information to any interested community group about fire safety.
- **Establish San Mateo County Fire Social Media accounts and keep them active.** With the increased use of social media, SMCFD plans on establishing and updating social media accounts to connect with



Photo 18 Firefighters teaches a kid about fire safety.



the public and disseminate incident information. Additionally, create safety videos and graphics for use on social media.

- **Create a paramedic recruitment outreach campaign to attract local candidates.** Coordinate with local paramedic schools to gain access to potential paramedic candidates through presentations about SMCFD and CAL FIRE. Have applications and informational materials available for the students along with current firefighters to answer questions.
- **Establish a feedback survey on the SMCFD website.** Ensure that all members of the public are given the opportunity to leave feedback about the service they receive.
- **Develop and implement an employee recognition program.** As a part of the initiative to ensure employee recruitment and retention, SMCFD plans to develop an employee recognition program. Ideally, identified employees would be recognized for their efforts by the board of supervisors.
- **Restore antique fire engines for use in public safety events.** Currently, SMCFD houses two antique fire engines. Restoration of these apparatus will enable firefighters to use them for fire prevention presentation and activities.
- **Establish a child car seat inspection program at Fire Stations 17, 58 and 59.** Provide the community with an additional safety-related service by initiating a child car seat inspection program. This will require firefighters to attend specialized training to allow them to inspect car seats for proper installation.



## PERFORMANCE METRICS AND REPORTING

By March 1<sup>st</sup> of each year, upon adoption of this plan, SMCFD will provide the San Mateo County Manager's Office an annual report with a summary of the following information:

- Detailed update on each implementation measure outlined in this plan
- Customer service feedback
- Fire prevention activities
- Fire inspection activities
- Total breakdown of call types and response times
- Update on WUI risk reduction measures



## SIX YEAR PLAN (BY Fiscal Year)

### IMPLEMENTATION MATRIX

Implementation Measures		FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	Estimated One Time Costs	Estimated Ongoing Annual Costs
<b>1.0</b>	<b>FIRE SUPPRESSION OPERATIONS AND RESPONSE</b>								
<b>1.1</b>	Increase Personal Protective Equipment (PPE) safety equipment budget to reduce exposure to cancer causing particulates.	X						\$150,000	\$0
<b>1.2</b>	Convert the Heavy Equipment Mechanic position to a .5 FTE Operations Battalion Chief.	X						\$0	\$60,000
<b>1.3</b>	Upgrade two Fire Apparatus Engineer positions to Fire Captain positions to ensure all shifts are staffed with a company supervisor.	X						\$0	\$40,000
<b>1.4</b>	Hire additional firefighters to increase ladder truck staffing (to 4-person staffing) to meet national and local fire service standards (3 FTE positions: 2 FAE, 1 FAE-P) and reduce overtime costs.	X						\$8,000	\$551,820
<b>1.5</b>	Upgrade cellular-based mobile wireless networks and mobile incident command tablets on fire apparatus.	X						\$100,000	\$35,000
<b>1.6</b>	Expand the SMCFD's remote area suppression and response program (RASR).		X					\$10,000	\$3,000
<b>1.7</b>	Purchase an additional backup set Advanced Life Support paramedic first aid equipment.		X					\$50,000	\$1,000
<b>1.8</b>	Assist San Mateo County Public Safety Communications (PSC) with a CAD-to-CAD software solution, linking PSC with CAL FIRE's regional command center.		X					\$100,000	\$3,000
<b>1.9</b>	Increase staffing on Pescadero Fire Engine 59 (to 4-people) to ensure dual Paramedic coverage and to meet National Fire Protection 1500. (3 FTE firefighter/paramedic positions) and reduce overtime costs.		X					\$10,000	\$603,500
<b>1.10</b>	Explore the feasibility of establishing an ocean rescue program.		X					TBD	TBD



1.11	Explore and implement an analytics software for use in department performance reporting and data-driven decision making.		X						\$0	\$5,000
1.12	Review, digitize, and upload target hazard pre-plans, county water district plans, jurisdictional maps and other valuable information.			X					\$10,000	\$2,000
1.13	Hire two additional Fire Apparatus Engineer-Paramedics to improve quality standards and reduce overtime costs.			X					\$6,000	\$403,000
1.14	Explore and implement the use of landing zone web-cams and weather stations.				X				\$3,000	\$3,000
1.15	Explore and implement an unmanned aerial vehicle program for use during emergency response.				X				\$25,000	\$5,000
1.16	Explore and implement changes to improve the ISO rating in the rural parts of the county.					X			TBD	TBD
<b>Implementation Measures</b>		<b>FY 19/20</b>	<b>FY 20/21</b>	<b>FY 21/22</b>	<b>FY 22/23</b>	<b>FY 23/24</b>	<b>FY 24/25</b>	<b>Estimated One Time Costs</b>	<b>Estimated Ongoing Annual Costs</b>	
<b>2.0</b>	<b>WILDLAND URBAN INTERFACE (WUI) RISK REDUCTION</b>									
2.1	Implement a WUI Risk Reduction Program.	X							\$350,000	\$1,146,280
2.2	Work collaboratively with San Mateo County Fire Chiefs Association on Standardize Wildfire Evacuation Zone Polygon project.	X							\$0	\$0
2.3	Actively participate in San Mateo County FireSafe Council.	X							\$0	\$0
2.4	Participate in the county-led Fire Risk Strategy Team.	X							\$0	\$0
2.5	Enhance the County Fire Weed Abatement Program.	X							\$0	\$0
2.6	Create, publish and distribute evacuation plans/maps for high fire risk areas of the county.		X						\$10,000	\$0
2.7	Work collaboratively to explore the deployment of early detection cameras in remote areas.		X						\$0	\$5,000



2.8	Conduct wildfire safety townhall meetings annually.		X					\$5,000	\$5,000
2.9	Offer subject matter expertise on any update to the Safety Element of the General Plan to ensure additional focus on fire hazard planning.			X				\$0	\$0
2.10	Assist in attaining a local ordinance certification that meets or exceeds the SRA Fire Safe Regulations for new development in high fire areas.			X				\$0	\$0
2.11	Explore the feasibility of establishing a 14-person WUI hand crew for fuel reduction and wildfire response.			X				TBD	TBD
2.12	Coordinate with San Mateo County FireSafe Council to update local fire prevention literature and resources.				X			\$0	\$0
<b>Implementation Measures</b>		<b>FY 19/20</b>	<b>FY 20/21</b>	<b>FY 21/22</b>	<b>FY 22/23</b>	<b>FY 23/24</b>	<b>FY 24/25</b>	<b>Estimated One Time Costs</b>	<b>Estimated Ongoing Annual Costs</b>
<b>3.0</b>	<b>FIRE MARSHAL, PREVENTION, AND PLANNING</b>								
3.1	Hire a consultant to update fire marshal policies and procedures.	X						\$15,000	\$0
3.2	Update occupancy database for inspection tracking.	X						\$7,500	\$0
3.3	Utilize an online platform for plans reviews.		X					\$15,000	\$5,000
3.4	Implement a cloud-based mobile fire inspection and record system.		X					\$4,500	\$3,000
3.5	Upgrade a part-time office technician position to a part-time Staff Service Analyst to address Title 19 fire inspection reporting requirements		X					\$0	\$16,000
3.6	Train and utilize Fire Marshal Office staff for on-call fire investigations.			X				\$20,000	\$10,000
<b>Implementation Measures</b>		<b>FY 19/20</b>	<b>FY 20/21</b>	<b>FY 21/22</b>	<b>FY 22/23</b>	<b>FY 23/24</b>	<b>FY 24/25</b>	<b>Estimated One Time Costs</b>	<b>Estimated Ongoing Annual Costs</b>
<b>4.0</b>	<b>FIRE STATIONS AND FACILITIES</b>								
4.1	Explore the feasibility of replacing Highlands Fire Station 17.	X						\$150,000	\$0
4.2	Fire Station 59 upgrades and enhancements.	X						\$225,000	\$0





4.3	Conduct a facility security assessment at all County Fire facilities and implement recommendations.		X					\$50,000	\$0
4.4	Fire Station 55 upgrades and enhancements.		X					\$225,000	\$0
4.5	Explore a location for a Department Operations Center (DOC).			X				\$0	\$0
<b>Implementation Measures</b>		<b>FY 19/20</b>	<b>FY 20/21</b>	<b>FY 21/22</b>	<b>FY 22/23</b>	<b>FY 23/24</b>	<b>FY 24/25</b>	<b>Estimated One Time Costs</b>	<b>Estimated Ongoing Annual Costs</b>
<b>5.0</b>	<b>VOLUNTEER FIRE COMPANIES</b>								
5.1	Continue to improve administrative support and training for volunteer fire brigades.	X						\$0	\$0
5.2	Develop and implement a volunteer firefighter recruitment and retention campaign for Loma Mar Company 55.		X					\$15,000	\$3,000
5.3	Meet twice annually with volunteer fire chief's (VFC) to ensure they are being sufficiently supported	X						\$0	\$0
5.4	Develop and implement a Volunteer Handbook.		X					\$2,000	\$0
<b>Implementation Measures</b>		<b>FY 19/20</b>	<b>FY 20/21</b>	<b>FY 21/22</b>	<b>FY 22/23</b>	<b>FY 23/24</b>	<b>FY 24/25</b>	<b>Estimated One Time Costs</b>	<b>Estimated Ongoing Annual Costs</b>
<b>6.0</b>	<b>TRAINING DIVISION</b>								
6.1	Establish and implement an expedited paramedic accreditation program for County Fire paramedics.	X						\$5,000	\$5,000
6.2	Continue to standardize training procedures with Coastside Fire District.		X					\$0	\$0
6.3	Update the truck qualification policy for the firefighter, operator and officer ranks.			X				\$0	\$0
6.4	Support employees in attaining professional certifications.				X			\$0	\$10,000
<b>Implementation Measures</b>		<b>FY 19/20</b>	<b>FY 20/21</b>	<b>FY 21/22</b>	<b>FY 22/23</b>	<b>FY 23/24</b>	<b>FY 24/25</b>	<b>Estimated One Time Costs</b>	<b>Estimated Ongoing Annual Costs</b>
<b>7.0</b>	<b>COMMUNITY OUTREACH, EDUCATION AND COMMUNICATIONS PROGRAM</b>								
7.1	Establish a feedback survey on the SMCFD website.	X						\$0	\$0



7.2	Complete fire apparatus re-branding with new San Mateo County Fire logo.		X					\$35,000	\$0
7.3	Continue to expand the San Mateo County Fire Department website.		X					\$2,500	\$2,500
7.4	Host an open house annually at fire stations 17, 58 and 59.			X				\$0	\$6,000
7.5	Install a bicycle safety and repair station at Fire Station 58 Skylonda.			X				\$5,000	\$0
7.6	Offer fire safety presentations and classes to interested community group or school.			X				\$5,000	\$0
7.7	Establish San Mateo County Fire Social Media accounts and keep them active.	X						\$0	\$0
7.8	Create a paramedic recruitment outreach campaign to attract local candidates.		X					\$3,000	\$1,500
7.9	Establish a feedback survey on SMCFD website.		X					\$1,000	\$0
7.10	Develop and implement an employee recognition program.			X				\$5,000	\$5,000
7.11	Restore antique fire engine for use in public events.				X			\$30,000	\$10,000
7.12	Establish a child car seat inspection program at Fire Stations 17, 58 and 59.				X			\$12,000	\$5,000



