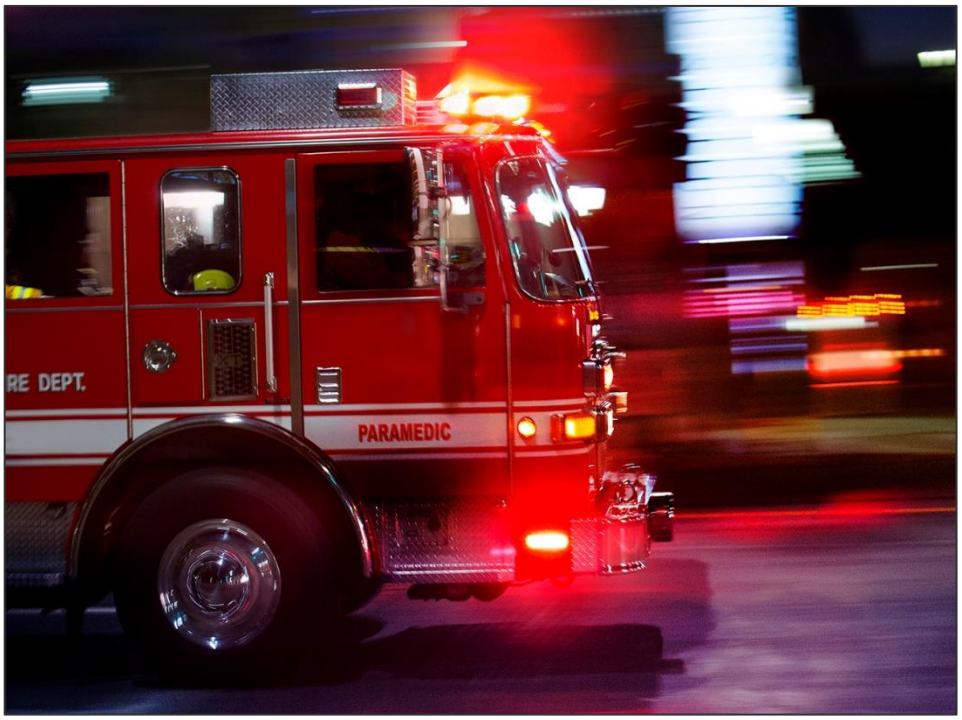
CENTER FOR PUBLIC SAFETY MANAGEMENT, LLC

Fire Operational and Administrative Analysis

Morgan Hill Fire Dept. and South Santa Clara County Fire District, California

FINAL REPORT-January 2017



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ICMA

Exclusive Provider of Public Safety Technical Services for
International City/County Management Association

The Association & The Company

The International City/County Management Association (ICMA) is a 100-year-old, nonprofit professional association of local government administrators and managers, with approximately 9,000 members spanning thirty-two countries.

Since its inception in 1914, ICMA has been dedicated to assisting local governments in providing services to their citizens in an efficient and effective manner. Our work spans all of the activities of local government — parks, libraries, recreation, public works, economic development, code enforcement, Brownfields, public safety, etc.

ICMA advances the knowledge of local government best practices across a wide range of platforms including publications, research, training, and technical assistance. Its work includes both domestic and international activities in partnership with local, state, and federal governments as well as private foundations. For example, it is involved in a major library research project funded by the Bill and Melinda Gates Foundation and is providing community policing training in Panama working with the U.S. State Department. It has personnel in Afghanistan assisting with building wastewater treatment plants and has had teams in Central America providing training in disaster relief working with SOUTHCOM.

The **ICMA *Center for Public Safety Management* (ICMA/CPSM)** was one of four Centers within the Information and Assistance Division of ICMA providing support to local governments in the areas of police, fire, EMS, emergency management, and homeland security. In addition to providing technical assistance in these areas we also represent local governments at the federal level and are involved in numerous projects with the Department of Justice and the Department of Homeland Security. In each of these Centers, ICMA has selected to partner with nationally recognized individuals or companies to provide services that ICMA has previously provided directly. Doing so will provide a higher level of services, greater flexibility, and reduced costs in meeting members' needs as ICMA will be expanding the services that it can offer to local governments. For example, The Center for Productivity Management (CPM) is now working exclusively with SAS, one of the world's leaders in data management and analysis. And the Center for Strategic Management (CSM) is now partnering with nationally recognized experts and academics in local government management and finance.

Center for Public Safety Management, LLC (CPSM) is now the exclusive provider of public safety technical assistance for ICMA. CPSM provides training and research for the Association's members and represents ICMA in its dealings with the federal government and other public safety professional associations such as CALEA. The Center for Public Safety Management, LLC maintains the same team of individuals performing the same level of service that it has for the past seven years for ICMA.

CPSM's local government technical assistance experience includes workload and deployment analysis using our unique methodology and subject matter experts to examine department organizational structure and culture, identify workload and staffing needs, and identify and disseminate industry best practices. We have conducted more than 200 such studies in 36 states and 155 communities ranging in size from 8,000 population (Boone, Iowa) to 800,000 population (Indianapolis, Ind.).

Thomas Wieczorek is the Director of the Center for Public Safety Management. Leonard Matarese serves as the Director of Research & Program Development. Dr. Dov Chelst is the Director of Quantitative Analysis.

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SECTION 1. EXECUTIVE SUMMARY

The Center for Public Safety Management, LLC (CPSM) was retained by the city of Morgan Hill and Santa Clara County to conduct a comprehensive analysis of fire department operations provided by the California Department of Forestry and Fire Protection (CAL FIRE) in these communities. This analysis includes CAL FIRE's deployment practices, workload, organization structure, training, performance measures, prevention activities, the fees for these services, and interactions with mutual aid partners. Specifically, CPSM was tasked with providing recommendations and alternatives regarding the current contractual relationship with CAL FIRE and to evaluate fire department operations, staffing levels, financial efficiencies, and alternative modes of operation.

During the study, CPSM analyzed performance data provided by CAL FIRE and also examined firsthand the department's operations. Fire departments tend to deploy resources utilizing traditional approaches, which are rarely reviewed. To begin the review, project staff asked CAL FIRE for certain documents, data, and information. The project staff used this information/data to familiarize themselves with the department's structure, assets, and operations. The provided information was also used in conjunction with information collected during an on-site visit to determine the existing performance of the department, and to compare that performance to national benchmarks. These benchmarks have been developed by organizations such as the National Fire Protection Association (NFPA), Center for Public Safety Excellence, Inc., (CPSE), and the ICMA Center for Performance Measurement.

Project staff conducted a site visit on May 12–14, 2016, for the purpose of observing fire department and agency-connected support operations, interviewing key department staff, and reviewing preliminary data and information. Telephone conference calls as well as e-mail exchanges were conducted between CPSM project management staff, the city, and CAL FIRE so that CPSM staff could affirm the project scope, and elicit further discussion regarding this operational analysis.

CAL FIRE provides full-service fire protection to many of the citizens of California through the administration of 145 cooperative ***fire protection agreements*** in 33 of the state's 58 counties, 30 cities, 32 fire districts, and 25 other special districts and service areas. CAL FIRE is a highly skilled and progressive organization that is a recognized leader nationally in its delivery of wildland protection, and fire and EMS services. The CAL FIRE personnel with whom CPSM interacted are truly interested in serving the City of Morgan Hill and the South Santa Clara County Fire District to the best of their abilities. As service demands increase and CAL FIRE is required to provide increased response activities, the necessity for strong collaboration with contract partners will also continue to evolve. This working relationship and the ability to address the expanding service needs and its corresponding reporting requirements will provide ongoing challenges. These however, are not insurmountable and CPSM will provide a series of observations and recommendations that we believe can allow CAL FIRE to become more ***efficient*** and ***smarter*** in the management of its emergency and nonemergency responsibilities.

RECOMMENDATIONS

CAL FIRE provides an excellent service to the citizens, local businesses, and visitors to the area. The department is well respected in the community and by city and county leadership. CAL FIRE's line and command personnel continually make every effort to be a part of the community and not be seen as outside contractors merely providing a service. The service agreement between the City of Morgan Hill and CAL FIRE was initiated in 2013; SSCCFD has maintained its relationship with CAL FIRE since 1980. The working relationship observed between the City, District, and CAL FIRE is impressive and is one of the more proficient cooperative arrangements for fire and prehospital emergency medical care that we have observed nationally.

Thirteen recommendations follow, and are also listed in the applicable sections within this report. The recommendations are based on best practices derived from the NFPA, CPSM, ICMA, the U.S. Fire Administration, the International Association of Emergency Managers (IAEM), and the Federal Emergency Management Agency (FEMA). Though these recommendations are intended to provide insightful guidance, it is ultimately the decision of the local governing bodies to choose those recommendations that are appropriate and ultimately how and when any efforts towards implementation are considered.

These recommendations are listed in order in which they appear in the report.

1. The City of Morgan Hill and the SSCCFD should continue the contractual relationship with CAL FIRE for protecting their respective communities.
2. CAL FIRE should continue in its effort to maintain the use of volunteers to provide assistance during larger events or extended operations. In addition, other support functions as canteen efforts, CERT, fire prevention duties, and assistance during community public events are effective methods to utilize volunteer support.
3. CAL FIRE should conduct a formal fire risk analysis that concentrates on strip commercial establishments, big-box occupancies, high-rise structures, and processing and institutional properties.
4. CAL FIRE should work with County EMS in modifying CAL FIRE's response protocols for Priority 2 call types (Alpha Designations) in an effort to alter unit response modes when calls are determined to nonemergency or minor incidents.
5. CAL FIRE should build its training regimens and tactical strategies around an exterior or transitional attack when the fire scenario and the number of responding personnel warrant this approach.
6. Morgan Hill and SSCCFD should maintain the current ALS first responder services in their respective response areas.
7. CAL FIRE should improve the level of review of its incident reporting to ensure the complete and accurate documentation of its response activities.
8. CAL FIRE should undertake a concerted effort to expand its current performance measures in order to incorporate a comprehensive performance management system that monitors a full range of performance outcomes.
9. Morgan Hill and SSCCFD should consider CPSE fire accreditation in the future.
10. CAL FIRE should improve its fire hydrant inspection and flow testing process in SSCCFD.
11. CAL FIRE should institute an in-service engine company fire inspection process in the SSCCFD.

12. Morgan Hill and Santa Clara County should consider consolidating their fire prevention efforts (permitting, plans review, inspections and code enforcement) under CAL FIRE in the delivery of fire prevention services.
13. The City of Morgan Hill and the SSCCFD should initiate discussions with CAL FIRE regarding options that can achieve greater efficiencies and operability in their fire and EMS dispatch operations.

SECTION 2. SCOPE OF PROJECT

The scope of this project was to provide an independent review of the services provided by CAL FIRE to the City of Morgan Hill and the South Santa Clara County Fire District (SSCCFD). This study provides a comprehensive analysis of CAL FIRE, including its organizational structure, workload, staffing, deployment, training, fire prevention, emergency communications (911), and planning and public education efforts. Local government officials often attempt to understand if their fire department is meeting the service demands of the community, and commission these types of studies to measure their departments against industry best practices. In this analysis CPSM provides recommendations where appropriate, and offers input on a strategic direction for the future.

Key areas evaluated during this study include:

- Fire department response times (using data from the city/county computer-aided dispatch system and its records management systems).
- Deployment and staffing.
- Organizational structure and managerial oversight.
- Fire and EMS unit workloads.
- CAL FIRE support functions (training, fire prevention/code enforcement/911 dispatch).
- Essential facilities, equipment, and resources.
- The working relationship with Santa Clara County EMS.