# APPENDIX



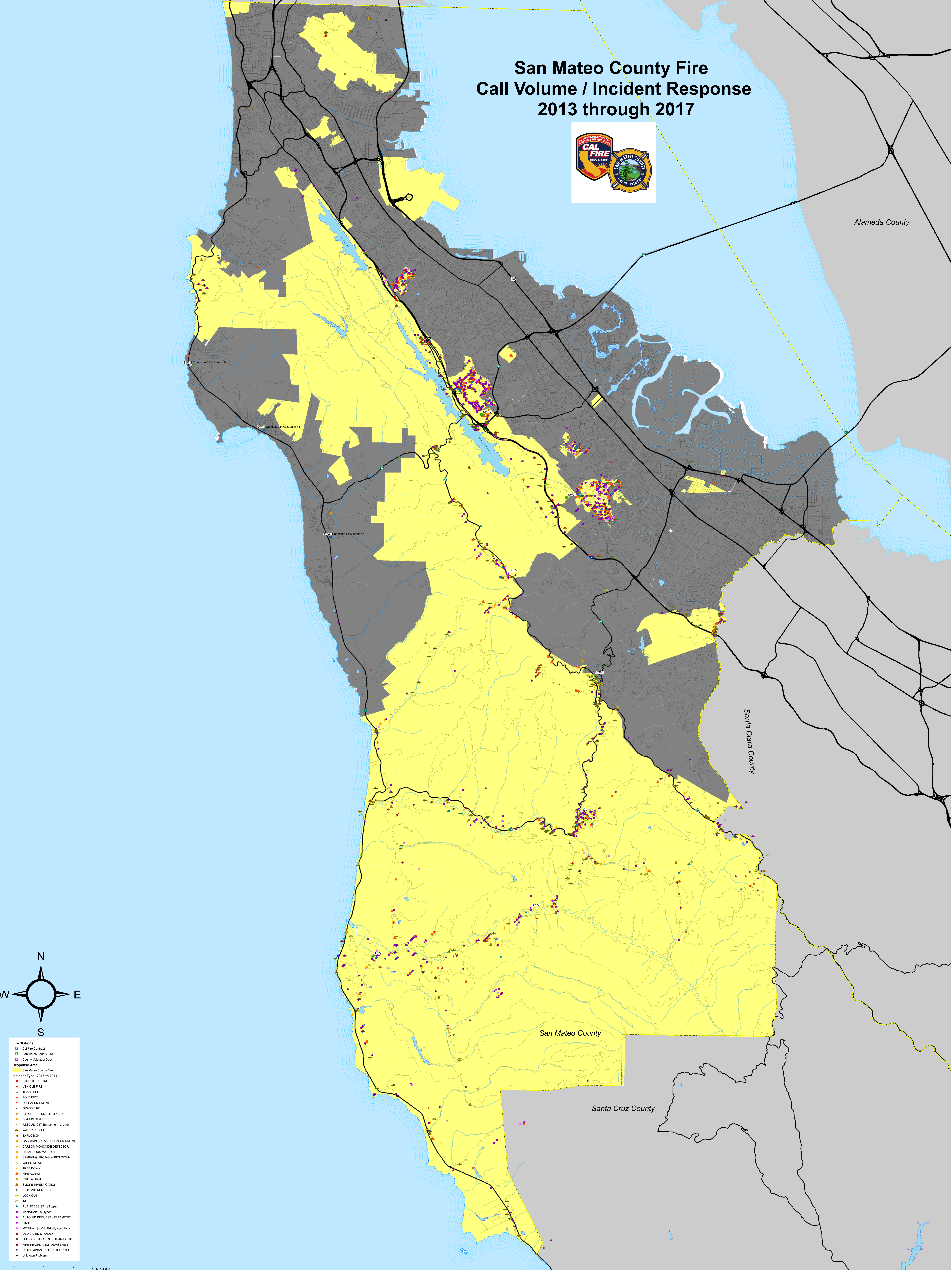
## Appendix A: 2013-2017 Call Volume/Incident Response Map

See next page.





# San Mateo County Fire Call Volume / Incident Response 2013 through 2017

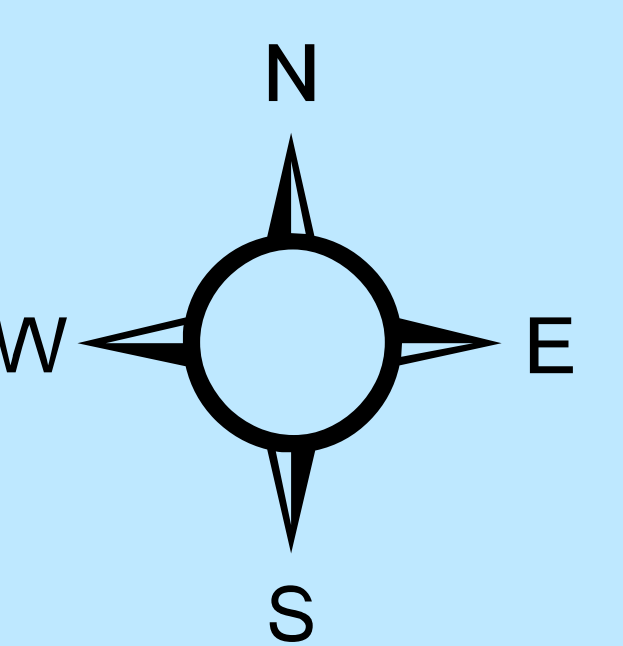


Alameda County

Santa Clara County

San Mateo County

Santa Cruz County



- Fire Stations**
- Cal Fire Contract
  - San Mateo County Fire
  - County Volunteer Dept
- Response Area**
- San Mateo County Fire
- Incident Type: 2013 to 2017**
- STRUCTURE FIRE
  - VEHICLE FIRE
  - TRASH FIRE
  - POLE FIRE
  - FULL ASSIGNMENT
  - GRASS FIRE
  - AIR CRASH - SMALL AIRCRAFT
  - BOAT IN DISTRESS
  - RESCUE - CAR, Entertainment, & other
  - WATER RESCUE
  - EXPLOSION
  - GAS MAIN BREAK FULL ASSIGNMENT
  - CARBON MONOXIDE DETECTOR
  - HAZARDOUS MATERIAL
  - SPARKING/ARCING WIRES DOWN
  - WIRES DOWN
  - TREE DOWN
  - FIRE ALARM
  - STILL ALARM
  - SMOKE INVESTIGATION
  - AUTO AID REQUEST
  - LOCK OUT
  - TIC
  - PUBLIC ASSIST - all types
  - Medical Aid - all types
  - AUTO AID REQUEST - PARAMEDIC
  - Psych
  - MED-NO Injury/No Priority symptoms
  - DEDICATED STANDBY
  - OUT OF CITY STROKE TEAM SOUTH
  - FIRE INFORMATION ADVISEMENT
  - DETERMINANT NOT AUTHORIZED
  - Unknown Problem



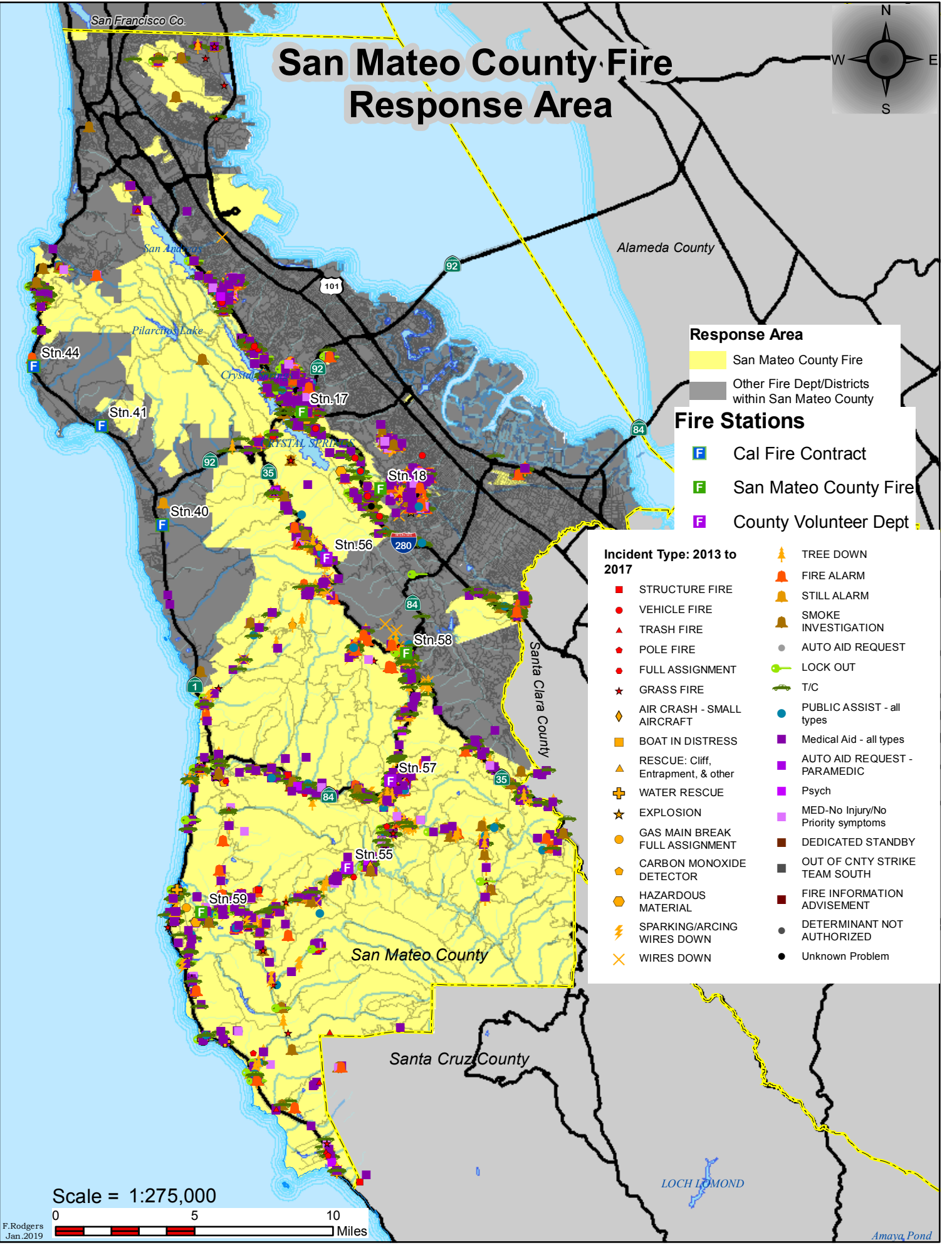
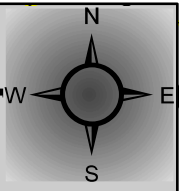
## Appendix B: SMCFD Response Area and Call Type Map

See next page.





# San Mateo County Fire Response Area



**Response Area**

- San Mateo County Fire
- Other Fire Dept/Districts within San Mateo County

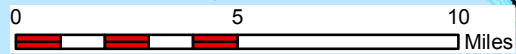
**Fire Stations**

- Cal Fire Contract
- San Mateo County Fire
- County Volunteer Dept

**Incident Type: 2013 to 2017**

■ STRUCTURE FIRE	🌳 TREE DOWN
● VEHICLE FIRE	🚒 FIRE ALARM
▲ TRASH FIRE	🚒 STILL ALARM
● POLE FIRE	👤 SMOKE INVESTIGATION
● FULL ASSIGNMENT	● AUTO AID REQUEST
★ GRASS FIRE	🔑 LOCK OUT
◆ AIR CRASH - SMALL AIRCRAFT	🌿 T/C
■ BOAT IN DISTRESS	● PUBLIC ASSIST - all types
▲ RESCUE: Cliff, Entrapment, & other	■ Medical Aid - all types
⊕ WATER RESCUE	■ AUTO AID REQUEST - PARAMEDIC
★ EXPLOSION	■ Psych
● GAS MAIN BREAK FULL ASSIGNMENT	■ MED-No Injury/No Priority symptoms
● CARBON MONOXIDE DETECTOR	■ DEDICATED STANDBY
● HAZARDOUS MATERIAL	■ OUT OF CNTY STRIKE TEAM SOUTH
⚡ SPARKING/ARCING WIRES DOWN	■ FIRE INFORMATION ADVISEMENT
✂ WIRES DOWN	● DETERMINANT NOT AUTHORIZED
	● Unknown Problem

Scale = 1:275,000



LOCH LOMOND

Amaya Pond

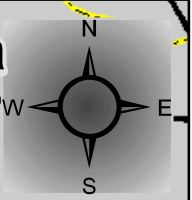
## Appendix C: SMCFD Fire Ignition History Map

See next page.



San Francisco Co.

# San Mateo County Fire Response Area



### Fire Stations

- Cal Fire Contract
- San Mateo County Fire
- County Volunteer Dept

### Fire History CZU

#### Year

- 2010 - 2017
- 2006 - 2009
- 2000-2005
- 1980 - 1989
- 1970 - 1979
- 1960 - 1969
- 1950 - 1959
- 1940-1949
- 1920-1929

### Response Area

- San Mateo County Fire
- Other Fire Dept/Districts within San Mateo County

## Fire ignitions 2000 to 2018 within San Mateo County Fire jurisdiction.

- |  |   |
|--|---|
| <span style="color: orange;">●</span> 2000 | <span style="color: magenta;">●</span> 2009 |
| <span style="color: orange;">●</span> 2001 | <span style="color: magenta;">●</span> 2010 |
| <span style="color: orange;">●</span> 2002 | <span style="color: magenta;">●</span> 2011 |
| <span style="color: orange;">●</span> 2003 | <span style="color: purple;">●</span> 2012  |
| <span style="color: orange;">●</span> 2004 | <span style="color: blue;">●</span> 2013    |
| <span style="color: orange;">●</span> 2005 | <span style="color: blue;">●</span> 2015    |
| <span style="color: orange;">●</span> 2006 | <span style="color: cyan;">●</span> 2016    |
| <span style="color: orange;">●</span> 2007 | <span style="color: cyan;">●</span> 2017    |
| <span style="color: orange;">●</span> 2008 | <span style="color: green;">●</span> 2018   |

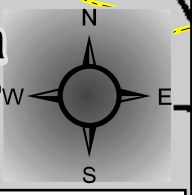


## Appendix D: SMCFD Fire History Map

See next page.



# San Mateo County Fire Response Area



## Fire Stations

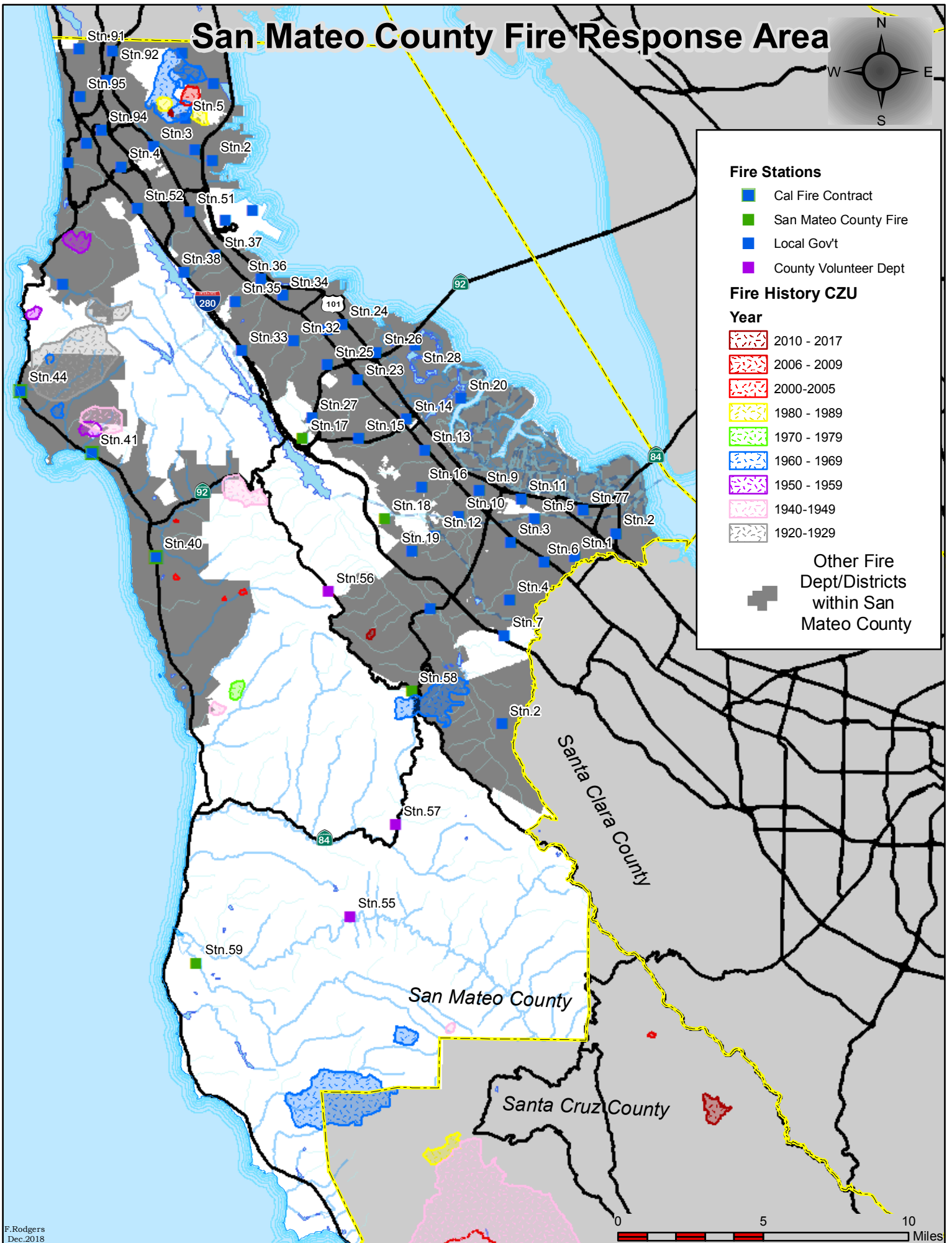
- Cal Fire Contract
- San Mateo County Fire
- Local Gov't
- County Volunteer Dept

## Fire History CZU

### Year

- 2010 - 2017
- 2006 - 2009
- 2000-2005
- 1980 - 1989
- 1970 - 1979
- 1960 - 1969
- 1950 - 1959
- 1940-1949
- 1920-1929

  Other Fire Dept/Districts within San Mateo County



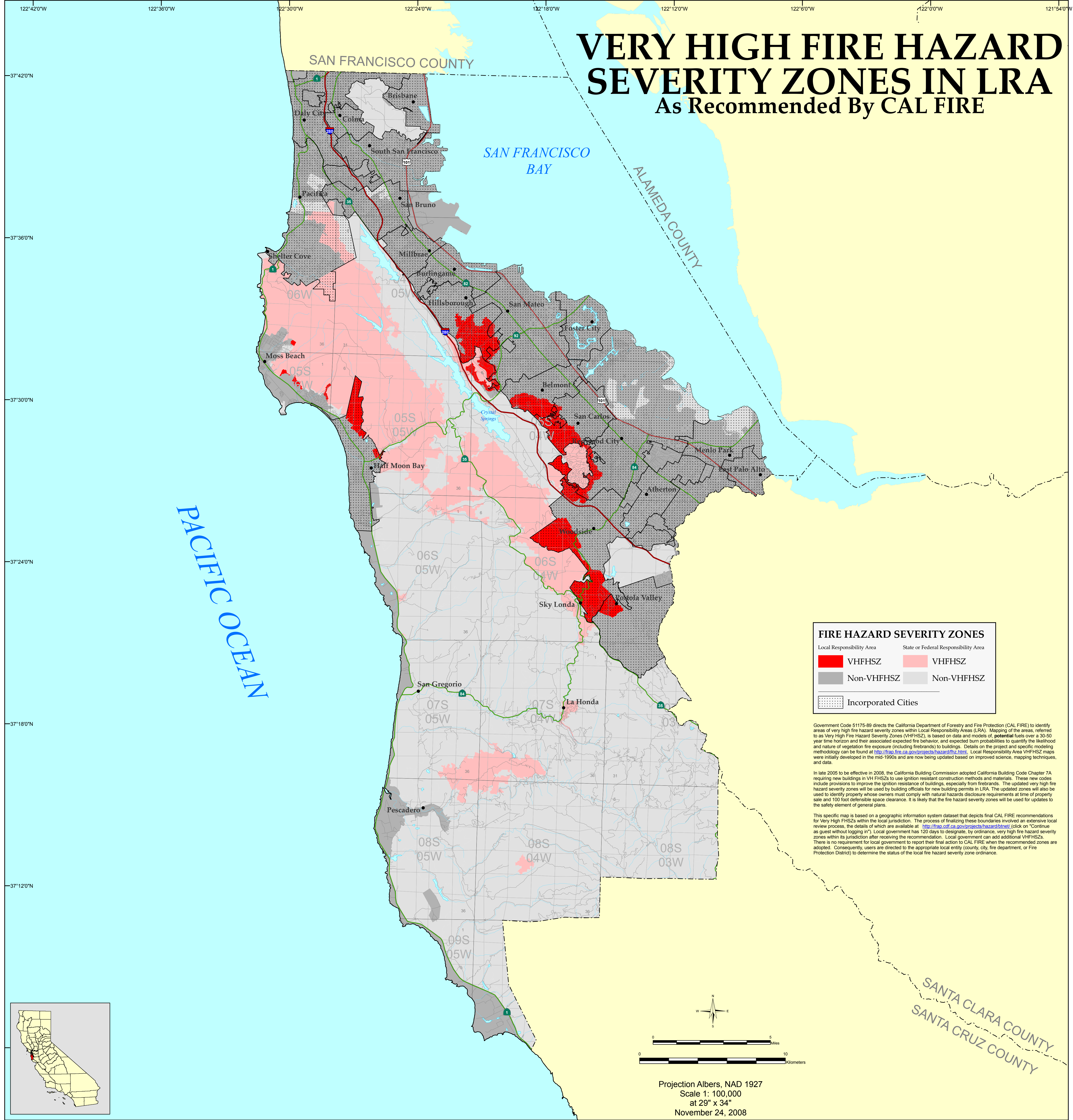
## Appendix E: LRA Very High Fire Hazard Severity Zone Map

See next page.





## VERY HIGH FIRE HAZARD SEVERITY ZONES IN LRA As Recommended By CAL FIRE



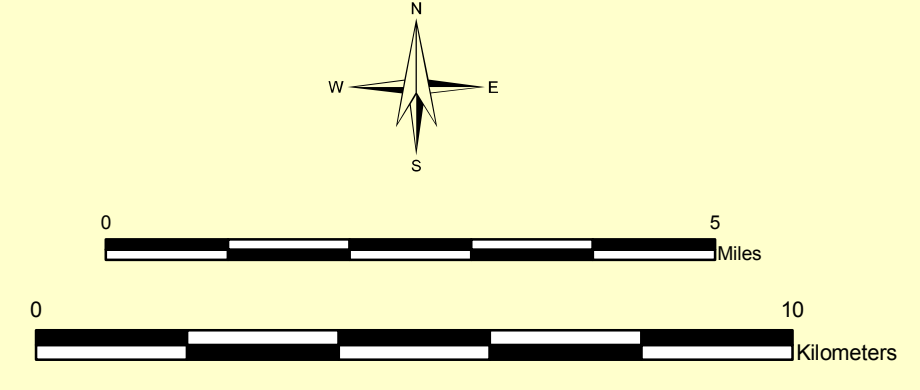
**FIRE HAZARD SEVERITY ZONES**

Local Responsibility Area		State or Federal Responsibility Area	
	VHFHSZ		VHFHSZ
	Non-VHFHSZ		Non-VHFHSZ
	Incorporated Cities		

Government Code 51175-89 directs the California Department of Forestry and Fire Protection (CAL FIRE) to identify areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). Mapping of the areas, referred to as Very High Fire Hazard Severity Zones (VHFHSZ), is based on data and models of potential fuels over a 30-50 year time horizon and their associated expected fire behavior, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure (including firebrands) to buildings. Details on the project and specific modeling methodology can be found at <http://frap.cdf.ca.gov/projects/hazard/frap.html>. Local Responsibility Area VHFHSZ maps were initially developed in the mid-1990s and are now being updated based on improved science, mapping techniques, and data.