SECTION 3. ORGANIZATION AND MANAGEMENT

GOVERNANCE AND ADMINISTRATION

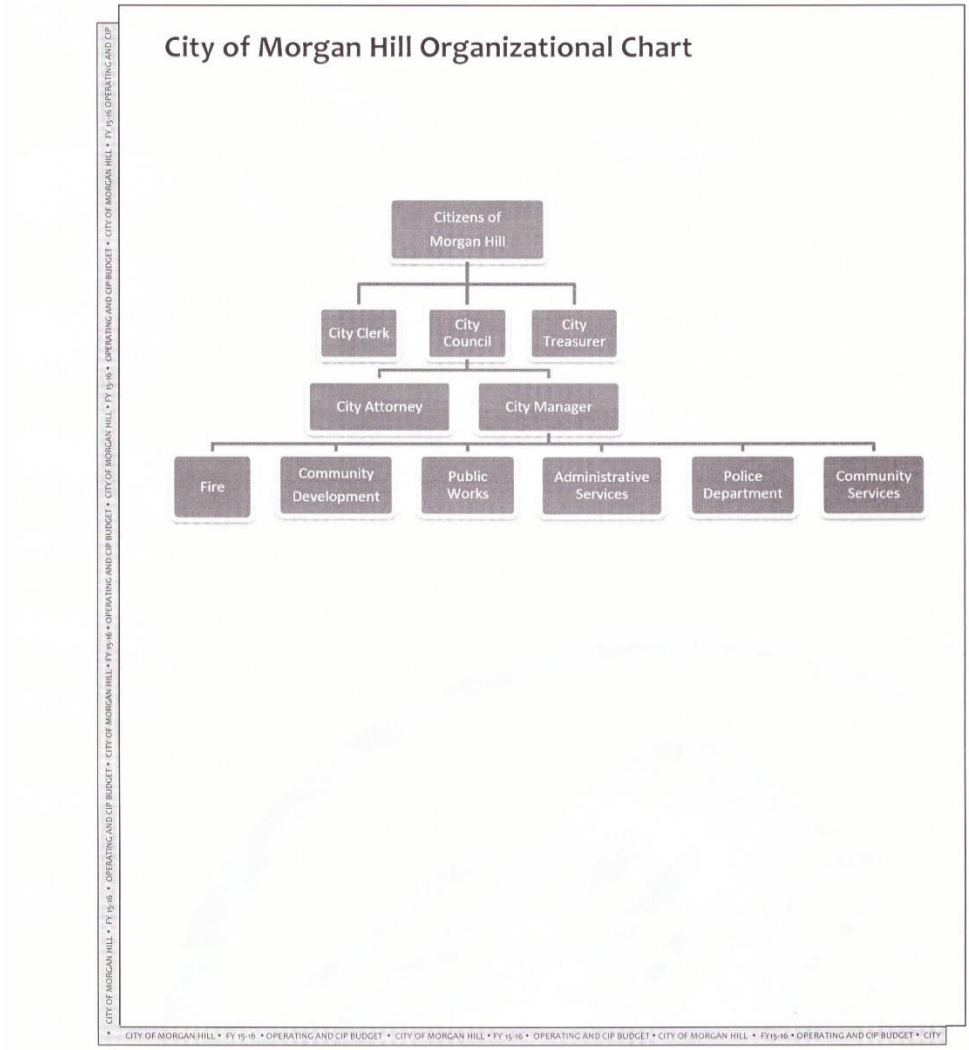
City of Morgan Hill

Morgan Hill is located in the southern portion of Santa Clara County, approximately 12 miles south of San Jose. Morgan Hill is an affluent bedroom community of San Jose and Silicon Valley. The city sits in the Santa Clara Valley, which previously supported ranching and agricultural interests. The corporate limits of the City of Morgan Hill encompass a land area of approximately 12.8 square miles. According to the U.S. Census, the estimated population of the city in 2014 was 42,068. Morgan Hill is a General Law City and operates under a Council/Manager form of government. This form of government combines the political leadership of elected officials in the form of the Morgan Hill City Council with the managerial experience of an appointed city manager. The Morgan Hill City Council is comprised of one mayor and four council members who are all elected at large. All elected officials serve four-year terms and elections are nonpartisan. The city charter is the basic law under which the city operates. The Mayor is the formal representative for the city and presides over its council meetings. The City Council serves as the legislative body for the city. Its responsibilities include enacting laws that govern the city, adopting the annual budget, and appropriating funds to provide city services. The City Council also establishes policies executed through the administration. Most transactions require only a quorum or simple majority be present.

The City Manager is responsible for the business, financial, and property transactions of the city, as well as preparation of the annual budget, appointment and supervision of personnel, enforcement of city ordinances, and the organization and general management of city departments.

Morgan Hill is typical of many cities and towns across the United States in that it operates its own public works department, library, parks and recreation, and several internal functions including finance and human resources. Morgan Hill operates its own police department. In 2013 Morgan Hill chose to enter into a cooperative agreement with the California Department of Forestry and Fire Protection (CAL FIRE) to obtain fire protection and EMS services. In a unique cooperative arrangement with both CAL FIRE, fire and EMS services are provided to both the City of Morgan Hill and the South Santa Clara County Fire District by CAL FIRE.

FIGURE 3-1: City of Morgan Hill Table of Organization

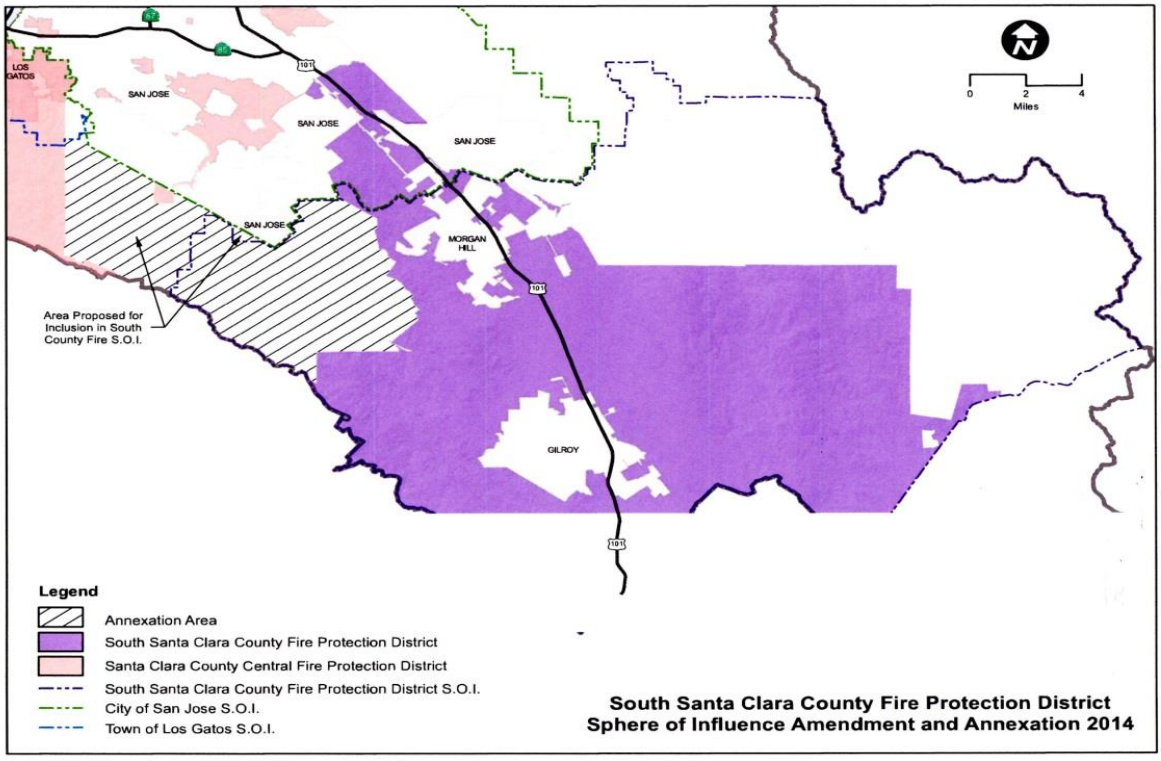


South Santa Clara County Fire District (SSCCFD)

The District was established June 1, 1980, as a dependent fire district within Santa Clara County. As a dependent fire protection district, the Board of Supervisors of Santa Clara County have oversight of fire department operations and approve any taxation and official actions of the District. The District also utilizes a Fire Board of Commissioners, which is composed of five area representatives and two rotating members. The Fire District Board of Commissioners are appointed by the District 1– Santa Clara County Board of Supervisors and serve at their pleasure. They provide community input, oversight, and budget management regarding fire and EMS in the District. Funding is primarily from ad valorem taxes that are levied against property in the District. In addition, the District also generates fire protection mitigation fees, which are additional fees levied against new construction and are utilized solely for the funding of capital improvement projects and new equipment purchases.

The District has an estimated area of 320 square miles and a permanent population of 38,500. Due to the presence of major freeway, highway, and rail lines in the area, an estimated transient population of nearly 100,000 travel through the District daily. Figure 3-2 is a map of the SSCCFD.

FIGURE 3-2: South Santa Clara County Fire District



CAL FIRE

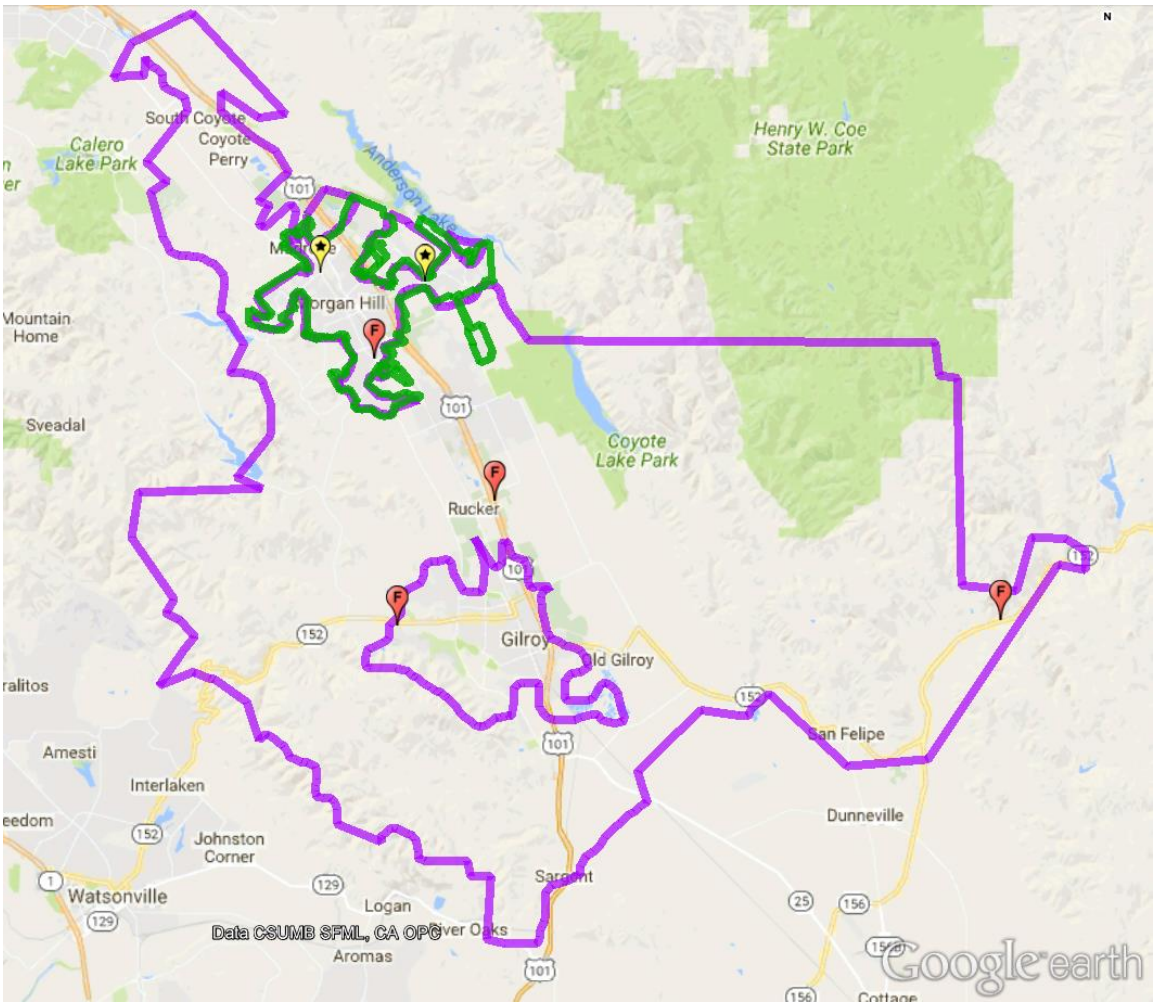
CAL FIRE provides fire and emergency medical services (EMS) under its cooperative fire protection agreements to both the City of Morgan Hill and SSCCFD. Santa Clara County EMS is responsible for EMS transport in both jurisdictions and CAL FIRE provides ALS first response in both the District and the City. Morgan Hill has two fire stations, and SSCCFD operates three fire stations. The District also operates a fourth fire station (Station 31) in the area of Pacheco Pass. This station operates under an ***Amador Agreement***, meaning it is staffed on a full-time basis but the funding mechanism is different, with the state assuming much of the funding responsibility during wildfire season. Because of the limited response activity (104 total responses in 2015), the Pacheco Station was excluded from this analysis, except for the interaction involving mutual aid responses. The City and District entered in a ***Boundary-Drop Agreement*** in 2013 in which the resources of both agencies are comingled in servicing the two areas. CPSM recognizes this agreement as a ***Best Practice***. The combined fire stations that service Morgan Hill and SSCCFD are as follows:

- Station 1 (SSCCFD) – 15670 Monterey St.*
- Station 2 (SSCCFD) – 10810 No Name Uno Ave.
- Station 3 (SSCCFD) – 3050 Hecker Pass Highway
- Station 31 (SSCCFD) – 12280 Pacheco Pass Hwy**
- Station 4 (City) – 18300 Old Monterey (El Toro)
- Station 5 (City) – 2100 E. Dunne Ave. (Dunne Hill)

*Note: Station 1 is a state-owned facility that utilizes a shared staffing plan involving the state and District.
** Note: Station 31 operates under an Amador Agreement with the state and operates at the ALS level.

A graphic depiction of the city's two fire station locations, CAL FIRE Station 1 and the District's three fires stations appear in Figure 3-3.