In late 2005 to be effective in 2008, the California Building Commission adopted California Building Code Chapter 7A requiring new buildings in VH FHSZs to use ignition resistant construction methods and materials. These new codes include provisions to improve the ignition resistance of buildings, especially from firebrands. The updated very high fire hazard severity zones will be used by building officials for new building permits in LRA. The updated zones will also be used to identify property whose owners must comply with natural hazards disclosure requirements at time of property sale and 100 foot defensible space clearance. It is likely that the fire hazard severity zones will be used for updates to the safety element of general plans.

This specific map is based on a geographic information system dataset that depicts final CAL FIRE recommendations for Very High FHSZs within the local jurisdiction. The process of finalizing these boundaries involved an extensive local review process, the details of which are available at <http://frap.cdf.ca.gov/projects/hazard/frap.html> (click on "Continue as guest without logging in"). Local government has 120 days to designate, by ordinance, very high fire hazard severity zones within its jurisdiction after receiving the recommendation. Local government can add additional VHFHSZs. There is no requirement for local government to report their final action to CAL FIRE when the recommended zones are adopted. Consequently, users are directed to the appropriate local entity (county, city, fire department, or Fire Protection District) to determine the status of the local fire hazard severity zone ordinance.



Projection Albers, NAD 1927  
Scale 1: 100,000  
at 29" x 34"  
November 24, 2008



## Appendix F: SRA Very High Fire Hazard Severity Zone Map

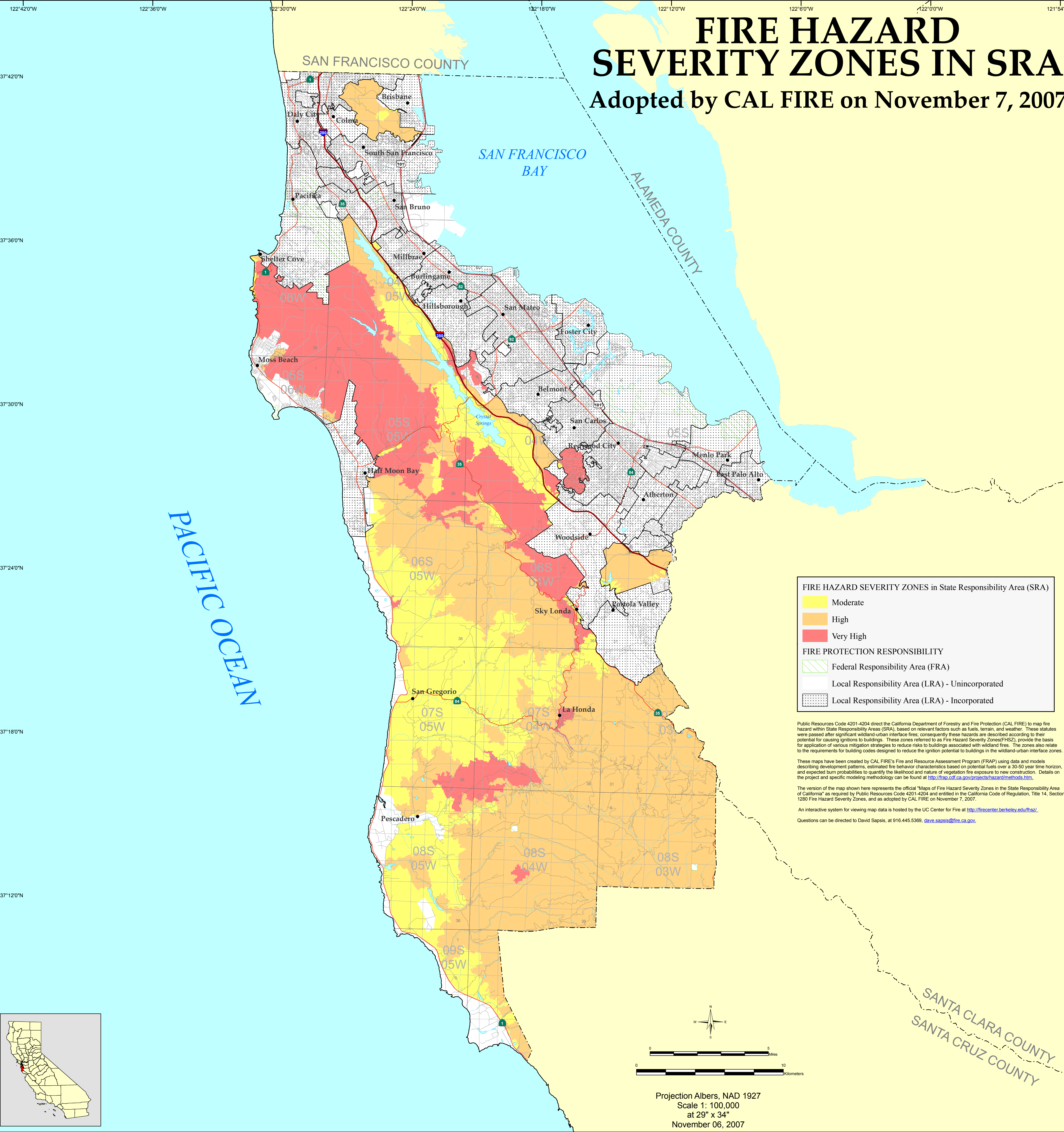
See next page.





## FIRE HAZARD SEVERITY ZONES IN SRA

Adopted by CAL FIRE on November 7, 2007



**FIRE HAZARD SEVERITY ZONES in State Responsibility Area (SRA)**

- Moderate
- High
- Very High

**FIRE PROTECTION RESPONSIBILITY**

- Federal Responsibility Area (FRA)
- Local Responsibility Area (LRA) - Unincorporated
- Local Responsibility Area (LRA) - Incorporated

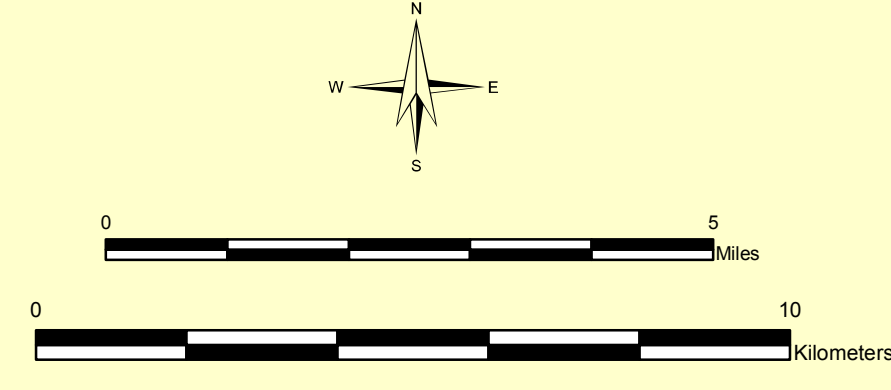
Public Resources Code 4201-4204 direct the California Department of Forestry and Fire Protection (CAL FIRE) to map fire hazard within State Responsibility Areas (SRA), based on relevant factors such as fuels, terrain, and weather. These statutes were passed after significant wildland-urban interface fires, consequently these hazards are described according to their potential for causing ignitions to buildings. These zones referred to as Fire Hazard Severity Zones (FHSZ), provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. The zones also relate to the requirements for building codes designed to reduce the ignition potential to buildings in the wildland-urban interface zones.

These maps have been created by CAL FIRE's Fire and Resource Assessment Program (FRAP) using data and models describing development patterns, estimated fire behavior characteristics based on potential fuels over a 30-50 year time horizon, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure to new construction. Details on the project and specific modeling methodology can be found at <http://frap.cdf.ca.gov/projects/hazard/methods.htm>.

The version of the map shown here represents the official "Maps of Fire Hazard Severity Zones in the State Responsibility Area of California" as required by Public Resources Code 4201-4204 and entitled in the California Code of Regulation, Title 14, Section 1280 Fire Hazard Severity Zones, and as adopted by CAL FIRE on November 7, 2007.

An interactive system for viewing map data is hosted by the UC Center for Fire at <http://firecenter.berkeley.edu/fhsz/>.

Questions can be directed to David Sepsis, at 916.445.5369, [dave.sepsis@fire.ca.gov](mailto:dave.sepsis@fire.ca.gov).



Projection Albers, NAD 1927  
Scale 1: 100,000  
at 29" x 34"  
November 06, 2007

The State of California and the Department of Forestry and Fire Protection make no representations or warranties regarding the accuracy of data or maps. Neither the State nor the Department shall be liable under any circumstances for any direct, special, incidental, or consequential damages with respect to any claim by any user or third party on account of, or arising from, the use of data or maps.

Obtain FRAP maps, data, metadata and publications on the Internet at <http://frap.cdf.ca.gov>  
For more information, contact CAL FIRE-FRAP, PO Box 944246, Sacramento, CA 94244-2460, (916) 327-3939.

Arnold Schwarzenegger, Governor,  
State of California  
Mike Chrisman, Secretary for Resources,  
The Resources Agency  
Ruben Grijalva, Director,  
Department of Forestry and Fire Protection

MAP ID: FHSZS\_MAP  
DATA SOURCES  
CAL FIRE Fire Hazard Severity Zones (FHSZS06\_3)  
CAL FIRE State Responsibility Areas (SRA05\_5)  
CAL FIRE Incorporated Cities (Incorp07\_3)  
PLSS (1:100,000 USGS, Land Grants with CAL FIRE grid)



## Appendix G: 10 Year Mobile Equipment Replacement Plan (MERP)

See next page.



## 6-Year Mobile Equipment Replacement Plan (MERP) - 5.16.19

Vehicle ID	Vehicle Type	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
<b>6 Year Cycle Replacement Cycle</b>							
C-11B	Command 4X4						X
B-11A	Command 4X4						X
B-11B	Command 4X4			X			
MED-11	Command 4X4	X					X
T-11A	Support 4X4			X			
P-11	Support 4X2					X	
P-11A	Support 4X4			X			
P-11B	Support 4X4						X
P-11C*	Support 4X4	X					
P-11D*	Support 4X4	X					
IO-11*	Support 4X4	X					
<b>10 Year Replacement Cycle</b>							
E-17	Engine-Type 1						
E-18	Engine-Type 1						
E-58	Engine-Type 1						
E-59	Engine-Type 1						
B-111	Command 4X4						
<b>12 Year Replacement Cycle</b>							
U-17	Utility						
U-58	Utility						
U-59	Utility						
<b>20 Year Replacement Cycle</b>							
ERV-58	Remote Rescue						
ERV-59	Remote Rescue						
E-659	Engine-Type 6						
E-658*	Engine-Type 6	X					
E-317	Engine-Type 3						
Forklift	Misc.						
E-55	Engine-Type 2	X					
E-655	Engine- Type 6						
E-57	Engine-Type 1						
R-57	Rescue-Type 3						X
WT-56	Water Tender						
WT-57	Water Tender				X		
WT-58	Water Tender						
E-217	Engine-Type 1					X	
E-118	Engine-Type 1			X			
E-117	Engine-Type 1	X					
<b>25 Year Replacement Cycle</b>							
T-17	Truck-Type 1						
T-117	Truck-Type 1		X				






\* Denotes New Addition to Fleet (WUI Program)

## Appendix H: Current Inventory of County Fire Apparatus

See next page.



## Current Inventory of County Fire Apparatus (as of 1/1/19)

Apparatus Photo	Apparatus Information
<p><b>Engine 17</b></p> 	<p>County Fire Vehicle ID: COX5                      Fire Apparatus Callsign: Engine 17                      Current Use: Front-line fire engine                      Station Assignment: Highlands Fire Station 17                      Vehicle Year: 2017                      Vehicle Type: Type-1 structural fire engine                      Staffing: Paid 3-person company</p>
<p><b>Engine 18</b></p> 	<p>County Fire Vehicle ID: COX15                      Fire Apparatus Callsign: Engine 18                      Current Use: Front-line fire engine                      Station Assignment: Cordilleras Fire Station 18                      Vehicle Year: 2016                      Vehicle Type: Type-1 structural fire engine                      Staffing: Paid 3-person company</p>
<p><b>Engine 58</b></p> 	<p>County Fire Vehicle ID: COX7                      Fire Apparatus Callsign: Engine 58                      Current Use: Front-line fire engine                      Station Assignment: Skylonda Fire Station 58                      Vehicle Year: 2016                      Vehicle Type: Type-1 structural fire engine                      Staffing: Paid 3-person company</p>
<p><b>Engine 59</b></p> 	<p>County Fire Vehicle ID: COX4                      Fire Apparatus Callsign: Engine 59                      Current Use: Front-line fire engine                      Station Assignment: Pescadero Fire Station 58                      Vehicle Year: 2016                      Vehicle Type: Type-1 structural fire engine                      Staffing: Paid 3-person company</p>
<p><b>Truck 17</b></p> 	<p>County Fire Vehicle ID: COX18                      Fire Apparatus Callsign: Truck 17                      Current Use: Front-line ladder truck                      Station Assignment: Highlands Fire Station 17                      Vehicle Year: 2016                      Vehicle Type: Type-1 ladder truck                      Staffing: Paid 3-person company</p>





## Current Inventory of County-owned Fire Apparatus (as of 1/1/19)

Apparatus Photo	Apparatus Information
<p><b>Engine 317</b></p> 	<p><b>County Fire Vehicle ID:</b> COX37  <b>Fire Apparatus Callsign:</b> Engine 317  <b>Current Use:</b> Front-line wildland fire engine  <b>Station Assignment:</b> Highlands Fire Station 17  <b>Vehicle Year:</b> 1990  <b>Vehicle Type:</b> Type-3 wildland fire engine  <b>Staffing:</b> Cross staffed with a paid 3-person company</p>
<p><b>Engine 655</b></p> 	<p><b>County Fire Vehicle ID:</b> COX24  <b>Fire Apparatus Callsign:</b> Engine 655  <b>Current Use:</b> Front-line volunteer fire engine  <b>Station Assignment:</b> Loma Mar Fire Station 55  <b>Vehicle Year:</b> 2017  <b>Vehicle Type:</b> Type-6 wildland fire apparatus  <b>Staffing:</b> Volunteer fire company</p>
<p><b>Engine 659</b></p> 	<p><b>County Fire Vehicle ID:</b> COX21  <b>Fire Apparatus Callsign:</b> Engine 659  <b>Current Use:</b> Front-line fire engine  <b>Station Assignment:</b> Pescadero Fire Station 59  <b>Vehicle Year:</b> 2015  <b>Vehicle Type:</b> Type-6 wildland fire engine  <b>Staffing:</b> Cross staffed paid 3-person company</p>
<p><b>Engine 117</b></p> 	<p><b>County Fire Vehicle ID:</b> COX17  <b>Fire Apparatus Callsign:</b> Engine 117  <b>Current Use:</b> Reserve fire engine  <b>Station Assignment:</b> Highlands Fire Station 17  <b>Vehicle Year:</b> 1995  <b>Vehicle Type:</b> Type-1 structural fire engine  <b>Staffing:</b> Reserve</p>
<p><b>Engine 118</b></p> 	<p><b>County Fire Vehicle ID:</b> COX60  <b>Fire Apparatus Callsign:</b> Engine 118  <b>Current Use:</b> Reserve fire engine  <b>Station Assignment:</b> Cordilleras Fire Station 17  <b>Vehicle Year:</b> 1998  <b>Vehicle Type:</b> Type-1 structural fire engine  <b>Staffing:</b> Reserve</p>



## Current Inventory of County-owned Fire Apparatus (as of 1/1/19)

Apparatus Photo	Apparatus Information
<p><b>Engine 217</b></p> 	<p><b>County Fire Vehicle ID:</b> COX69  <b>Fire Apparatus Callsign:</b> Engine 217  <b>Current Use:</b> Reserve fire engine  <b>Station Assignment:</b> Highlands Fire Station 17  <b>Vehicle Year:</b> 1998  <b>Vehicle Type:</b> Type-1 structural fire engine  <b>Staffing:</b> Reserve</p>
<p><b>Engine 57</b></p> 	<p><b>County Fire Vehicle ID:</b> COX31  <b>Fire Apparatus Callsign:</b> Engine 57  <b>Current Use:</b> Front-line volunteer fire engine  <b>Station Assignment:</b> La Honda Volunteer Fire Station 57  <b>Vehicle Year:</b> 2017  <b>Vehicle Type:</b> Type-1 structural fire apparatus  <b>Staffing:</b> Volunteer fire company</p>
<p><b>Water Tender 56</b></p> 	<p><b>County Fire Vehicle ID:</b> COX56  <b>Fire Apparatus Callsign:</b> Water Tender 56  <b>Current Use:</b> Front-line water tender  <b>Station Assignment:</b> Kings Mountain Volunteer Fire Station 56  <b>Vehicle Year:</b> 2016  <b>Vehicle Type:</b> 2,500 gallon water tender  <b>Staffing:</b> Volunteer fire company</p>
<p><b>Water Tender 57</b></p> 	<p><b>County Fire Vehicle ID:</b> COX68  <b>Fire Apparatus Callsign:</b> Water Tender 57  <b>Current Use:</b> Front-line water tender  <b>Station Assignment:</b> La Honda Volunteer Fire Station 57  <b>Vehicle Year:</b> 2003  <b>Vehicle Type:</b> 3,000 gallon water tender  <b>Staffing:</b> Volunteer fire company</p>
<p><b>Water Tender 58</b></p> 	<p><b>County Fire Vehicle ID:</b> COX  <b>Fire Apparatus Callsign:</b> Water Tender 58  <b>Current Use:</b> Front-line water tender  <b>Station Assignment:</b> Skylanda Fire Station 58  <b>Vehicle Year:</b> 2017  <b>Vehicle Type:</b> 2,000 gallon water tender  <b>Staffing:</b> Cross staffed 3-person company</p>



## Current Inventory of County-owned Fire Apparatus (as of 1/1/19)

Apparatus Photo	Apparatus Information
<p><b>Rescue 57</b></p> 	<p>County Fire Vehicle ID: COX74                      Fire Apparatus Callsign: Rescue 57                      Current Use: Front-line rescue vehicle                      Station Assignment: La Honda Volunteer Fire Station 57                      Vehicle Year: 2010                      Vehicle Type: Type-3 Rescue                      Staffing: Volunteer fire company</p>
<p><b>Engine 55</b></p> 	<p>County Fire Vehicle ID: COX57                      Fire Apparatus Callsign: Engine 55                      Current Use: Front-line volunteer fire engine                      Station Assignment: Loma Mar Volunteer Fire Station 55                      Vehicle Year: 1997                      Vehicle Type: Type-2 Fire Engine                      Staffing: Volunteer fire company</p>
<p><b>Chief 11B</b></p> 	<p>County Fire Vehicle ID: COX40                      Fire Apparatus Callsign: Chief 11B                      Current Use: Front-line fire chief vehicle                      Station Assignment: Highlands Fire Station 17                      Vehicle Year: 2017                      Vehicle Type: 4X4 command vehicle                      Staffing: One Chief Officer</p>
<p><b>Battalion 11A</b></p> 	<p>County Fire Vehicle ID: COX10                      Fire Apparatus Callsign: Battalion 11A                      Current Use: Front-line battalion chief                      Station Assignment: Highlands Fire Station 17                      Vehicle Year: 2015                      Vehicle Type: 4X4 Command vehicle                      Staffing: One Battalion Chief</p>
<p><b>Battalion 11B</b></p> 	<p>County Fire Vehicle ID: COX76                      Fire Apparatus Callsign: Battalion 11B                      Current Use: Front-line battalion chief                      Station Assignment: Highlands Fire Station 17                      Vehicle Year: 2016                      Vehicle Type: 4X4 Command vehicle                      Staffing: One Battalion Chief</p>



## Current Inventory of County-owned Fire Apparatus (as of 1/1/19)

Apparatus Photo	Apparatus Information
<p><b>MED 11</b></p> 	<p>County Fire Vehicle ID: COX75            Fire Apparatus Callsign: MED 11            Current Use: Front-line Paramedic Supervisor-Battalion Chief            Station Assignment: Highlands Fire Station 17            Vehicle Year: 2011            Vehicle Type: 4X4 Command Vehicle            Staffing: One Battalion Chief</p>
<p><b>Training 11A</b></p> 	<p>County Fire Vehicle ID: COX22            Fire Apparatus Callsign: Training 11A            Current Use: Training Captain Staff Vehicle            Station Assignment: Highlands Fire Station 17            Vehicle Year: 2015            Vehicle Type: 4X4 Pickup Truck            Staffing: One Fire Captain</p>
<p><b>Prevention 11</b></p> 	<p>County Fire Vehicle ID: COX40            Fire Apparatus Callsign: Prevention 11            Current Use: Front-line Fire Marshal/Battalion Chief vehicle            Station Assignment: Highlands Fire Station 17            Vehicle Year: 2017            Vehicle Type: 4X4 command vehicle            Staffing: One Battalion Chief</p>
<p><b>Prevention 11A</b></p> 	<p>County Fire Vehicle ID: COX41            Fire Apparatus Callsign: Prevention 11A            Current Use: Front-line Deputy Fire Marshal vehicle            Station Assignment: Highlands Fire Station 17            Vehicle Year: 2015            Vehicle Type: 4X4 Staff vehicle            Staffing: One Fire Captain</p>
<p><b>Prevention 11B</b></p> 	<p>County Fire Vehicle ID: COX71            Fire Apparatus Callsign: Prevention 11B            Current Use: Front-line Deputy Fire Marshal vehicle            Station Assignment: Highlands Fire Station 17            Vehicle Year: 2008            Vehicle Type: 4X4 Staff vehicle            Staffing: One Fire Captain</p>





## Current Inventory of County-owned Fire Apparatus (as of 1/1/19)

Apparatus Photo	Apparatus Information
<p><b>Battalion 111</b></p> 	<p>County Fire Vehicle ID: COX73                      Fire Apparatus Callsign: Battalion 111                      Current Use: Reserve Battalion Chief Vehicle                      Station Assignment: Highlands Fire Station 17                      Vehicle Year: 2009                      Vehicle Type: 4X4 Command SUV                      Staffing: Reserve vehicle</p>
<p><b>Utility 17</b></p> 	<p>County Fire Vehicle ID: COX23                      Fire Apparatus Callsign: Utility 17                      Current Use: Utility support vehicle                      Station Assignment: Highlands Fire Station 17                      Vehicle Year: 2017                      Vehicle Type: 4X4 support vehicle                      Staffing: Support vehicle, not staffed</p>
<p><b>Utility 59</b></p> 	<p>County Fire Vehicle ID: COX65                      Fire Apparatus Callsign: Utility 59                      Current Use: Utility support vehicle                      Station Assignment: Pescadero Fire Station 59                      Vehicle Year: 2003 (new vehicle on order)                      Vehicle Type: 4X4 support vehicle                      Staffing: Support vehicle, not staffed</p>
<p><b>Rescue 140</b></p> 	<p>County Fire Vehicle ID: COX20                      Fire Apparatus Callsign: Rescue 114                      Current Use: Reserve rescue vehicle                      Station Assignment: Half Moon Bay Fire Station 40                      Vehicle Year: 1993 (new specialized rescue vehicle on order)                      Vehicle Type: 4X4 rescue vehicle                      Staffing: Reserve apparatus</p>
<p><b>Truck 117</b></p> 	<p>County Fire Vehicle ID: COX                      Fire Apparatus Callsign: Truck 117                      Current Use: Planned reserve ladder truck purchase                      Station Assignment: Highlands Fire Station 17                      Vehicle Year:                      Vehicle Type: Ladder truck                      Staffing: Reserve apparatus</p>



## Types and Kinds of Fire Apparatus

Emergency fire apparatus are classified within the Incident Command System and the statewide FIRESCOPE Committee and published in the Field Operating Guide (FOG) Manual (ICS 420-1) under Primary Mobile Suppression Resources Minimum ICS Standards (attached). This same system has been adopted as the Standardized Emergency Management System (SEMS) for all governments within the state and the National Incident Management System (NIMS) This typing system will be used within San Mateo County Fire for equipment description.