FIGURE 3-3: Morgan Hill and SSCCFD Fire Stations



Budget Allocation and Deployment

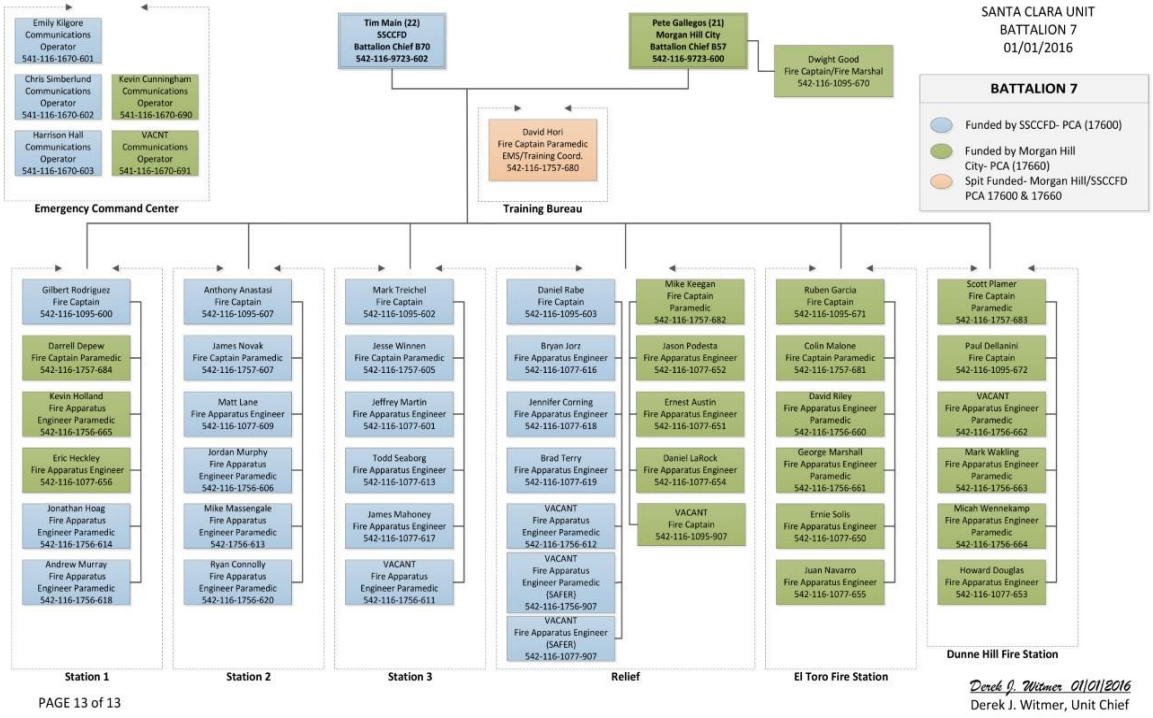
CAL FIRE uses a very detailed proportional allocation model to fund its operations in the two service areas. A total of fifty-one full-time employees are assigned to field operations in the combined areas. In addition, there are eight personnel that serve in support and command roles (chief officers, fire prevention, training, mechanical staff, and communications) and who are proportionately funded by both Morgan Hill and the District. There are also a number of personnel (Fire Chief, administrative and clerical support, and some mechanical staff) who support the City/District operations but are funded in part by the state and also through an administrative charge that is included in both the City and District contracts.

CAL FIRE operates with a traditional fire department organizational structure which is led by the Fire Chief, who may respond to larger incidents to provide command and scene support. The Battalion Chief manages the day-to-day field operations, including scheduling and payroll and personnel issues. There is a Training Chief who oversees all departmental training requirements (fire, EMS, and specialty training). The Fire Marshal is responsible for fire prevention activities, including code enforcement, plans reviews, and fire inspections. Operationally, CAL FIRE utilizes two platoons and a relief squad, each led by a Battalion Chief. Each station is supervised by a Fire Captain. Also assigned are Fire Apparatus Engineers who serve as vehicle operators and

firefighters. All field personnel are certified as either EMTs or paramedics and every station is staffed with at least one paramedic in order to provide advanced life support (ALS) services.

Operational shift personnel work 72 hours on and 96 hours off, which is based on an average workweek of 53 hours. The normal workweek includes 53 hours at straight-time wages and 19 hours at the overtime rate (time and one-half the employee's hourly rate). The minimum staffing each day is 16 personnel, which includes three personnel operating from each of the five fire stations (two City and three District) and one Battalion Chief (excludes Station 31, which operates under an Amador Agreement). CAL FIRE utilizes a unique platoon schedule to staff the various stations throughout the year. There are three platoons that are operational in this system. Platoon A works for three consecutive days. Platoon B works the three alternate days. The third platoon is a relief platoon and these personnel typically work the seventh day not covered by either Platoon A & B and also cover for scheduled vacancies on either of the other two platoons. CAL FIRE utilizes a constant staffing model; thus, when an operational vacancy occurs as a result of scheduled or unscheduled leave (sick leave, vacation, disability leave, or termination, etc.), that vacancy is filled by either by an individual from the relief squad or by the recall of an off-duty person (utilizing overtime). Figure 3-4 is a representation of the CAL FIRE platoon structure.

FIGURE 3-4: CAL FIRE Platoon Structure



As indicated above, in each monthly work cycle CAL FIRE employees typically work 288 hours, of which 212 hours are at the straight time rate and 76hours are at an overtime rate. This is not typical in most fire organizations, as scheduled overtime is usually 12 hours or less. CAL FIRE provides a much higher amount of scheduled overtime, but this is offset by the lower wage scale when compared with neighboring California jurisdictions. The state of California is required by Government Code; Section 19827.3, to survey salary and benefits of firefighters in other jurisdictions. In the 2014 annual survey, conducted by the California Department of Human Resources (CalHR), it was determined that when compared to 20 randomly selected municipalities for the four positions surveyed (Firefighter II, Fire Apparatus Engineer, Fire Captain,

and Battalion Chief), the combined compensation package (salary, overtime, and benefits), for CAL FIRE personnel was 33.1 percent lower. When comparing salary alone (excluding overtime), CAL FIRE is paying significantly less than those wages typically found in other California municipalities (approximately 89 percent lower). Tables 3-1 through 3-4 show the findings from the CalHR 2014 survey for the four personnel positions that were studied.

TABLE 3-1: Firefighter II Total Compensation Comparison

Fire Department	Class Title – Class Code	Min. Salary	Max. Salary	Hrs. per Week	Max. Hourly Pay	Monthly Hours of EDWC*	Monthly Pay for EDWC*	Max. Hourly Pay With EDWC	Max. Monthly Cash Bens.	Max. Monthly Emplyr. Paid Bens.	Max. Mo. Vac.	Max. Mo. Sick	Ave. Mo. Hol. Hrs.	Value of Max. Mo. Ave. Vac./ Sick/ Hol.	Mon. Total Comp.
Bakersfield	32202 FF Suppression	$4,621	$5,627	56	$23.19	12.6	$483.00	$25.18	$1,100.41	$3,145.63	14	11	13	$866.72	$11,243
Chula Vista	5623 FF	$4,687	$5,697	56	$32.87	0.0	$0.00	$32.87	$616.67	$3,840.93	19	11	11	$1,333.16	$11,488
Corona	FRF100R FF	$4,941	$6,033	56	$34.80	0.0	$0.00	$34.80	$1,478.09	$4,692.35	31	0	12	$1,608.13	$13,712
Escondido	60700 FF/Paramedic	$4,965	$6,336	56	$26.11	0.0	$0.00	$26.11	$1,122.74	$3,854.11	18	12	12	$1,197.57	$12,510
Fullerton	FF	$4,522	$5,771	56	$23.78	12.6	$458.39	$25.67	$1,284.10	$4,088.07	18	11	10	$1,147.47	$12,749
Hayward	215 FF (56 hr.)	$6,642	$8,074	56	$33.24	0.0	$0.00	$33.24	$1,287.30	$4,964.88	20	12	28	$1,401.05	$15,727
Livermore-Pleasanton	FF	$5,800	$7,405	56	$30.52	13.0	$974.68	$34.53	$1,313.02	$5,102.63	16	11.2	0	$1,620.90	$16,416
Los Angeles County	0199 FF	$4,345	$6,353	56	$26.08	12.6	$675.11	$28.85	$2,422.83	$4,649.59	18	12	11	$1,446.22	$15,548
Milpitas	4502 FF/EMT	$7,180	$8,680	56	$35.77	0.0	$0.00	$35.77	$560.71	$5,191.32	19	24	0	$2,164.43	$16,596
Novato	5623 FF	$6,567	$7,437	56	$42.91	0.0	$0.00	$42.91	$150.00	$6,226.39	22	12	0	$1,488.20	$15,301
Ontario	3005 FF	$4,713	$5,729	53	$24.94	30.0	$1,417.22	$31.12	$1,604.20	$4,993.05	22	12	15	$1,564.33	$15,308
Oxnard	FF	$4,922	$6,312	56	$26.01	10.8	$486.50	$28.02	$991.91	$3,976.14	35	0	0	$1,042.52	$12,809
Rialto	6013 FF	$4,322	$5,792	56	$23.80	6.0	$232.14	$24.76	$762.53	$3,921.80	18	13	14	$1,227.96	$11,936
Roseville	FF	$4,779	$6,725	56	$27.71	0.0	$0.00	$27.71	$1,344.92	$4,016.73	18	12	14	$1,249.78	$13,336
San Bernardino (City of)	60031 FF	$5,542	$7,252	56	$29.80	12.6	$579.92	$32.19	$250.00	$3,131.57	30	16	12	$1,788.20	$13,002
San Mateo (City of)	See Engineer	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Monica	2050 FF	$6,343	$7,831	56	$32.27	0.0	$0.00	$32.27	$2,910.02	$5,935.96	15	12	12	$1,726.24	$18,403
Stockton	20545 FF	$4,139	$6,713	56	$27.66	4.3	$200.77	$28.49	$1,099.24	$4,034.90	35	12	9	$1,539.93	$13,588
Torrance	7112 FF	$4,195	$6,345	56	$26.19	12.5	$585.11	$28.60	$2,705.04	$6,073.32	24	9	8	$1,531.31	$17,240
Ventura County	00770 FF	$4,753	$6,327	56	$36.50	13.5	$677.64	$40.41	$1,870.85	$5,831.54	29	11	0	$1,462.25	$16,169
Survey Average		$5,157	$6,655	56	$29.69	7.4	$356.37	$31.24	$1,309.19	$4,614.26	22.1	11.3	9.5	$1,438.24	$14,373
CAL FIRE	FF II	$2,777	$3,509	72	$11.25	82.3	$1,825.33	$17.10	$894.17	$3,390.10	23.0	14	24	$1,431.91	$11,051
CAL FIRE Salary Relationship		-85.7%	-89.6%		-164.0%		$80.5%	-82.7%	-46.4%	-36.1%				-0.4%	-30.1%

Note: FF = Firefighter

City of San Mateo does not have a classification comparable to Firefighter II.

Cities of Fullerton and Hayward did not provide which premium pays are included in the calculation of retirement or paid leave. It is assumed that all earned pay differentials and planned overtime (for retirement calculation only) are included in these calculations.

TABLE 3-2: Fire Apparatus Engineer Total Compensation Comparison

Fire Department	Class Title – Class Code	Min. Salary	Max. Salary	Hrs. per Week	Max. Hourly Pay	Monthly Hours of EDWC*	Monthly Pay for EDWC*	Max. Hourly Pay With EDWC	Max. Monthly Cash Bens.	Max. Monthly Emplyr. Paid Bens.	Max. Mo. Vac.	Max. Mo. Sick	Ave. Mo. Hol. Hrs.	Value of Max. Mo. Ave. Vac./ Sick/ Hol.	Mon. Total Comp.
Bakersfield	32150 Fire Engineer	$5,100	$6,216	56	$25.62	12.6	$533.56	$27.81	$1,159.32	$3,392.74	14	11	13	$979.54	$12,281
Chula Vista	5603 Fire Engineer	$5,515	$6,703	56	$38.67	0.0	$0.00	$38.67	$616.67	$4,206.35	19	11	11	$1,568.82	$13,095
Corona	Fire Engineer	$5,598	$6,834	56	$39.43	0.0	$0.00	$39.43	$1,674.33	$5,104.00	31	0	12	$1,708.42	$15,321
Escondido	60300 Fire Engineer	$5,213	$6,653	56	$27.42	0.0	$0.00	$27.42	$1,069.40	$3,945.02	18	12	12	$1,257.49	$12,925
Fullerton	Fire Engineer	$5,145	$6,566	56	$27.06	12.6	$521.81	$29.21	$1,495.95	$4,402.32	21	11	10	$1,410.84	$14,397
Hayward	221 Apparatus Operator (56 Hr.)	$7,047	$8,564	56	$46.81	0.0	$0.00	$46.81	$1,363.25	$5,120.16	20	12	28	$1,485.76	$16,533
Livermore-Pleasanton	Fire Engineer	$7,894	$8,288	56	$34.15	13.0	$1,090.91	$38.65	$1,463.13	$5,469.99	20	11.2	0	$1,974.02	$18,286
Los Angeles County	0201 Fire Fighter Specialist	$6,432	$7,568	56	$31.07	12.6	$803.47	$34.37	$2,851.18	$5,214.98	20	12	11	$1,806.88	$18,245
Milpitas	4501 Fire Engineer	$7,682	$9,290	56	$38.28	0.0	$0.00	$38.28	$764.85	$5,459.67	19	24	0	$2,356.60	$17,871
Novato	5603 Fire Engineer	$8,290	$8,290	56	$47.83	0.0	$0.00	$47.83	$150.00	$6,709.60	22	12	0	$1,655.54	$16,805
Ontario	Fire Engineer	$5,615	$6,826	53	$29.72	30.0	$1,642.94	$36.87	$1,659.06	$5,487.77	24	12	15	$1,884.20	$17,500
Oxnard	Fire Engineer	$5,609	$7,193	56	$29.64	10.8	$553.97	$31.92	$1,119.62	$4,461.06	37	0	0	$1,282.20	$14,610
Rialto	6009 Fire Engineer	$5,266	$7,057	56	$29.00	6.0	$282.44	$30.16	$1,065.46	$4,604.18	18	13	14	$1,521.71	$14,531
Roseville	3340 Fire Engineer	$5,326	$7,494	56	$30.88	0.0	$0.00	$30.88	$1,873.47	$4,462.02	18	12	14	$1,392.75	$15,222
San Bernardino (City of)	60881 Fire Engineer	$6,108	$7,947	56	$32.66	12.6	$633.97	$35.26	$250.00	$3,329.71	30	16	12	$1,953.76	$14,114
San Mateo (City of)	3140 Firefighter / Engineer	$7,099	$8,465	56	$34.88	6.5	$226.74	$35.82	$1,837.85	$4,464.60	19	12	0	$1,822.56	$16,817
Santa Monica	2030 Fire Engineer	$7,494	$9,252	56	$38.13	0.0	$0.00	$38.13	$3,355.50	$6,594.44	15	12	12	$2,026.21	$21,228
Stockton	Firefighter Engineer	$5,240	$6,727	56	$27.72	4.3	$201.19	$28.55	$1,101.43	$4,040.65	35	12	9	$1,543.14	$13,613
Torrance	Fire Engineer	$5,099	$6,197	56	$25.57	12.5	$593.94	$28.03	$3,256.44	$6,281.61	24	9	8	$1,599.55	$17,929
Ventura County	Fire Engineer	$5,956	$7,181	56	$41.43	13.5	$644.75	$45.15	$622.88	$5,576.97	29	11	0	$1,659.75	$15,685
Survey Average		$6,136	$7,466	56	$33.80	7.4	$386.48	$35.46	$1,437.49	$4,916.39	22.6	11.3	9.0	$1,644.48	$15,850
CAL FIRE	Fire Apparatus Engineer	$3,325	$4,003	72	$12.83	82.3	$2,077.27	$19.49	$894.17	$3,623.73	23.0	14	24	$1,620.87	$12,219
CAL FIRE Salary Relationship		-84.6%	-86.5%		-163.4%		81.4%	-82.0%	-60.8%	-35.7%				-1.5%	-29.7%

Cities of Fullerton and Hayward did not provide which premium pays are included in the calculation of retirement or paid leave. It is assumed that all earned pay differentials and planned overtime (for retirement calculation only) are included in these calculations.

TABLE 3-3: Fire Captain Total Compensation Comparison

Fire Department	Class Title – Class Code	Min. Salary	Max. Salary	Hrs. per Week	Max. Hourly Pay	Monthly Hours of EDWC*	Monthly Pay for EDWC*	Max. Hourly Pay With EDWC	Max. Monthly Cash Bens.	Max. Monthly Emplyr. Paid Bens.	Max. Mo. Vac.	Max. Mo. Sick	Ave. Mo. Hol. Hrs.	Value of Max. Mo. Ave. Vac./ Sick/ Hol.	Mon. Total Comp.
Bakersfield	67180 Fire Capt.	$6,094	$7,425	56	$30.60	12.6	$637.33	$33.22	$1,280.21	$3,899.87	19	11	13	$1,313.25	$14,556
Chula Vista	5583 Fire Capt.	$6,468	$7,862	56	$45.36	0.0	$0.00	$45.36	$616.87	$4,627.14	24	11	11	$2,081.67	$15,188
Corona	Fire Capt.	$7,255	$8,857	56	$51.10	0.0	$0.00	$51.10	$2,258.54	$6,180.23	36	0	12	$2,469.74	$19,766
Escondido	Fire Capt.	$6,118	$7,809	56	$32.18	0.0	$0.00	$32.18	$1,190.78	$4,385.46	22	12	12	$1,617.75	$15,003
Fullerton	Fire Capt. (56 hr.)	$5,996	$7,652	56	$31.53	12.6	$597.10	$33.99	$1,523.10	$4,805.07	22	11	10	$1,643.45	$16,221
Hayward	Fire Capt. (56 hr.)	$8,785	$9,685	56	$39.91	0.0	$0.00	$39.91	$1,537.01	$5,475.40	25	12	28	$1,909.99	$18,607
Livermore-Pleasanton	Fire Captain	$8,831	$9,271	56	$38.20	13.0	$1,220.30	$43.23	$1,630.24	$5,878.96	24	11.2	0	$2,386.95	$20,387
Los Angeles County	0205 Fire Capt.	$7,605	$8,949	56	$36.74	12.6	$986.90	$40.79	$3,830.12	$6,094.52	20	12	11	$2,233.43	$22,084
Milpitas	2504 Fire Capt.	$8,712	$10,542	56	$43.44	0.0	$0.00	$43.44	$1,038.28	$5,961.92	24	24	0	$2,968.95	$20,511
Novato	5583 Capt. (Line/Shift)	$9,427	$9,427	56	$54.39	0.0	$0.00	$54.39	$200.00	$7,381.87	32	12	0	$2,443.76	$19,453
Ontario	3016 Fire Capt.	$6,640	$8,071	53	$35.14	30.0	$2,017.74	$43.93	$2,326.67	$6,309.25	26	12	15	$2,399.52	$21,124
Oxnard	Fire Capt.	$6,530	$8,374	56	$34.51	10.8	$650.09	$37.19	$1,374.65	$5,151.76	38	0	0	$1,541.19	$17,092
Rialto	6007 Fire Capt.	$6,107	$8,163	56	$33.63	6.0	$327.21	$34.97	$1,206.21	$5,157.22	18	13	14	$1,759.03	$16,633
Roseville	3320 Fire Capt.	$6,191	$8,711	56	$35.90	0.0	$0.00	$35.90	$2,308.35	$5,028.77	22	12	14	$1,809.16	$17,857
San Bernardino (City of)	60130 Fire Investigator/Capt.	$9,128	$9,128	40	$37.51	12.6	$733.65	$40.53	$350.00	$3,793.54	40	16	12	$2,648.87	$16,654
San Mateo (City of)	3120 Fire Capt.	$9,049	$9,888	56	$40.75	6.5	$264.87	$41.84	$2,037.13	$5,121.04	25	12	0	$2,419.06	$19,731
Santa Monica	0950 Fire Capt.	$8,841	$10,915	56	$44.98	0.0	$0.00	$44.98	$3,876.65	$7,365.06	21	12	12	$2,742.99	$24,900
Stockton	20335 Fire Capt.	$5,949	$7,638	56	$31.48	4.3	$228.44	$32.42	$1,243.82	$4,414.60	40	12	9	$1,909.50	$15,434
Torrance	7114 Fire Capt.	$5,902	$8,450	56	$34.87	12.5	$831.97	$38.31	$4,336.89	$8,003.03	24	9	8	$2,163.55	$23,786
Ventura County	00750 Fire Capt.	$6,938	$8,366	56	$48.26	13.5	$745.36	$52.56	$643.09	$6,335.68	29	11	0	$1,933.38	$18,043
Survey Average		$7,328	$8,760	55	$39.02	7.4	$462.05	$41.01	$1,740.43	$5,569.52	26.6	11.3	9.0	$2,119.26	$18,651
CAL FIRE	Fire Capt., Range A	$3,648	$4,609	72	$14.77	82.3	$2,456.42	$22.65	$1,032.44	$3,975.58	24.8	14	24	$1,960.81	$14,034
CAL FIRE Salary Relationship		-100.9%	-90.1%		-164.2%		81.2%	-81.1%	-68.6%	-40.1%				-8.1%	-32.9%

San Bernardino Fire Captains do not get FLSA Overtime. Instead, they receive an * percent Captain Assignment pay.

Cities of Fullerton and Hayward did not provide which premium pays are included in the calculation of retirement or paid leave. It is assumed that all earned pay differentials and planned overtime (for retirement calculation only) are included in these calculations.

TABLE 3-4: Battalion Chief Total Compensation Comparison

Fire Department	Class Title – Class Code	Min. Salary	Max. Salary	Hrs. per Week	Max. Hourly Pay	Monthly Hours of EDWC*	Monthly Pay for EDWC*	Max. Hourly Pay With EDWC	Max. Monthly Cash Bens.	Max. Monthly Emplyr. Paid Bens.	Max. Mo. Vac.	Max. Mo. Sick	Ave. Mo. Hol. Hrs.	Value of Max. Mo. Ave. Vac./ Sick/ Hol.	Mon. Total Comp.
Bakersfield	68130 Fire Batt. Chief Days	$7,635	$9,281	56	$38.25	0.0	$0.00	$38.25	$1,465.81	$4,396.62	19	11	13	$1,641.50	$16,785
Chula Vista	5511 Fire Batt. Ch.	$8,058	$9,794	56	$56.51	0.0	$0.00	$56.51	$616.67	$5,328.86	24	11	11	$2,593.24	$18,333
Corona	Battalion Chief	$9,498	$11,595	56	$66.89	0.0	$0.00	$66.89	$463.80	$6,599.60	36	0	12	$3,233.18	$21,862
Escondido	Fire Batt. Chief	$7,052	$9,521	56	$39.23	0.0	$0.00	$39.23	$208.33	$4,637.01	26	12	12	$1,957.43	$16,324
Fullerton	Batt. Chief (56 hr.)	$8,726	$11,137	56	$45.89	12.6	$579.36	$46.28	$627.97	$5,763.46	2	11	10	$2,107.35	$20,215
Hayward	Batt. Chief (56 hr.)	$10,037	$12,199	56	$50.27	0.0	$0.00	$50.27	$1,930.85	$6,710.20	25	12	14	$2,969.79	$23,810
Livermore-Pleasanton	Battalion Chief	$11,638	$11,638	56	$47.96	13.0	$1,531.85	$54.27	$2,032.63	$6,863.73	24	11.2	0	$3,000.43	$25,067
Los Angeles County	0208 Batt. Chief	$10,199	$12,001	56	$49.26	12.6	$1,243.83	$54.37	$4,083.63	$7,811.39	20	12	11	$2,806.86	$27,947
Milpitas	640 Fire Batt. Ch.	$8,839	$12,067	56	$51.95	0.0	$0.00	$49.73	$200.00	$6,149.74	22	24	0	$2,999.95	$21,417
Novato	5511 Batt. Chief (Line/Shift)	$12,125	$12,125	56	$69.95	0.0	$0.00	$69.95	$242.49	$9,502.85	32	9	24	$4,602.02	$26,472
Ontario	3017 Fire Batt. Supervisor	$8,607	$10,461	53	$45.55	30.0	$2,440.48	$56.18	$2,094.20	$7,108.21	38	0	15	$2,799.35	$24,904
Oxnard	Fire Batt. Chief	$8,531	$12,061	56	$49.70	0.0	$0.00	$49.70	$0.00	$6,021.28	45	0	0	$2,238.74	$20,321
Rialto	6005 Fire Bat. Ch.	$8,012	$10,737	56	$44.25	0.0	$0.00	$44.25	$1,766.16	$5,850.05	18	14	18	$2,491.09	$20,844
Roseville	0905 Fire Batt. Chief (24 hr.)	$8,351	$11,191	56	$46.12	0.0	$0.00	$46.12	$1,498.88	$5,567.72	22	8	12	$2,082.17	$20,340
San Bernardino (City of)	70241 Battalion Chief (56 hr.)	$12,203	$12,203	56	$50.15	12.6	$988.52	$54.21	$566.67	$4,714.57	25	12	12	$2,557.98	$21,031
San Mateo (City of)	2086 Fire Batt. Chief-56	$10,555	$12,587	56	$51.87	6.5	$337.16	$53.26	$509.17	$5,343.75	22	12	0	$2,625.21	$21,403
Santa Monica	0812 Batt. Chief	$11,182	$13,805	56	$56.89	0.0	$0.00	$56.89	$1,342.23	$7,490.43	21	12	12	$2,808.90	$25,447
Stockton	06186 Fire Batt. Chief	$7,179	$9,217	56	$37.98	4.3	$275.66	$39.12	$1,490.62	$5,062.76	40	12	9	$2,304.25	$18,350
Torrance	7115 Fire Batt. Ch.	$8,789	$10,080	56	$41.54	12.5	$1,113.15	$46.12	$5,090.89	$9,319.85	24	9	8	$2,566.84	$28,170
Ventura County	00926 Fire Batt. Ch.	$7,501	$10,502	56	$60.59	13.5	$1,227.86	$67.67	$1,264.10	$8,683.23	29	0	3	$1,920.40	$23,597
Survey Average		$9,236	$11,210	56	$50.04	5.9	$486.89	$52.06	$1,374.75	$6,444.77	26.7	9.6	9.8	$2,615.33	$22,132
CAL FIRE	Battalion Chief	$4,641	$5,869	72	$18.81	82.3	$2,471.24	$26.73	$1,187.62	$4,423.46	26.6	14	24	$1,866.66	$15,818
CAL FIRE Salary Relationship		-99.0%	-91.0%		-166.0%		80.3%	-94.8%	-15.8%	-45.7%				-40.1%	-39.9%

Cities of Fullerton and Hayward did not provide which premium pays are included in the calculation of retirement or paid leave. It is assumed that all earned pay differentials and planned overtime (for retirement calculation only) are included in these calculations.