- **Fire Engines**

Fire engines, commonly referred to as “pumpers” serve the primary purpose of carrying water, hose, and a fire pump. Fire engines also carry some ladders, medical gear, vehicle extrication equipment and hand tools. There are a variety of fire engine classifications known as “types”.

- **Type I Fire Engine**

A Type I fire engine is a municipal-style structural firefighting apparatus. This is the primary fire apparatus type used by SMCFD. The design for this type engine is structural fire control and must have a fire pump capacity of 1000 gallons per minute, or greater, and a hose bed capacity to carry at least 1200 feet of 2 ½ inch (or larger) diameter fire hose. (The standard for fire agencies in San Mateo County is 5-inch diameter hose.) These engines must have a minimum 300-gallon water tank and be equipped with a “deck gun” or master stream appliance for large defensive fire operations. Type I engines must be capable of carrying at least four firefighters. The National Fire Protection Association’s (NFPA 1901) standards require that all firefighters be carried in an enclosed cab. Designs of these engines have a crew cab capable of carrying 4 to 6 firefighters. SMCFD has Type I fire engines at the Highlands, Cordilleras, Skylonda, La Honda, and Pescadero stations.

- **Type II Fire Engine**

A Type II fire engine has multiple uses and is considered a cross between a Type I and Type III. SMCFD utilize a Type II fire engine in the Loma Mar area. By ICS standards, a Type II fire engine must have a fire pump with a minimum of 500 gallons per minute (GPM) capability. These fire engines must have at least a 300-gallon water tank and be capable of safely carrying three firefighters. The required fire hose carrying capacity is slightly less than that of a Type I engine, at 1000 feet instead of 1200 feet. Master stream appliances (deck guns) are not required but have been added in some cases to meet local needs. The smaller size makes Type II fire engines more adaptable to narrow, windy roads and some operate well off-road, even without all-wheel drive. This makes them effective for fighting wildland type fires, as well as structural fires. The pump capacity makes them somewhat effective on most structural fires. The main disadvantage to these engines is that they usually can only carry two or three firefighters.

- **Type III Fire Engine**

A Type III fire engine is primarily designed for fighting wildland fires with additional ground clearance for off road operations, and many are four-wheel drive. The minimum pumping capacity of a Type III engine’s fire pump is 150 GPM, but most have a larger capacity (300 to 500 gallons per minute). A water tank of at least 500 gallons is required. The hose complement is primarily forestry type hose. The engine must have “pump and roll” capabilities and must be able to go off road. SMCFD owns one Type III fire engine at Cordilleras fire station. Additionally,



CAL FIRE owns and operates four Type III fire engines in San Mateo County. CAL FIRE Type III engines are located at the Highlands, Skylonda and Pescadero stations. All CAL FIRE owned Type III fire engines also carry a minimum of 500' of 3" hose used for supply and master stream operations. All engines are complimented with Basic Life Support (BLS) medical equipment.

- **Type IV, V, & VI Fire Engines**

These engines are also known as "quick attack" or "patrols" and are essentially modified pickup trucks. There are a variety of configurations and build-ups that meet the requirements of these types of engines. They are designed for wildland fires and for initial response to other types of emergency calls such as medical calls and small outside fires. These vehicles are usually small and maneuverable and often have all wheel drive. The vehicle must be able to carry a minimum of two fire fighters. SMCDF owns two Type VI fire engines, located in Pescadero and Loma Mar.
- **Water Tenders**

Water tenders are designed to bring large amounts of water to a fire. They are vital in rural and remote areas where there are no fire hydrants. There are two kinds of Water Tenders; Tactical and Support. This apparatus is utilized for both wildland and structure firefighting operations. They are also extremely valuable for urban operations when municipal water systems fail, (e.g. earthquakes and other system failures). SMCDF County Fire has two support water tenders, located in La Honda and Kings Mountain, and one tactical water tender, located at Skylonda Fire Station 58. They are required to have a minimum pump capacity of 200 GPM and must carry 2500 gallons of water.
- **Rescues**

SMCFD operates Type III or "light" rescue units. These vehicles are four-wheel drive and carry additional rescue equipment such as ropes, jaws of life and medical tools. They are not intended to transport patients to the hospital but can be used in more remote areas to transport a person to a nearby ambulance. These apparatuses are important for the remote highways and cliffs on the south coast, where traumatic vehicle accidents and rescues occur more frequently. Additionally, these apparatuses are helpful when medical helicopters are requested as they can establish a safe landing area.
- **Ladder Trucks**

This is a specialized apparatus that is designed to carry a multitude of suppression and rescue equipment. The most notable feature is the hydraulically operated 105 ft. aerial ladder with a 1,250 gallon per minute elevated stream. While there is no water or pump on this apparatus, it carries a variety of tools, such as several hundred feet of ground ladders, jaws of life, chain saws, struts, blowers and cliff rescue ropes. SMCDF staffs this apparatus with a licensed paramedic and carries a full complement of advanced life support medical equipment. Currently, SMCDF owns and operates one front-line ladder truck. SMCDF needs a reserve ladder truck to ensure continuity of truck service when the front-line apparatus is not available.
- **Chief Officer Command Vehicles**

Chief Officers are required to respond and manage larger emergency incidents. Chief Officers are also required to attend meetings and be able to travel between fire stations. SMCDF Chief Officer positions include Assistant Chief (1), Field Battalion Chiefs (2), Fire Marshal (1), and a Paramedic Supervisor Battalion Chief (1). These command vehicles require four-wheel drive and a configuration that can carry a variety of specialized equipment. They carry a minimum of two mobile radios, emergency lighting, and a "command box" system, enabling them to command numerous resources at the scene of an incident. Chief Officer vehicles are either large SUV's or modified pickup trucks.
- **Staff Vehicles**





SMCFD has several specialized staff positions which require vehicles to conduct day to day duties. These vehicles are also for emergency response, requiring four-wheel drive and a configuration that can carry specific equipment. This vehicle must have mobile radios, emergency lighting and other equipment. Positions include: Deputy Fire Marshal (2) and a Training Captain (1).

- **Utility Vehicles**

SMCFD operates several utility vehicles. These vehicles are designed and/or ordered to meet general needs, usually at a specific fire station. These vehicles are used to transport materials and/or personnel for emergency and non-emergency situations. These pickup trucks are ¾ ton in size and capable of carrying two to four personnel.



## Appendix I: Tools and Equipment Replacement Schedule

<b>Tools and Equipment Replacement Schedule - San Mateo County Fire Department (1.1.19)</b>						
<b>Equipment</b>	<b>FY 19/20</b>	<b>FY 20/21</b>	<b>FY 21/22</b>	<b>FY 22/23</b>	<b>FY 23/24</b>	<b>FY 24/25</b>
Auto Extrication Equipment	\$20,000	\$25,000	\$25,000	\$30,000	\$30,000	\$30,000
Lucas Devices	\$40,000					
Replacement SCBA Cylinders		\$35,000	\$50,000	\$40,000	\$50,000	\$40,000
AED Units	\$25,000					
Thermal Imaging Cameras			\$10,000			\$10,000
Rope Rescue Equipment	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Mobile Radio's		\$30,000	\$15,000	\$15,000	\$15,000	\$15,000
Portable Radio's				\$15,000	\$5,000	\$5,000
Self Contained Breathing Apparatus						
Forcible Entry Doors	\$10,000	\$10,000				
CPR Manicans						
ALS Manican	\$5,000					
Volunteer Tools and Equip.	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Other Misc. Tools and Equipment.	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
<b>Total</b>	<b>\$150,000</b>	<b>\$150,000</b>	<b>\$150,000</b>	<b>\$150,000</b>	<b>\$150,000</b>	<b>\$150,000</b>





## NFPA 1710

### Changes to Fireground Staffing Levels for Career Fire Departments

NFPA 1710 provides the minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments.

For the 2016 edition of the standard, subsection 5.2.4 on fire department service deployment was revised to include three new occupancies, along with the appropriate response staffing levels for each. The minimum staffing level for each occupancy is listed below. *(For the full breakdown of staffing requirements by position, refer to the subsections specific to each occupancy in 5.2.4.)*

- Single-Family Dwelling — minimum of 14 members (15 if aerial device is used)**

The initial full alarm assignment to a structure fire in a typical 2000 ft<sup>2</sup> (186 m<sup>2</sup>), two-story, single-family dwelling without a basement and with no exposures must provide for a minimum of 14 members (15 if an aerial device is used).
- Open-Air Strip Mall — minimum of 27 members (28 if aerial device is used)**

The initial full alarm assignment to a structure fire in a typical open-air strip shopping center ranging from 13,000 ft<sup>2</sup> to 196,000 ft<sup>2</sup> (1203 m<sup>2</sup> to 18,209 m<sup>2</sup>) in size must provide for a minimum of 27 members (28 if an aerial device is used).
- Garden-Style Apartment — minimum of 27 members (28 if aerial device is used)**

The initial full alarm assignment to a structure fire in a typical 1200 ft<sup>2</sup> (111 m<sup>2</sup>) apartment within a three-story, garden-style apartment building must provide for a minimum of 27 members (28 if an aerial device is used).
- High-Rise — minimum of 42 members (43 if building equipped with fire pump)**

The initial full alarm assignment to a fire in a building with the highest floor greater than 75 ft (23 m) above the lowest level of fire department vehicle access must provide for a minimum of 42 members (43 if the building is equipped with a fire pump).
- Fire departments that respond to fires in occupancies that present hazards greater than those found in 5.2.4 shall deploy additional resources as described in 5.2.4.5 on the initial alarm.

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NOTE: Even though fireground staffing levels have changed, NFPA 1710 continues to require that engine companies be staffed with a minimum of 4 on-duty members, as stated in subsection 5.2.3. In addition, paragraph 5.2.2.1 requires that the fire department identify minimum company staffing levels as necessary to meet the deployment criteria required in 5.2.4 to ensure that a sufficient number of members are assigned, on duty, and available to safely and effectively respond with each company.

Material used in this summary is taken from the 2016 edition of NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. This reprinted material is not the complete and official position of the NFPA or its Technical Committees on the referenced subject, which is represented solely by the standard in its entirety. That standard can be accessed online at [www.nfpa.org](http://www.nfpa.org).



## Appendix K OSHA 2in/2out Standard

This is in response to your letter dated January 16, to Mr. Kipp Hartmann, Area Director of the Occupational Safety and Health Administration's (OSHA) Providence Rhode Island, Area Office. The subject of your letter is section (g)(4) of OSHA's Respiratory Protection Standard, 29 CFR 1910.134, which has been recently revised and published in the [Federal Register](#). You have asked OSHA to provide information on cases where firefighters who were among the first four members to arrive on the scene of a structure fire, were trapped and unable to extricate themselves.