It is also interesting to note that most of the agencies surveyed participate in the California Public Employees' Retirement System (CalPERS). Only three of the 21 agencies surveyed utilized a municipal pension system; these three must make a significantly higher employer contribution then those utilizing CALPERS. Also notable were the number of days and hours worked in a year by CAL FIRE employees as compared to those surveyed. CAL FIRE employees work 165 days annually, as compared to the 125 days worked, on average, in surveyed jurisdictions. In terms of actual hours, CAL FIRE employees work nearly 25 percent more hours than those of their surveyed counterparts. Table 3-5 shows the days and hours worked in surveyed jurisdictions and by CAL FIRE. In summary, however, the personnel costs for CAL FIRE are significantly less than those of California jurisdictions in the 2014 survey.

TABLE 3-5: Hours and Days Worked Annually by Fire Department

Fire Department	Hours Annually	Days Annually
Bakersfield	2920.00	122
Chula Vista	3128.57	130
Corona	2920.00	122
Escondido	3128.57	130
Fullerton	2911.92	121
Heyward	2920.00	122
Livermore-Pleasanton	2920.00	122
Los Angeles Co.	2920.00	122
Milpitas	3128.57	130
Novato	2920.00	122
Ontario	3128.57	130
Oxnard	2920.00	122
Rialto	3128.57	130
Roseville	3128.57	130
San Bernardino (City of)	2920.00	122
San Mateo (City of)	2920.00	122
Santa Monica	3128.57	130
Stockton	2920.00	122
Torrance	2920.00	122
Ventura Co.	3128.57	130
Local Average	3007.39	125
State Firefighters (CAL FIRE)	3744.00	156

Budgetary Costs

As indicated above, both the City of Morgan Hill and the South Santa Clara County Fire District contract with CAL FIRE for all fire and EMS services in their respective jurisdictions. Neither the City nor the District employ any fire personnel and all services, including the administrative support functions, are provided under contract by CAL FIRE. These arrangements are governed through cooperative fire protection agreements between the state of California and Morgan Hill and Santa Clara County. CAL FIRE utilizes a ***Direct Cost Budgeting Proces***s for both the City and the District. In this methodology, actual costs are reimbursed to CAL FIRE for its services. CAL FIRE provides a five-year budget projection, but actual costs are funded by the respective agency. In most instances, CAL FIRE costs are lower than budget projections. In addition, the City and District receive an EMS reimbursements for call activity and response time compliance. Each agency can then use these revenues to offset their budgetary costs. In FY 2015-16 the budget

allocation for the City was $4.9 million and the District amount was $5.8 million. Combined, both agencies are paying just under $10.8 million for their service contract to CAL FIRE. This provides 24/7 protection to a combined service population of 80,568 and a service area of over 332 square miles.

TABLE 3-6: Budget and Service Profile

	FY 2015-16 Budget	Population	Service Area	Personnel	Alarm Activity
Morgan Hill	$5.35 million	42,068	12.8 Sq. Miles	25	3,066
SSCCFD	$5.98 million	38,500	320 Sq. Miles	31	1,929
Total	**$11.33 million**	**80,568**	**332 Sq. Miles**	**56**	**4,995***

*Note: Excludes cancelled calls and calls handled by mutual aid partners.

Perhaps the most challenging question being faced by local elected officials and municipal administrators across the nation is how much fire and EMS protection is appropriate for their community. Though there are a whole host of guidelines, as well as historical and political influences that frame this issue, it ultimately comes down to local officials to determine what is right for their community. The level of protection currently being provided in Morgan Hill and SSCCFD is sufficiently meeting the service demand and the level of protection is very appropriate for the anticipated risk. The key efficiency involved in the current arrangement is the co-utilization of resources between the City and District, combined with the expertise in both command functions and financial oversight provided by the CAL FIRE leadership. In addition, CAL FIRE maintains tremendous depth in the amounts and types of resources that can be drawn upon during those more unique or larger incidents. CPSM believes that the cost of services provided by CAL FIRE is extremely cost effective and less expensive than if the City or District individually would attempt to replicate these services. When looking at the City of Gilroy, which CPSM believes would be comparable to either the City or the District if they chose to operate independently, it was found that Gilroy is expending in excess of $8 million dollars for its fire department operations. The Gilroy Fire Department employs 41 personnel and operates three fire stations in a city of approximately 50,000 and handles just over 5,200 calls annually. The expenditures in Gilroy are significantly higher than the current expenditures of either the City or District individually.

Recommendation: The City of Morgan Hill and the SSCCFD should continue the contractual relationship with CAL FIRE for protecting their respective communities.

USE OF VOLUNTEERS

CAL FIRE supports a volunteer corps in the District and is attempting to build a volunteer effort within the City service area. Currently, 12 volunteers are active in the District and they are used primarily in support roles, during special events, and during larger incidents.

The ability to develop and maintain a volunteer contingent is extremely difficult in suburban areas in which residents commute to work in neighboring urban areas. CAL FIRE maintains the training and proficiency of its volunteers to bolster staffing during peak demand periods and during larger incidents. Volunteer efforts are typically more productive in rural areas in which members of the community work and reside within the jurisdiction. CAL FIRE does not pay for volunteer services. Typically those areas that support volunteers provide financial support either

in the form of paid-on-call services, in which individuals receive payment for each emergency response and for participation in training drills. Other agencies often provide monthly stipends for a required number of hours of service or provide health insurance benefits or pension contributions for volunteer participation. We have also observed successful volunteer efforts in which aspiring firefighters/EMTs provide their services in return for tuition reimbursements and specialized training in EMS or paramedicine. This is attractive to someone seeking to enter the fire service, as the total cost for this training can be in excess of $10,000 and can take more than two years to complete. Many agencies use volunteer/student firefighters, and as an incentive provide tuition assistance and hands-on experience in return for this volunteer service. In these cases, volunteers enter a contractual relationship for a designated timeframe (two to three years), in which they are sponsored by the agency to attend training courses and their fees are paid by the host agency.

The South Santa Clara area, including Morgan Hill, does not appear conducive for volunteer participation to support emergency response activities. There are, however, a number of volunteer efforts that can and should be supported in this area. These are primarily in support functions, including "canteen" efforts or rehabilitation or refreshment services during larger events. There are also a number of administrative and clerical functions that can be supported primarily from retirees who provide skilled assistance and administrative support. Fire prevention activities, including inspections services, code enforcement, plans review, and public education presentations are also frequently supported through voluntary efforts. Special duty details at fairs, carnivals, concerts, and large public assembly venues are also suitable for voluntary participation. Finally, many communities utilize "CERT" efforts (Community Emergency Response Teams) to provide critical support functions during large-scale disasters and community events.

Recommendation: CAL FIRE should continue in its effort to maintain the use of volunteers to provide assistance during larger events or extended operations. In addition, other support functions as canteen efforts, CERT, fire prevention duties, and assistance during community public events are effective methods to utilize volunteer support.

APPARATUS AND FLEET MAINTENANCE

The CAL FIRE fleet of first-line apparatus in Morgan Hill/SSCCFD is very good and the level of maintenance appears appropriate in keeping the fleet viable and in a state of readiness. As with the funding formula for personnel, the methodology utilized by CAL FIRE for the cost distribution for apparatus repairs and maintenance appears appropriate. The City budgets capital costs for replacement and vehicle parts apart from its contractual costs and these are added to its annual budget as needed. In addition, the City includes $10,000 in its annual budget to offset overtime costs for maintenance/repair services provided by CAL FIRE mechanical staff. The District provides funding for one of the CAL FIRE mechanical staff positions and provides funding for its vehicle replacement schedule.

Both the City and District utilize lease-purchase funding plans for apparatus purchases. The mix of payments between the District and City provides sufficient revenues to support the maintenance facility and the apparatus replacement schedule. CAL FIRE utilizes a 15-year replacement schedule for its first-line apparatus and a five-year reserve period for a total useful life of 20 years.

The entire fleet maintenance program—its level of technical expertise, parts inventory, and recordkeeping—appear extremely efficient. The combined effort is commendable and CPSM

considers the fleet maintenance process managed by CAL FIRE a ***Best Practice*** from which both the City and District benefit. In recent years CPSM has observed many municipalities deferring the purchase of expensive fire apparatus, ambulances, and other capital equipment in the wake of shrinking revenues.

We estimate that, in 2016, the average age of first-line engines utilized by CAL FIRE was 5.6 years and its primary reserve engines averaged 18 years of service. The age and upkeep of these apparatus are exceptional and a tribute to the management and mechanical staff in maintaining this level of commitment. It has been CPSM's observation that most fire departments anticipate a useful working life of fire engines to be 15 years in frontline service followed by five to seven years in a reserve status (a useful life expectancy of 20 to 22 years).

TABLE 3-7: SSCCFD and Morgan Hill Apparatus Inventory

Unit	Type	Make	Year	Age
Engine 67 (Sta. 1- HQ Monterey Rd)	Type 1/Engine	Pierce	2008	8 years
Engine 68 (Sta. 2 Masten)	Type 1/Engine	Pierce	2010	6 years
Engine 69 (Sta. 3 Treehaven)	Type 1/Engine	Pierce	2015	1 years
Engine 57 (Sta. 4 El Toro)	Type 1/Engine	Pierce	2013	3 years
Engine 58 (Sta. 5 Dunne Hill)	Type 1/Engine	Pierce	2013	3 years
Ladder 57 (Sta. 4 El Toro)	Type 1/Ladder	Pierce	2013	3 years
WT 67 (Sta. 1- HQ Monterey Rd)	Type 1/Tender	Pierce	2000	16 years
WT 68 (Sta. 2 Masten)	Type 1/Tender	Pierce	2002	14 years
Wildland 658 (Sta. 5 Dunne Hill)	Type 6/Engine	Ford	2013	3 years
Wildland 368 (Sta. 2 Masten)	Type 3/Engine	HME/IH	2015	1 years
Reserve 167 (Sta. 3 Treehaven)	Type 1/Engine	Pierce	1994	22 years
Reserve 168 (Sta. 2 Masten)	Type 1/Engine	Pierce	1998	18 years
Reserve 169 (Sta. 3 Treehaven)	Type 1/Engine	Pierce	2003	13 years
Battalion 57 (Sta. 4 El Toro)	Command	Ford/F-250	2013	3 years
Engine 1681 (Sta. 31 Pacheco)	Type 3/Engine	INTL	2014	2 years

In a 2004 survey of 360 fire departments in urban, suburban, and rural settings across the nation, Pierce Manufacturing reported on the average life expectancy for fire pumpers.[1] The results are shown in Table 3-8.

TABLE 3-8: Fire Pumper Life Expectancy by Type of Jurisdiction

Demographic	First-Line Service	Annual Miles Driven	Reserve Status	Total Years of Service
Urban	15 Years	7,629	10 Years	25
Suburban	16 Years	4,992	11 Years	27
Rural	18 years	3,034	14 Years	32

Note: Survey information was developed by Added Value Inc. for Pierce Manufacturing in, "Fire Apparatus Duty Cycle White Paper," Fire Apparatus Manufacturer's Association, August 2004.

[1] Fire Apparatus Duty Cycle White Paper, Fire Apparatus Manufacturer's Association. August 2004.

When compared against this matrix, the average age of the CAL FIRE first-line apparatus is well ahead of what was represented in the manufacturer's survey. We estimate that fire apparatus in Morgan Hill will travel in the range of 5,000 to 8,000 miles annually. District engines are averaging nearly double that amount, between 12,000 and 16,000 miles annually due to the larger service area and the extended distance of its responses. Today's fire engines are expected to travel a total of 125,000 to 150,000 miles, with proper maintenance before needing replacement.

Capital Equipment

Fire apparatus are equipped with various types of tools and equipment that are utilized in providing fire and EMS services. Many of the tools and much of the equipment carried on fire apparatus are specified in NFPA and ISO guidelines. Fire and EMS equipment includes such items as hose, couplings, nozzles, various types of ladders, foam, scene lighting, oxygen tanks, defibrillators, small hand tools, fire extinguishers, mobile and portable radios, salvage covers, and medical equipment and supplies. Many of the small tools and equipment are considered disposable items and are replaced with ongoing operating funds. However, some pieces of equipment are very expensive, and thus require ongoing planning for their useful life and replacement. The more expensive pieces of capital equipment include:

- Self-contained breathing apparatus (SCBA) and fill stations.
- Firefighting PPE (personal protective equipment).
- Hydraulic/pneumatic extrication equipment.
- ECG monitors/defibrillators
- Thermal imaging cameras.
- Mobile/portable and base radios.
- Mobile data computers.
- Gas monitoring and detection devices.

Much of the more expensive capital equipment is generally on a ten-year replacement cycle. The total cost of outfitting a fleet of apparatus the size of the CAL FIRE fleet being utilized in the Morgan Hill/SSCCFD area for the capital items described above is estimated to be in excess of $1,500,000. **It is therefore imperative that these costs be included in the apparatus replacement program and be built around the anticipated life cycle of this equipment.**

SECTION 4. OPERATIONAL PREPARATION, RESPONSE, AND WORKLOAD

FIRE RISK ANALYSIS/TARGET HAZARDS

The cost of providing fire protection in most communities has increased steadily in recent years. This has been fueled in part by rising wages, additional special pay, and escalating overtime costs. In addition, funding requirements have been compounded by increasing insurance premiums and spiraling pension contributions. At the same time the workforce has become less productive largely because of the increases in lost time, specifically because of vacation leave, greater usage of sick leave, and increases in other miscellaneous lost time categories (workers' compensation, light duty, FMLA, holiday leave, training leave, etc.). As a result, many jurisdictions are asking the fundamental question of whether the level of risk in their jurisdiction is commensurate with the type of protective force that is currently being deployed. To this end, a fire risk assessment and hazard analysis process can be helpful in providing a more objective assessment of a community's level of risk.

A fire risk analysis utilizes a "fire risk score," which is a rating of an individual property on the basis of several factors, including;

- Needed fire flow if a fire were to occur.
- Probability of an occurrence based on historical events.
- The consequence of an incident in that occupancy (to both occupants and responders).
- The cumulative effect of these occupancies and their concentration in the community.

From this analysis a score is established and this is used to categorize a property as one of low-, moderate-, or high/maximum-risk. There is specific training and a number of retail software products currently available that assist in carrying out this process.

Plotting the rated properties on a map will provide a better understanding of how the response matrix and staffing patterns can be used to provide a higher concentration of resources for worse-case scenarios or, conversely, fewer resources for lower levels of risk.[2] The community fire risk assessment may also include determining and defining the differences in fire risk between a detached single-family dwelling, a multifamily dwelling, an industrial building, and a high-rise building by placing each in separate categories. Further, an overall community risk profile can be linked to historical response time data. This analysis can then be used to establish response time baselines and benchmarks.

Community risk and vulnerability assessment are essential elements in a fire department's planning process. CAL FIRE has not completed a comprehensive community risk and vulnerability assessment. The leadership in CAL FIRE have recognized the importance and usefulness of this process, but to date have been unable to complete this process. According to a National Fire Protection Association (NFPA) paper on assessing community vulnerability, fire department operational performance is a function of three considerations: resource

[2] *Fire and Emergency Service Self-Assessment Manual,* Eighth Edition, (Center for Public Safety Excellence, 2009), 49.

availability/reliability, department capability, and operational effectiveness.[3] These elements can be further defined as:

Resource availability/reliability: The degree to which the resources are ready and available to respond.

Department capability: The ability of the resources deployed to manage an incident.

Operational effectiveness: The product of availability and capability. It is the outcome achieved by the deployed resources or a measure of the ability to match resources deployed to the risk level to which they are responding.[4]

Recommendation: CAL FIRE should conduct a formal fire risk analysis that concentrates on strip commercial establishments, big-box occupancies, high-rise structures, and processing and institutional properties.

Target Hazards

The process of identifying target hazards and preplanning suppression and rescue efforts are basic preparedness efforts that have been key functions in the fire service for many years. In this process, critical structures are identified on the basis of the risk they pose. Then, tactical considerations are established for fires in these structures. Consideration is given to the activities that take place (manufacturing, processing, etc.), the number and types of occupants (elderly, youth, handicapped, imprisoned, etc.), and other specific aspects relating to the construction of the facility or any hazardous or flammable materials that are regularly found in the building. Target hazards are those occupancies or structures that are unusually dangerous when considering the potential for loss of life or the potential for property damage. Typically, these occupancies include hospitals, nursing homes, high-rise, and other large structures. Also included are arenas and theaters, industrial and manufacturing plants, and other buildings or large complexes.

The Morgan Hill and South Santa Clara County service areas have a limited number of target hazards. There are a number of area nursing or adult care facilities (Centennial Senior Center, Pacific Hills Manor, Hillview Convalescent Hospital, Valley Pines Senior Assisted Living, Westmont of Morgan Hill, Morgan Hill Villa, St. Joseph Care Home, and South County Retirement Home). The San Martin Airport and the James Boys Ranch Juvenile Detention Facility would also be included. There are a number of big-box retail centers (Walmart, Home Depot, Safeway, Target, Trader Joes, Ace Lumber, Staples, and TJ Maxx). The city has a number of large assembly buildings, including schools, hotels, theaters, and churches. The presence of Highway 101 presents the potential for transportation accidents and the dispersal of product that requires specific tactical considerations and preparation.

[3] Fire Service Deployment, Assessing Community Vulnerability: From http://www.nfpa.org/assets/files/pdf/urbanfirevulnerability.pdf.
[4] National Fire Service Data Summit Proceedings, U.S. Department of Commerce, NIST Tech Note 1698, May 2011.

OPERATIONAL RESPONSE APPROACHES

Many agencies develop prefire plans to provide a response and tactical strategy for those more critical or complex occupancies in the community. The community risk and vulnerability assessment evaluates the community as a whole, and with regard to property, measures all property and the risks associated with that property and then segregates the property as either a high-, medium-, or low-hazard. These hazards are further broken down into varying degrees of risk. According to the NFPA Fire Protection Handbook, these hazards are defined as:

High-hazard occupancies: Schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life-hazard or large fire-potential occupancies.

Medium-hazard occupancies: Apartments, offices, and mercantile and industrial occupancies not normally requiring extensive rescue by firefighting forces.

Low-hazard occupancies: One-, two-, or three-family dwellings and scattered small business and industrial occupancies.[5]

Figures 4-1 and 4-2 illustrate the critical tasks and resource deployment required on low-risk incidents and moderate-risk incidents such as structure fires. Understanding the community's risk greatly assists fire department management planning for and justification of staffing and apparatus resources.

FIGURE 4-1: Low-Risk Response, Exterior Fire Attack

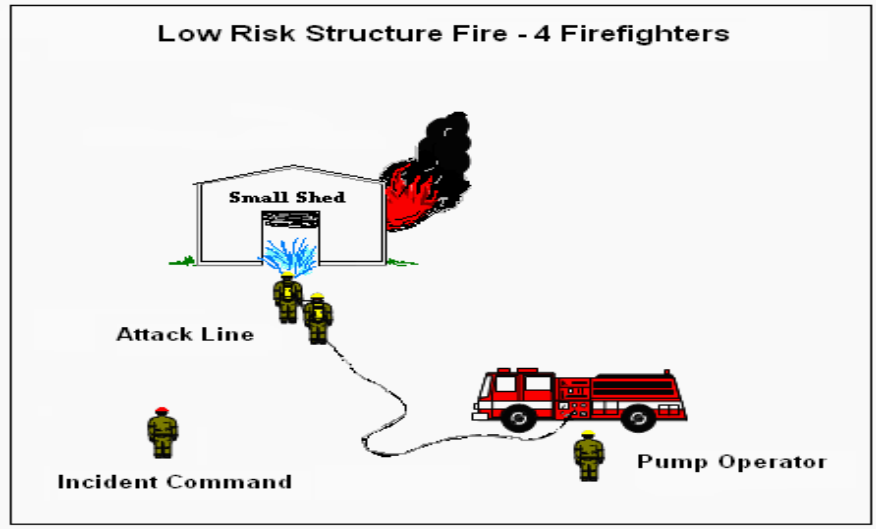
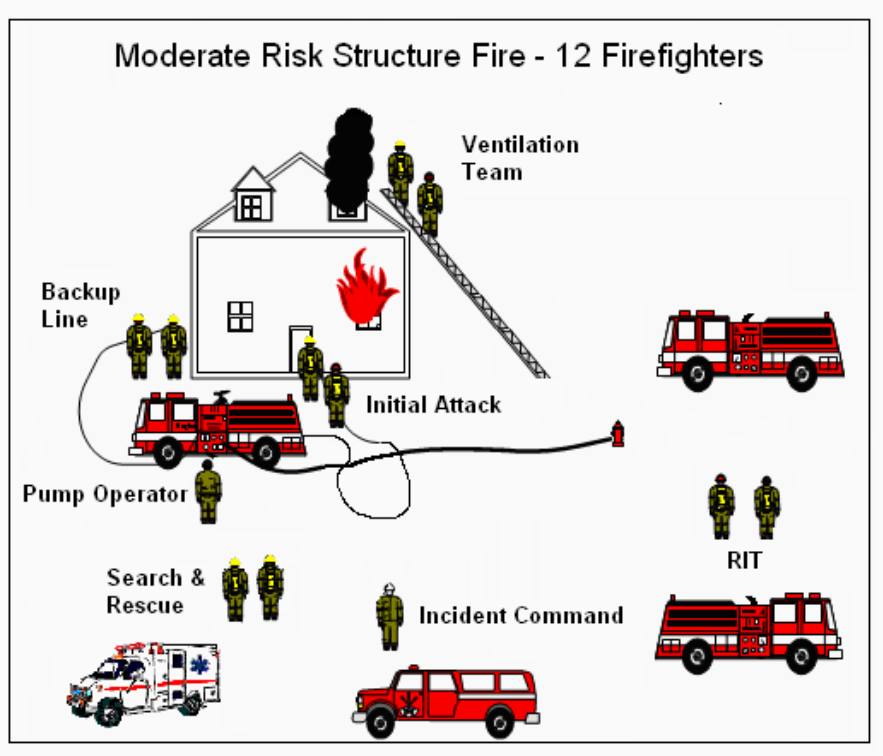


Figure 4-2 represents critical task elements for a moderate-risk structure fire. Some jurisdictions add additional response resources to meet and in some cases exceed the specifics of national benchmarking, such as National Fire Protection Association (NFPA) 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments, 2014 Edition. NFPA 1710 calls for the initial assignment of 14 personnel on a single-family residential structure when an aerial ladder is not utilized. CAL FIRE utilizes the combined resources of both Morgan Hill and SSCCFD to assemble the necessary staffing to manage larger incidents. In addition, CAL FIRE incorporates

[5] Cote, Grant, Hall & Solomon, eds., *Fire Protection Handbook* (Quincy, MA: National Fire Protection Association, 2008), 12.

the resources from neighboring jurisdictions through mutual aid and automatic response agreements to supplement on-duty resources. CAL FIRE also has access to other state resources in neighboring service units.

FIGURE 4-2: Moderate Risk Response-Interior Fire Attack



In addition to examining risks faced by the community at large, the department needs to examine internal risks in an effort to protect all assets, including personnel, resources, and property. This concept is not new to the fire service and can be an excellent tool for strengthening existing health and safety guidelines. The National Fire Protection Association's Standard for a Fire Department Occupational Safety and Health Program (NFPA 1500) recommends the development of a separate risk management plan[6] for fire departments; that is, separate from those incorporated in a local government plan. The risk management plan establishes a standard of safety for the daily operations of the department. This standard of safety establishes the parameters in which the department should conduct all activities during emergency and nonemergency operations. The intent is for all members of the department to operate within this standard or plan of safety and not deviate from this process.

CAL FIRE has compiled an extensive number of preplan documents for its high- and medium-risk occupancies. These preplans are readily available to responding personnel (in hard copy) and the department is very attentive in keeping these files up to date and familiar to responding personnel. This is a very good effort that is considered a ***Best Practice***.

[6] Robert C. Barr and John M. Eversole, eds., *The Fire Chief's Handbook*, 6th edition (Tulsa, OK: PennWell Books), 270.

CAL FIRE RESPONSE MATRIX

CAL FIRE utilizes a multilayered process for deploying apparatus and personnel to its myriad of calls for service. Morgan Hill Police Dispatch is the primary public safety answering point (PSAP) for 911 calls originating within city limits. If the call is EMS-related it is immediately transferred to the Santa Clara 911 Dispatch Center, which screens the call, determines its prioritization, and dispatches the closest County EMS unit. Simultaneously, the CAL FIRE Dispatch Center is notified in a pre-alert, which activates the responding CAL FIRE -EMS first responder. In many situations the pre-alert is received prior to the completion of the County EMS call interrogation and determination of call severity and prioritization. Subsequently, CAL FIRE will initiate a hot response. The Santa Clara 911 Dispatch Center utilizes the Medical Priority Dispatch System (MPDS) software package that allows dispatchers to ask a series of questions in determining the severity of the call. On the basis of the information received, the dispatcher will then assign an alphanumeric designation that determines the mode of response. Responses are either "hot," which refers to a unit driving while utilizing lights and sirens, or "cold," which refers to units responding while not utilizing lights and sirens and while following traffic patterns and signalization. County EMS units will alter their response depending on the call prioritization; however, CAL FIRE frequently maintain a hot response on nearly all EMS calls. The system is very similar in the District except that the Santa Clara 911 Dispatch Center is the PSAP who first receives the call and then dispatches Santa Clara EMS and notifies the CAL FIRE Dispatch Center of a call in the District.