The safety of firefighters engaged in interior structural firefighting is the major focus of paragraph (g)(4) of the OSHA Respiratory Protection standard. This provision requires that at least two employees enter the Immediately Dangerous to Life or Health (IDLH) atmosphere and remain in visual or voice contact with each other at all times. It also requires that at least two employees be located outside the IDLH atmosphere, thus the term, "two in/two out". This assures that the "two in" can monitor each other and assist with equipment failure or entrapment or other hazards, and the "two out" can monitor those in the building, initiate rescue, or call for back-up. One of the "two out" can be assigned another role such as incident commander.

The two-out provision of the standard is not a change from OSHA's prior Respiratory Protection Standard, which required standby **men** (plural) whenever respirators were used in imminent danger situations. The two-in requirement for firefighters, which you do not question, was not required by the prior standard but is consistent with OSHA's recent enforcement practice. OSHA's rationale for the requirements is explained in detail in the preamble to the standard at 63 Fed. Reg. 1245-1248 (Jan. 8, 1998). As well as the situations described there, OSHA has received reports of a number of incidents in which the failure to follow two-in/two-out procedures has contributed to firefighter casualties.

For example, in Lexington, Kentucky, one firefighter died and a second Kentucky OSHA cited the firefighters' employer for failing to utilize two-in/two-out procedures. In a second case, OSHA has learned about two firefighters who died from smoke inhalation after being overcome by toxic fumes while fighting an accidental fire in Philadelphia, Pennsylvania. Although two additional firefighters were outside the home, both were engaged in support activities (hydrant hook-up and pump operation), and neither was fully accountable for monitoring the interior personnel.

OSHA also has had a report of a success story following the adoption of two-in/two-out procedures in Pittsburgh, Pennsylvania. The fire department there implemented an accountability and rescue system after a fatal fire. In one case, four firefighters who were performing an interior attack on an apartment building fire became disoriented and were trapped in the building. The standby personnel were able to initiate rescue operations promptly. As a result, although the four interior firefighters and two of the rescuers were injured, all survived.

Because these cases involve situations that are typical of those faced by firefighters, we expect there are additional instances of firefighters who either were or could have been saved through the utilization of two-in/two-out procedures. Most firefighters are employed by local governments, however, and their operations are not governed by Federal OSHA, which does not cover state and local government employees. In contrast, states that operate their own OSHA-approved occupational safety and health plans must cover these public employees. Therefore the provisions of the respirator standard relating to firefighters will be enforced primarily by the twenty-five state-plan states. As you know, Rhode Island does not have its own OSHA-approved state plan so no OSHA program will enforce the two-in/two-out requirement in its public fire departments. OSHA does, however, encourage compliance by these employers.

OSHA also emphasizes that the two-in/two-out provision, like all OSHA standards, states a minimum requirement. Your suggestion that safety would be enhanced if the two inside firefighters are accompanied by a supervisor is therefore not precluded by the OSHA standard. However, because an additional person would then be subject to the extrahazardous and hostile environment created by a structural fire, the need for adequate and attentive standby personnel is even more crucial. OSHA also questions your premise that, in the case of a four-person crew with a two-person interior team, one of the outside members would need to serve as a full-time incident commander. We believe it should be possible for one crew member to operate the pump or perform any other necessary support activities, while the other monitors the inside team. But regardless of the size of the team, the least desirable situation would be to have only a single outside crew member, particularly one whose attention is focused on performing support functions rather than on monitoring the firefighters inside.

We thank you for your interest in safety and health. We hope this provides you with the information you have requested. If you have further questions, please call Ms. Wanda Bissell of my staff at (202) 219-8036 Ext. 41.



# Appendix L: NFPA 1911

There are many different types of forms for reporting inspections, maintenance, and tests that could be used in connection with a fire apparatus preventive maintenance program. Resources for forms other than those shown in this annex are the local or state fire apparatus mechanics association, apparatus manufacturers, or the Apparatus Maintenance Section of the International Association of Fire Chiefs.

## Annex D Guidelines for First-Line and Reserve Fire Apparatus

*This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.*

**D.1 General.** To maximize fire fighter capabilities and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities. In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatus manufactured prior to 1991 usually included only a few of the safety upgrades required by the 1991 and subsequent editions of the NFPA fire department apparatus standards or the equivalent Underwriters' Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine tuning to NFPA 1901, *Standard for Automotive Fire Apparatus*, since 1991 have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters of keeping pre-1991 fire apparatus in first-line service.

The 1991 edition of the NFPA fire department apparatus standards included, among other provisions, requirements for fully enclosed driving and riding areas, auxiliary braking systems, reflective striping, improved warning lights, and prohibition of roof-mounted audible warning devices. The minimum tip load for an aerial ladder was set at 250 lb (114 kg), and other requirements, such as a minimum rail height, were added to make the aerial ladder safer for fire fighters to use. The 1991 editions have been recognized as the benchmark from which improved and safer fire apparatus have evolved. It is recommended that only apparatus that were designed and manufactured to meet the 1991 or later editions of the NFPA fire apparatus standards, or apparatus that have been refurbished in accordance with NFPA 1912, *Standard for Fire Apparatus Refurbishing*, to meet the 1991 or later editions of the NFPA fire apparatus standards, be permitted to operate in first-line service. This will ensure that, while the apparatus might not totally comply with the current edition of the automotive fire apparatus standards, many of the improvements and upgrades required by the standards since 1991 are available to the fire fighters who use the apparatus.

It is recommended that apparatus manufactured prior to 1991 that is less than 25 years old, that has been properly maintained, and that is still in serviceable condition should be placed in reserve status and upgraded to incorporate as many features as possible of the post-1991 fire apparatus (see Section D.3). Apparatus that was not manufactured to the applicable NFPA fire apparatus standards or that is over 25 years old should be replaced.

**D.2 How the Standards Have Changed.** It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. The length of that life depends on many factors, including vehicle mileage and engine hours, quality of the preventative maintenance program, quality of the driver training program, whether the fire apparatus was

used within the design parameters, whether the apparatus was manufactured on a custom or commercial chassis, quality of workmanship by the original manufacturer, quality of the components used, and availability of replacement parts, to name a few. In the fire service, there are fire apparatus with 8 to 10 years of service that are simply worn out. There are also fire apparatus that were manufactured with quality components, that have had excellent maintenance, and that have responded to a minimum number of incidents that are still in serviceable condition after 20 years. Most would agree that the care of fire apparatus while being used and the quality and timeliness of maintenance are perhaps the most significant factors in determining how well a fire apparatus ages.

Prior to 1991, the single fire department apparatus standard was NFPA 1901. It was basically a "reactive standard." If something worked well in field use for a few years, it might have been suggested for inclusion in NFPA 1901. It was a very basic standard. In the late 1980s, the Technical Committee on Fire Department Apparatus decided to become proactive and to greatly enhance the value of the standard for the fire service. Task groups were appointed to develop reasonable requirements for the various components that made up a fire apparatus, and a safety task group was charged with looking at issues across the board that would improve the safety of fire fighters who use the apparatus.

The completely revised 1991 edition of NFPA fire department apparatus standards was the result of these efforts and the full committee's strong desire to make the automotive fire apparatus standards not only more safety oriented but also more user friendly. In 1991, four standards were issued: NFPA 1901, *Standard for Pumper Fire Apparatus*; NFPA 1902, *Standard for Initial Attack Fire Apparatus*; NFPA 1903, *Standard for Mobile Water Supply Fire Apparatus*; and NFPA 1904, *Standard for Aerial Ladder and Elevating Platform Fire Apparatus*.

Contained within the 1991 editions of the fire department apparatus standards were requirements for such items as increased battery capacity to ensure starting under most conditions, intersection lights for increased visibility, removal of all roof-mounted audible warning devices to reduce hearing problems, a flashing light in the cab to warn if a cab or body door is open, a backup alarm, an automatic transmission to make it easier to drive (unless the purchaser has a specific reason for a manual transmission), fully enclosed riding areas with reduced noise (dBA) levels to keep crew members safe and informed, seats and seat belts for all crew members riding on the apparatus, fail-safe door handles so the sleeve of a coat does not inadvertently catch a handle and open a door, and signs requiring everyone to be seated and belted.

In the pump area, the standard specified that 3 in. (75 mm) or larger valves be "slow close," that caps on intakes and discharge outlets be tested to 500 psi (3400 kPa), that an intake relief valve be provided to help manage incoming pressure, that 30-degree sweep elbows be provided on the discharges to eliminate hose kinking, and that all 3 in. (75 mm) and larger discharges be eliminated from the pump panel to reduce the possibility of injuries to the pump operator.

Fire apparatus equipped with electronic or electric engine throttle controls were required to include an interlock system to prevent engine speed advancement, unless the chassis transmission is in neutral with the parking brake engaged or unless the parking brake is engaged, the fire pump is engaged, and the chassis transmission is in the correct pumping gear.

In the body area, the minimum step surface size and load-carrying capabilities were increased, handrails were required





to be slip resistant, and reflective striping was required on all four sides of the apparatus. Electrical system requirements for line voltage systems were added to include the use of listed components that were grounded.

Many requirements were added to increase the operating capabilities of all aerial devices. For aerial ladders, the minimum design strength of the rungs was increased, a height requirement for the handrails was specified, a minimum load-carrying requirement for folding steps was specified, and the aerial ladder had to have a minimum carrying capacity of 250 lb (114 kg) at the tip when the aerial ladder is at zero degrees elevation and maximum extension. Where a water tower is equipped with a ladder, the same requirements that applied to an aerial ladder were required of the ladder on the water tower.

The carrying capacity of elevating platforms at zero degrees elevation and maximum extension was raised to 750 lb (340 kg). Elevating platforms were also required to have handrails, breathing air available in the platform (with low-air warning capability) for at least two fire fighters, and a water curtain cooling system under the platform.

All aerial devices had to be capable of supporting a static load of one and one-half times their rated capacity in any position. A requirement for a stabilizer movement alarm and reflective striping with warning lights was added. Interlocks to prevent inadvertent movement to an unsupported side and to prevent raising the aerial device prior to the stabilizers being deployed were specified. One hundred percent nondestructive tests (NDT) became a requirement. All these requirements were included in the 1991 editions of the NFPA fire department apparatus standards.

In 1996, the four fire department apparatus standards (NFPA 1901, NFPA 1902, NFPA 1903, and NFPA 1904) were recombined into a single standard that was designated as NFPA 1901, *Standard for Automotive Fire Apparatus*. This edition further enhanced the safety and operating characteristics of all the apparatus.

The 1999 edition included chapters on quints and mobile foam apparatus, further defined slip resistance of stepping and walking surfaces, required better mounting of equipment in the driving and crew compartments, required predelivery testing of foam systems, and specified that fill stations for breathing air cylinders be designed to totally contain a rupturing cylinder.

The 2003 edition continued to refine the requirements in the driving and crew riding areas with increased head height requirements at seating positions and additional requirements for storage of SCBAs in seat backs, both aimed at reducing fire fighter injuries. The test protocol for slip resistance of standing and walking surfaces was better defined. There was a general cleanup of the requirements throughout the document to enhance the operational usefulness of the apparatus.

**D.3 Upgrading Fire Apparatus.** Any apparatus, whether in first-line or reserve service, should be upgraded in accordance with NFPA 1912 as necessary to ensure that the following features are included as a minimum:

- (1) Fully enclosed seating is provided for all members riding on the fire apparatus.
- (2) Warning lights meet or exceed the current standard.
- (3) Reflective striping meets or exceeds the current standard.
- (4) Slip resistance of walking surfaces and handrails meets the current standard.