CAL FIRE utilizes a standard response plan or response matrix that specifies the number and types of resources that are sent to calls. For EMS responses the matrix calls for a single engine responding with a staffing of three and a Santa Clara County EMS unit. As mentioned above, County EMS will alter its response mode depending on the severity of the call, but CAL FIRE units always respond hot. CPSM believes that this level of response is unwarranted and in some cases may heighten the risk of responding apparatus being involved in vehicle accidents.

> ***Recommendation: CAL FIRE should work with County EMS to modify CAL FIRE's response protocols for Priority 2 call types (Alpha Designations) in an effort to alter unit response modes when calls are determined to be nonemergency or minor incidents.***

Emergency response units that are responding with lights and sirens are more susceptible to traffic accidents. Accidents involving fire vehicles responding to emergencies are the second highest cause for line-of-duty deaths of firefighters.[7] It is estimated that more than 30,000 fire apparatus are involved in accidents when responding to emergencies each year in the U.S.[8] Responding fewer units and having these units respond in a nonemergency mode makes sense in terms of safety and efficiency.

The current EMS contracts with Morgan Hill and SSCCFD have reduced response time requirements for Priority 2 calls. CAL FIRE should implement an altered response protocol that varies unit response on the basis of EMS call prioritizations.

The current response matrix for fire calls assigns four engines, a chief officer, and a safety officer to a reported structure fire. This assignment provides 14 personnel to a reported residential structural fire. CPSM believes this level of response is appropriate for the Morgan Hill/SSCCFD response areas. In those incidents in areas where fire hydrants are unavailable, the assignment will add a water tender. In those areas that are adjacent to or in proximity of a mutual aid

[7] "Analysis of Firetruck Crashes and Associated Firefighter Injuries in the U.S." Association for the Advancement of Automotive Medicine. October-2012.
[8] Ibid.

partner (typically San Jose or Gilroy), an automatic response from one of these partners is utilized to supplement the response assignment.

FIRE RESPONSE

The ability to assemble the necessary resources to effectively manage even a smaller residential or commercial structure fire is significant. As mentioned above, the NFPA standard (NFPA 1710) recommends a minimum of 14 personnel as the initial response to single family residential structure. Neither Morgan Hill nor SCCFD individually have the ability to assemble this many personnel, but when combined, this capability is enhanced significantly. This is the true benefit of the two organizations operating jointly under a single command and organizational structure (CAL FIRE). Though it is true that on most days the need for a 14- to 17-person contingent is not required, this does occur with some regularity and when it does the ability to assemble an effective workforce of this size rapidly can make the difference between success and failure. As the magnitude of an incident grows in size and complexity, it is not unusual to see staffing needs that can exceed 40 to 60 personnel. This would be the case with a fire at big-box retail center like a Home Depot or Walmart or a fire at an apartment complex. For wildfire incidents, staffing needs can easily exceed 100 personnel even in relatively small events (defined as 15 to 20 acres).

The decision as to what is the proper staffing level for a specific community's protection is perhaps the most difficult assessment that is faced by policy makers across the nation. As communities adjust their level of response, the costs associated with maintaining a level of readiness has significant implications. CPSM believes that Morgan Hill and SSCCFD are currently in an optimum situation in being able to combine their resources under a singular command and organizational structure. This is beneficial in meeting both day-to-day service demand and during larger and more complex incidents. CPSM believes that this cooperative effort is a ***Best Practice*** that should be maintained.

From this perspective it is critical that CAL FIRE units respond rapidly and initiate extinguishment efforts within the first eight to ten minutes of notification. It is, however, difficult to determine in every case the effectiveness of the initial response in limiting fire spread and fire damage. Many variables will impact these outcomes, including:

- The age and type of construction of the structure.
- The contents stored in the structure and its flammability.
- The presence of any flammable liquids, explosives, or compressed gas canisters.
- The time of detection, notification, and ultimately response of fire units.
- The presence of any built-in protection (automatic fire sprinklers) or fire detection systems.
- Weather conditions and the availability of water for extinguishment.

Subsequently, in those situations in which there are extended delays in the extinguishment effort or the fire has progressed sufficiently upon arrival of fire units, there is actually very little that can be done to limit the extent of damage to the entire structure and its contents. In these situations suppression efforts will focus on the protection of nearby or adjacent structures with the goal being to limit the spread of the fire beyond the building of origin. This is often termed ***protecting exposures***. When the extent of damage is extensive and the building becomes unstable, firefighting tactics typically move to what is called a ***defensive attack***, or one in which hose lines and more importantly personnel are on the outside of the structure and their focus is to merely

discharge large volumes of water until the fire goes out. In these situations the ability to enter the building is very limited and if victims are trapped in the structure, there are very few safe options for making entry.

Today's fire service is actively debating the options of interior firefighting vs exterior firefighting. These terms are self-descriptive in that an ***interior fire attack*** is one in which firefighters enter a burning building in an attempt to find the seat of the fire and from this interior position extinguish the fire with limited amounts of water. An ***exterior fire attack*** is a tactic in which firefighters' initially discharge water from the exterior of the building, either through a window or door, and knock down the fire before entry in the building is made. The concept is to introduce larger volumes of water initially from the outside of the building, cool the interior temperatures, and reduce the intensity of the fire before firefighters enter the building. An exterior attack is most applicable in smaller structures, typically single family, one-story detached units which are typically smaller than 2,500 square feet in total floor area.

There are a number of factors that have fueled this debate. The first and most critical of which are staffing levels. As fire departments operate with reduced levels of staffing, and this staff is arriving at the scene from greater distances, there is little option for a single fire unit with two, three, or four personnel but to conduct an exterior attack. The United States Occupational Safety and Health Administration (OSHA), has issued a standard that has been termed the ***"Two-in-Two-Out"*** provision. This standard affects most public fire departments across the U.S., including CAL FIRE. Under this standard, firefighters who are engaged in ***interior structural firefighting*** and enter an area that is immediately dangerous to life or health (an IDLH atmosphere) must remain in visual or voice contact with each other and have at least two other employees located outside the IDLH atmosphere. 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 a rescue, or call for back-up if a problem arises.[9] There is also a provision within the OSHA standard that will allow two personnel to make entry into an IDLH atmosphere without the required two back-up personnel. This is allowed when they are attempting to rescue a person or persons in the structure before the entire team is assembled.[10]

When using an exterior attack, the requirement of having the four persons assembled on-scene prior to making entry would not apply. Recent studies by UL have evaluated the effectiveness of interior vs. exterior attacks in certain simulated fire environments. These studies have found that the exterior attack to be equally effective in these simulations.[11] This debate is deep-seated in the fire service and traditional tactical measures have always proposed an interior fire attack, specifically when there is a possibility that victims may be present in the burning structure. The long-held belief in opposition to an exterior attack is that this approach may actually push the fire into areas that are not burning or where victims may be located. The counterpoint supporting the exterior attack centers on firefighter safety. The exterior attack limits the firefighters from making entry into those super-heated structures that may be susceptible to collapse. From CPSM's perspective, and given the limited number of on-duty personnel and the likelihood that a single crew of three or four personnel will encounter a fire situation, it is prudent that CAL FIRE build its training and operating procedures around the tactical concept of the exterior fire attack when the situation warrants such an approach.

[9] OSHA-Respiratory Protection Standard, 29CFR-1910.134(g)(4).
[10] Ibid, Note 2 to paragraph (g).
[11] "Innovating Fire Attack Tactics," U.L.COM/News Science, Summer 2013.

Recommendation: CAL FIRE should build its training regimens and tactical strategies around the exterior or transitional attack when the fire scenario and the number of responding personnel warrant this approach.

Table 4-1 aggregates the calls for the twelve-month period evaluated. EMS calls represent the largest percentage of calls for service at almost 60 percent; this predominance of EMS calls is not unusual and is quite similar to many communities CPSM has observed. While fire call types represent nearly 21.4 percent of the calls for service, actual fire calls (structural and outside) represent only 3.5 percent of the overall calls, with the majority of these being outside or wildland fires. Hazard, false alarms, good intent, and public service calls represent the largest percentage of the fire calls (83.6 percent), which is also typical in CPSM data and workload analyses of other fire departments. One interesting observation in this data set was the higher occurrence of actual fires in the District when compared to the City. Overall, two out of every three actual fires occurred in the District. In terms of structure fires, only five occurred in the City (18 percent), while 23 occurred in the District (82 percent). Though this comparison was limited, in that it only looked at the most recent yearly figures, it does indicate a higher fire incidence in the District than in the City. However, when comparing the total response activities, the City responses accounted for 65 percent of the call activity while the District responses accounted for only 35 percent of the overall activity.

TABLE 4-1: Call Types During Twelve-month Study Period

Call Type	Number of Calls by Location		Total Calls	Calls per Day	Call Percentage
	MHFD	SSCCFD			
EMS	2,037	824	2,861	7.8	52.0
MVA	166	299	465	1.3	8.4
EMS Total	**2,203**	**1,123**	**3,326**	**9.1**	**60.4**
False alarm	223	115	338	0.9	6.1
Good intent	38	69	107	0.3	2.0
Hazard	82	51	133	0.4	2.4
Outside fire	57	107	164	0.4	3.0
Public service	311	96	407	1.1	7.4
Structure fire	5	23	28	0.1	0.5
Fire Total	**716**	**461**	**1,177**	**3.2**	**21.4**
Automatic aid	9	249	258	0.7	4.7
Cancelled	138	96	304	0.8	5.5
Mutual aid	NA	NA	443	1.2	8.0
Total	**3,066**	**1,929**	**5,508**	**15.1**	**100.0**

Note: All mutual aid calls and 70 cancelled calls occurred outside of both MHFD's and SSCCFD's areas.

Observations:

Overall

- The departments received an average of 15.1 calls per day, which includes 0.8 cancelled and 1.2 mutual aid calls.
- On average, there were 0.7 automatic aid calls per day to which other agencies responded.

- EMS calls for the year totaled 3,326 (60 percent of all calls), an average of 9.1 per day.
- Fire calls for the year totaled 1,177 (21 percent of all calls), an average of 3.2 per day.

Fires

- Structure and outside fires combined for a total of 192 calls during the year, an average of one call every 1.9 days.
- A total of 28 structure fire calls accounted for 2 percent of the fire calls, with 82 percent of these occurring in SSCCFD's coverage area.
- A total of 164 outside fire calls accounted for 14 percent of the fire calls, with 65 percent of these occurring in SSCCFD's coverage area.
- Public service calls were the largest fire call category, making up 35 percent of the fire calls.
- False alarm calls made up 29 percent of the fire calls.

During our period of evaluation, CAL FIRE responded to a total of 28 incidents that were classified as structure fires, the majority of which (82 percent) were in the SSCCFD service area and only 5 (18 percent) of which were in the City. In looking in more detail at the structure fire incidents, it was determined that for five of these events there was ***no fire damage*** reported to the structure involved. When we looked at the time spent on fire incidents, we found that on 9 of the 28 structure fires and 77 of the 164 outside fires, the call duration for these incidents was 60 minutes or less. This is indicative of minor occurrences. However, 19 structure fire calls saw a duration of greater than one hour; 11 lasted for more than two hours. This would indicate more significant events.

There were 22 structure fires in which some degree of fire damage was noted in the incident report (18 District, 3 City). The total fire loss (structure and contents) for all structural fires in 2015 was estimated to be $2,851,360 ($2,831,300 District, $20,060 City). Fire damage estimates are done by CAL FIRE personnel who have received fire investigation training. For the calls in which damage was reported (structure and contents), we have estimated that the average damage incurred for each fire was approximately $101,834. NFPA estimates that in 2012 the average fire loss in the nation for a structure fire was $20,345.[12] From this perspective the average fire loss in Morgan Hill/SSCCFD is much higher than that rate found in many communities across the nation. Though the frequency of structure fires found was not exceptionally high, the amount of fire loss was much higher than the national average. It is important to note that on one fire, there was a combined structure and content loss of $1,318,700. If this one fire was removed from the overall fire loss figures, the average loss per incident would drop to approximately $56,756.

It was also very interesting in comparing the average fire loss for structure fires (including contents and structural damage) between the City and District. In the City the average loss for its four structure fires was $5,015. In the District, for the 23 structure fires with reported fire loss, the average was $123,972. Even if we removed the one major fire loss from this total, the average fire loss would still be $51,348. Another indication of the fire loss evaluation is the frequency of individual events in which the combined loss exceeds $20,000. The $20,000 demarcation is relevant from two perspectives; first, this is the national average as indicated earlier and second, it indicates a fire loss that from CPSM's perspective is representative of a more significant fire event that requires extinguishment. In the period evaluated, there were nine structure fire events (all in the District) in which the combined fire loss exceeded $20,000. In the city, there were no structure fires in which the combine fire loss exceeded the $20,000 threshold.