- (5) A low voltage electrical system load manager is installed if the total connected load exceeds the alternator output.
- (6) The alternator output is capable of meeting the total continuous load on the low voltage electrical system.
- (7) Where the gross vehicle weight rating (GVWR) is 36,000 lb (16,000 kg) or more, an auxiliary braking system is installed and operating correctly.
- (8) Ground and step lighting meets or exceeds the current standard.
- (9) Noise levels in the driving and crew compartment(s) meet the current standard, or appropriate hearing protection is provided.
- (10) All horns and sirens are relocated to a position as low and as far forward as possible.
- (11) Seat belts are available for every seat and are new or in serviceable condition.
- (12) Signs are present stating no riding on open areas.
- (13) A pump shift indicator system is present and working properly for vehicles equipped with an automatic chassis transmission.
- (14) For vehicles equipped with electronic or electric engine throttle controls, an interlock system is present and working properly to prevent engine speed advancement at the operator's panel, unless the chassis transmission is in neutral with the parking brake engaged; or unless the parking brake is engaged, the fire pump is engaged, and the chassis transmission is in pumping gear.
- (15) All loose equipment in the driving and crew areas is securely mounted to prevent its movement in case of an accident.

**D.4 Proper Maintenance of Fire Apparatus.** In addition to needed upgrades to older fire apparatus, it is imperative that all fire apparatus be checked and maintained regularly to ensure that they will be reliable and safe to use. The manufacturer's instructions should always be followed when maintaining the fire apparatus. Special attention should be paid to ensure that the following conditions exist, as they are particularly critical to maintaining a reliable unit:

- (1) Engine belts, fuel lines, and filters have been replaced in accordance with the manufacturers' maintenance schedule(s).
- (2) Brakes, brake lines, and wheel seals have been replaced or serviced in accordance with the manufacturers' maintenance schedule.
- (3) Tires and suspension are in serviceable condition, and tires are not more than 7 years old.
- (4) The radiator has been serviced in accordance with the manufacturer's maintenance schedule and all cooling system hose are new or in serviceable condition.
- (5) The alternator output meets its rating.
- (6) A complete weight analysis shows the fire apparatus is not over individual axle or total gross vehicle weight ratings.
- (7) The fire pump meets or exceeds its original pump rating.
- (8) The water tank and baffles are not corroded or distorted.
- (9) If equipped with an aerial device, a complete test to original specifications has been conducted and certified by a certified testing laboratory.
- (10) If so equipped, the generator and line voltage accessories have been tested and meet the current standard.

**D.5 Refurbishing or Replacing Fire Apparatus.** Fire department administrators and fire chiefs should exercise special care when evaluating the cost of refurbishing or updating an apparatus versus the cost of a new fire apparatus. Apparatus



that are refurbished should comply with the requirements of NFPA 1912. A thorough cost-benefit analysis of the value of upgrading or refurbishing a fire apparatus should be conducted. In many instances, it will be found that refurbishing costs will greatly exceed the current value of similar apparatus. Experience has also shown that refurbishing a fire apparatus that is over 20 years old, other than to paint or repair the apparatus, is a very poor investment.

Some factors to consider and evaluate when considering whether to refurbish or replace a fire apparatus include the following:

- (1) What is the true condition of the existing apparatus? Has it been in a major accident, or has something else happened to it that would make spending significant money on it ill advised?
- (2) Does the current apparatus meet the program needs of the area it is serving? Is it designed for the way the fire department operates today and is expected to operate into the foreseeable future, or is the apparatus functionally obsolete? Can it carry everything that is needed to do the job without being overloaded?
- (3) If the apparatus is refurbished, will it provide the level of safety and operational capability of a new fire apparatus? Remember, in many cases, refurbishing does not mean increasing the GVWR, so it is not possible to add a larger water tank or additional foam agent tanks or to carry massive amounts of additional equipment. Enclosing personnel riding areas might add enough weight to the chassis that existing equipment loads need to be reduced to avoid overloading the chassis. An aerial ladder that does not have a 250 lb (114 kg) tip load rating at zero degrees elevation and maximum extension cannot be made stronger.
- (4) What is the anticipated cost per year to operate the apparatus if it were refurbished, and what would the cost per year be for a new apparatus? Do not forget insurance costs, downtime costs, maintenance costs, depreciation, reliability, and the safety of the users and the public. At what rate are those costs rising each year? Are parts still readily available for all the components on the apparatus? A refurbished 15-year-old apparatus still has 15-year-old parts in it. How long could the fire department operate without the apparatus if it suddenly needed major repairs?
- (5) Is there a current trade-in value that will be gone tomorrow? Most apparatus over 12 years old have little trade-in value. Are there creative financing plans or leasing options that can provide a new fire apparatus for little more than the cost of refurbishing or maintaining an older apparatus?

**D.6 Conclusion.** A fire apparatus is an emergency vehicle that must be relied on to transport fire fighters safely to and from an incident and to operate reliably and properly to support the mission of the fire department. A piece of fire apparatus

that breaks down at any time during an emergency operation not only compromises the success of the operation but might jeopardize the safety of the fire fighters relying on that apparatus to support their role in the operation. An old, worn out, or poorly maintained fire apparatus has no role in providing emergency services to a community.

## Annex E Informational References

**E.1 Referenced Publications.** The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

**E.1.1 NFPA Publications.** National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam*, 2005 edition.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2003 edition.

NFPA 1150, *Standard on Foam Chemicals for Fires in Class A Fuels*, 2004 edition.

NFPA 1901, *Standard for Automotive Fire Apparatus*, 2003 edition.

NFPA 1912, *Standard for Fire Apparatus Refurbishing*, 2006 edition.

NFPA 1961, *Standard on Fire Hose*, 2007 edition.

NFPA 1962, *Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose*, 2003 edition.

**E.1.2 Other Publications.**

**E.1.2.1 American Association of Motor Vehicle Administrators Publications.** American Association of Motor Vehicle Administrators, P.O. Box 79702, Baltimore, MD 21279-0702.

*Vehicle Inspection Handbook, Passenger Vehicles & Light Trucks*, 1999.

*Vehicle Inspection Handbook, Trucks, Buses, & Trailers*, 1999.

**E.1.2.2 ASME Publications.** American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990.

ASME B40.100, *Pressure Gauges and Gauge Attachments*, 2005.

**E.1.2.3 U.S. Government Publications.** U.S. Government Printing Office, Washington, DC 20402.

Title 29, Code of Federal Regulations, Section 1910.177, "Servicing multi-piece and single piece rim wheels" Mar. 7, 1996.

**E.2 Informational References. (Reserved)**

**E.3 References for Extracts in Informational Sections.**

NFPA 1901, *Standard for Automotive Fire Apparatus*, 2003 edition.





## Appendix M: 6-Year Staffing Plan (CAL FIRE Schedule A Contract)

See next page.



**San Mateo County Fire Department - 6 Year FTE Staffing Plan**

**Years 1 & 2      Years 3 & 4      Years 5 & 6**

Line Personnel	Staffing Level 1			Staffing Level 2			Staffing Level 3			Staffing Level 4			Staffing Level 5		
	FY 18/19 Staffing			Position Upgrades/Coverations			Option 2 plus addition of 3 FTE (Truck Staffing)			Option 3 plus addition of 3 FTE (Pescadero Staffing)			Option 4 plus addition of 2 FTE (Additional Paramedic)		
	CSA #1	County Fire	Combined	CSA #1	County Fire	Combined	CSA #1	County Fire	Combined	CSA #1	County Fire	Combined	CSA #1	County Fire	Combined
Line Personnel	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE
0	6	6	0	7	7	7	0	7	7	7	7	0	7	7	7
Captain	1	3	4	1	4	5	1	4	5	5	5	1	4	4	5
Captain - Paramedic	3	12	15	3	11	14	4	11	15	14	18	4	14	18	20
Engineer - Paramedic	2.5	9.5	12	2.5	8.5	11	2	11	13	11	13	2	11	13	13
Engineer	2	2	4	2	2	4	2	2	4	2	4	2	2	2	4
Firefighter II	-	-	-	-	-	-	0	1	1	1	1	0	1	1	1
Forestry Assistant II	-	-	-	-	-	-	0	1	1	1	1	0	1	1	1
Information Officer II	-	-	-	-	-	-	0	1	1	1	1	0	1	1	1
<b>Total Line Personnel</b>	<b>8.5</b>	<b>32.5</b>	<b>41</b>	<b>8.5</b>	<b>32.5</b>	<b>41</b>	<b>9</b>	<b>37</b>	<b>46</b>	<b>9</b>	<b>40</b>	<b>9</b>	<b>40</b>	<b>49</b>	<b>51</b>
<b>Command &amp; Control Personnel</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>
Deputy Chief	0.1	0.4	0.5	0.1	0.4	0.5	0.1	0.4	0.5	0.1	0.4	0.1	0.4	0.5	0.5
Division Chief	0.1	0.4	0.5	0.1	0.4	0.5	0.1	0.4	0.5	0.1	0.4	0.1	0.4	0.5	0.5
Battalion Chief	0.4	1.6	2	0.5	2	2.5	0.5	2	2.5	0.5	2	0.5	2	2.5	2.5
Paramedic Coord.	0.2	0.8	1	0.2	0.8	1	0.2	0.8	1	0.2	0.8	0.2	0.8	1	1
Training Officer	0.2	0.8	1	0.2	0.8	1	0.2	0.8	1	0.2	0.8	0.2	0.8	1	1
Prev. Batt. Chief	0.2	0.3	0.5	0.2	0.3	0.5	0.2	0.3	0.5	0.2	0.3	0.2	0.3	0.5	0.5
Fire Prev. Planning	0.2	1.8	2	0.2	1.8	2	0.2	2.8	3	0.2	2.8	0.2	2.8	3	3
<b>Total Command &amp; Control Per.</b>	<b>1.4</b>	<b>6.1</b>	<b>7.5</b>	<b>1.5</b>	<b>6.5</b>	<b>8</b>	<b>1.5</b>	<b>7.5</b>	<b>9</b>	<b>1.5</b>	<b>7.5</b>	<b>1.5</b>	<b>7.5</b>	<b>9</b>	<b>9</b>
<b>Support Personnel</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>
Heavy Equip. Mech.	0.2	0.8	1	0	0	0	0	0	0	0	0	0	0	0	0
SSA	0.5	0.5	1	0.7	0.8	1.5	0.7	0.8	1.5	0.7	0.8	0.7	0.8	1.5	1.5
Clerical, Training	0.1	0.4	0.5	0.1	0.4	0.5	0.1	0.4	0.5	0.1	0.4	0.1	0.4	0.5	0.5
Clerical, Reception	0.1	0.4	0.5	0	0	0	0	0	0	0	0	0	0	0	0
Admin. Officer II	0.14	0.3	0.44	0.14	0.3	0.44	0.14	0.3	0.44	0.14	0.3	0.14	0.3	0.44	0.44
ECC Operator	0.2	0.8	1	0.2	0.8	1	0.2	0.8	1	0.2	0.8	0.2	0.8	1	1
<b>Total Support Personnel</b>	<b>1.24</b>	<b>3.2</b>	<b>4.44</b>	<b>1.14</b>	<b>2.3</b>	<b>3.44</b>	<b>1.14</b>	<b>2.3</b>	<b>3.44</b>	<b>1.14</b>	<b>2.3</b>	<b>1.14</b>	<b>2.3</b>	<b>3.44</b>	<b>3.44</b>
<b>Total All Personnel</b>	<b>11.14</b>	<b>41.8</b>	<b>52.94</b>	<b>11.14</b>	<b>41.3</b>	<b>52.44</b>	<b>11.64</b>	<b>46.8</b>	<b>58.44</b>	<b>11.64</b>	<b>49.8</b>	<b>11.64</b>	<b>49.8</b>	<b>61.44</b>	<b>63.44</b>
<b>Seasonal Staffing (Vegetation Management)</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>	<b>FTE</b>
Fire Captain (7 mo.)	-	-	-	-	-	-	0	2	2	0	2	0	2	2	2
Fire Fighter 1 (7 mo.)	-	-	-	-	-	-	0	6	6	0	6	0	6	6	6

## Appendix N: 6-Year Organizational Chart