[12] Michael J. Karter Jr., *Fire Loss in the United States during 2012*, NFPA September 2013, 13.

CPSM believes that the higher than normal average structure fire loss is more a product of the high property values in the area rather than some inability or lack of proficiency in firefighting tactics or overall competency. It is hard to clearly define a reasoning for the difference in fire loss rates between the City and District. Typically, fire occurrence and fire loss are a product of demographic differences in the population groupings and fire prevention and public education efforts. Another factor that can contribute to these differences is the extended response times typically observed in the District as compared to the City. Tables 4-2 and Table 4-3 provide an analysis of the Morgan Hill/SSCCFD fire loss in 2015.

TABLE 4-2: Content and Property Loss – Structure and Outside Fires

	MHFD			
	Property Loss		Content Loss	
Call Type	Loss Value	Number of Calls	Loss Value	Number of Calls
Outside fire	$172,620	18	$84,020	13
Structure fire	$11,500	3	$8,560	4
Total	**$184,120**	**21**	**$92,580**	**17**
	SSCCFD			
	Property Loss		Content Loss	
Call Type	Loss Value	Number of Calls	Loss Value	Number of Calls
Outside fire	$611,200	43	$209,850	26
Structure fire	$2,499,700	19	$331,600	14
Total	**$3,110,900**	**62**	**$541,450**	**40**

Note: This analysis only includes calls with recorded loss greater than 0.

Observations:

Overall

- Out of 164 outside fires, 61 had recorded property loss, with a combined $783,820 in loss.
- 39 outside fires also had content loss, with a combined $293,870 in loss.
- Out of 28 structure fires, 22 had recorded property loss, with a combined $2,511,200 in loss.
- 18 structure fires also had content loss, with a combined $340,160 in loss.
- The average loss for a structure fire was $123,972.

MHFD

- Out of 57 outside fires, 18 had recorded property loss, with a combined $172,620 in loss.
- 13 outside fires also had content loss, with a combined $84,020 in loss.
- Out of five structure fires, three had recorded property loss, with a combined $11,500 in loss.
- Four structure fires also had content loss, with a combined $8,560 in loss.
- The average loss for a structure fire was $5,015.

SSCCFD

- Out of 107 outside fires, 43 had recorded property loss, with a combined $611,200 in loss.
- 26 outside fires also had content loss, with a combined $209,850 in loss.
- Out of 23 structure fires, 19 had recorded property loss, with a combined $2,499,700 in loss.

- 14 structure fires also had content loss, with a combined $331,600 in loss.
- The average loss for a structure fire was $149,016.

TABLE 4-3: Total Fire Loss Above and Below $20,000

Call Type	MHFD			SSCCFD		
	No Loss	Under $20,000	$20,000 plus	No Loss	Under $20,000	$20,000 plus
Outside fire	38	15	4	62	37	8
Structure fire	1	4	0	4	10	9
Total	**39**	**19**	**4**	**66**	**47**	**17**

Observations:

Overall

- 100 outside fires (61 percent) and 5 structure fires (17 percent) had no recorded loss.
- 12 outside fires (7 percent) and 9 structure fires (30 percent) had $20,000 or more in loss.
- The highest total loss for an outside fire was $200,000.
- The highest total loss for a structure fire was $1,318,700.

MHFD

- 38 outside fires (67 percent) and 1 structure fire (20 percent) had no recorded loss.
- 4 outside fires (7 percent) and no structure fires had $20,000 or more in loss.
- The highest total loss for an outside fire was $60,000.
- The highest total loss for a structure fire was $10,060.

SSCCFD

- 62 outside fires (58 percent) and 4 structure fires (17 percent) had no recorded loss.
- 8 outside fires (7 percent) and 9 structure fires (39 percent) had $20,000 or more in loss.
- The highest total loss for an outside fire was $200,000.
- The highest total loss for a structure fire was $1,318,700.

EMS RESPONSE

EMS calls make up the predominant workload within both the City and District service areas. As already mentioned, approximately 60 percent of all calls reviewed in our analysis involve EMS responses. The percentage of EMS calls in the City is somewhat higher (71.8 percent) than the percentage of EMS calls in the District (58.2 percent). Perhaps more striking when comparing differences in call types is the number of motor vehicle accidents (MVA) in the District (approximately 27 percent of EMS responses), as compared with MVAs in the City (7.6 percent).

CAL FIRE provides ALS (Advanced Life Support) first response to 911 emergency calls within the combined service area. CAL FIRE and the Santa Clara County EMS operate in what is termed a ***two-tiered response system***. In this arrangement, the fire department is the immediate responding agency and typically arrives at the scene first and begins patient assessment,

stabilization, and treatment. The ambulance unit responds concurrently, but because of the distribution of ambulance units and workload, it typically arrives after the CAL FIRE unit. Santa Clara County contracts with a private ambulance provider, AMR, which provides ALS transport services throughout the county. Both the City of Morgan Hill and SSCCFD receive a first responder fee and a response time compliance fee. In FY-2017 Morgan Hill is projected to receive a combined $135,683 for its EMS first responder services and SSCCFD will receive $201,607. The city uses its proceeds to offset its contract costs, while SSCCFD includes this funding in its budget to pay for EMS supplies and personnel costs. In return for this payment, each agency must equip each unit according to county specifications, operate under County EMS medical policies, and are required to meet specified response time criteria that are monitored on a monthly basis. Santa Clara County also oversees EMS dispatching services and emergency radio communications for the ambulance provider and responding fire agencies.

It is important to note that of the 3,326 EMS calls to which CAL FIRE units responded, CPSM estimates that upwards of 40 percent (approximately 1,330 calls) were non-life-threatening emergencies. Santa Clara EMS has recognized the safety consideration in responding at slower speeds during nonemergency situations and has increased the response time criteria in these types of calls from 7:59 minutes to 12:59 minutes. CPSM believes that CAL FIRE should evaluate its ability to adjust its response patterns on Priority II, EMS responses.

ALS vs. BLS Response

Many agencies struggle with the decision regarding the impacts of delivering ALS versus BLS EMS first response. There have been a number studies that have attempted to evaluate ALS versus BLS differences in terms of patient outcomes.[13] Under the current response agreement with Santa Clara EMS, both Morgan Hill and SSCCFD are receiving significant annual revenues for providing an ALS first response to EMS calls. Though the cost of maintaining an ALS delivery system is significantly higher than those costs associated with BLS delivery, CPSM believes that the first responder revenues sufficiently offset the additional cost associated with this level of care.

Recommendation: Morgan Hill and SSCCFD should maintain the current ALS first responder services in their respective response areas.

MUTUAL AID/ AUTOMATIC RESPONSE

Local governments use many types of intergovernmental agreements to enhance fire protection and EMS services. These arrangements take many shapes and forms and range from a simple automatic response agreement that will respond a single unit to a minor vehicle accident or EMS call, to a more complex regional hazardous materials team or a helicopter trauma service that involves multiple agencies and requires a high level of coordination. It is important that fire departments are able to quickly access extra and/or specialized resources to manage significant events. In addition, because these types of incidents do not respect jurisdictional boundaries, they often require a coordinated response. Sharing resources also

[13] See "EFFECTIVENESS OF FIRST RESPONSE PARAMEDICS" By Thomas M. Dunn, Ph.D., NREMT-B, I William W. Dunn, BA, NREMT-P,23 Michael Krowka, BS, NREMT-P I Benjamin Dengerink, BS, NREMT-P I and Micah Ownbey, BS, NREMT-P I University of Northern Colorado, Greeley; 2 Denver Health Paramedic Division; 3 Eagle County (CO) Ambulance District Corresponding Author: thomas.dunn@unco.edu. ALSO; "Fewer Paramedics Means More Lives Saved" by Robert Davis, *USA Today*, May 21, 2006.

helps departments reduce costs without impacting service delivery. All of these situations point to the need for good working relationships with other fire and EMS organizations.

CAL FIRE utilizes its mutual aid and automatic response agreements very effectively. Clearly, the interaction between Morgan Hill and SSCCFD is the most common form of automatic response occurring between the two agencies on a daily basis. Both agencies co-respond and cover each other's areas as part of normal operations. As mentioned earlier, this is a very effective process that elevates overall efficiency. Our observation is that the interaction between Morgan Hill and SSCCFD is very equitable and in fact both agencies are able to fulfill their mission because of this interaction and cooperative arrangement. Table 4-4 summarizes the type of interaction that occurred between the two jurisdictions during the study period.

TABLE 4-4: Workload Distribution between Morgan Hill and SSCCFD

Workload Measure	Morgan Hill	SSCCFD	Mutual Aid/Other
Call Distribution	55.7%	35.0%	9.3%
Unit Response Distribution (Runs)	46.0%	45.4%	8.6%
Workload Distribution/Hours	31.2%	57.1%	11.7%

When we look at the workload distribution between Morgan Hill and SSCFD there are a number of ways to measure the utilization of resources for response activities.

If we look at ***call distribution***, which is a measurement of each actual incident (fire, EMS, other) and where they occurred, we find that 55.7 percent of the incidents (3,066) originated in Morgan Hill city limits. Similarly, 35.0 percent of the calls (1,929) were in the District and approximately 9.3 percent (513) were outside the two jurisdictions, primarily mutual aid and cancelled responses. We can also evaluate workload on the basis of ***unit responses***, which is the number of unit movements or runs that were made. This distribution shows that 46.0 percent were made into the City, 45.4 percent in the District, and 8.6 percent for mutual aid and other. The number of unit responses varies from the number of actual calls because on each call, particularly fire calls, multiple units respond, whereas on a typical EMS call, only one unit will respond.

When we evaluate the workload distribution/hours, we are looking at the combined time spent by all units for all responses. So if five units spend 20 minutes on a call, the total workload is 100 minutes for that call. If a single unit responds to a call and it spends 20 minutes on that call, it will account for 20 minutes of workload. This measure of workload hours incorporates all time associated with the call, from the time a response unit is alerted to the time the assignment is completed. In workload distribution, the District saw higher numbers than the City, even though the call distribution was higher in the City and the run distribution was nearly the same. CPSM attributes this to the longer response times associated with each response in the District and the higher number of actual fires and MVAs, which typically have longer call durations than EMS calls. Overall, however, the distribution of resources and workload is very equitable between the City and District and the current practice of combining resources in serving both jurisdictions is the most cost-effective approach.

CAL FIRE units operating in the Morgan Hill and SSCCFD service areas frequently interact with neighboring agencies on mutual aid assignments. Agencies want to ensure that the frequency in which resources are given is comparable to the frequency in which resources are received. CAL FIRE has automatic response agreements primarily with the cities of San Jose, Hollister, and Gilroy. In addition, there is interaction between Pajaro Valley and the Pacheco station. CPSM estimates that mutual aid was given a total 443 times in 2015. During this same timeframe CAL FIRE units received mutual aid a total of 258 times. The mutual aid and automatic response

agreements between CAL FIRE and its neighbors are equitable and very effective in providing mutual assistance between these agencies. CPSM recognizes this effort as a ***Best Practice***.

WORKLOAD ANALYSIS

The emergency call volume managed by CAL FIRE units is not excessively high, even when considering the geographic service area and the resident and commuting population being served. The total call volume handled by CAL FIRE units in the 12-month period we observed was 5,508 calls. This equates to 15.1 calls per day. The average duration of each call was approximately 43 minutes. Fire calls had an average call duration of 62.6 minutes, and EMS calls lasted an average of 32.4 minutes. On average, all CAL FIRE units combined were deployed a total of 933.1 minutes (15.5 hours) each day. Table 4-5 is an analysis of the annual runs and deployed time by call type.

TABLE 4-5: Annual Runs and Deployed Time by Call Type

Call Type	Avg. Deployed Min. per Run	Total Annual Hours	Percent of Total Hours	Avg. Deployed Min. per Day	Total Annual Runs	Avg. Runs per Day
EMS	32.5	1,761.0	31.0	289.5	3,251	8.9
MVA	32.2	520.1	9.2	85.5	970	2.7
EMS Total	**32.4**	**2,281.1**	**40.2**	**375.0**	**4,221**	**11.6**
False alarm	26.6	265.1	4.7	43.6	598	1.6
Good intent	27.5	102.1	1.8	16.8	223	0.6
Hazard	39.2	146.3	2.6	24.1	224	0.6
Outside fire	106.9	1,170.3	20.6	192.4	657	1.8
Public service	32.4	252.9	4.5	41.6	468	1.3
Structure fire	155.2	548.3	9.7	90.1	212	0.6
Fire Total	**62.6**	**2,485.1**	**43.8**	**408.5**	**2,382**	**6.5**
Automatic aid	32.0	148.6	2.6	24.4	279	0.8
Cancelled	16.2	119.6	2.1	19.7	442	1.2
Mutual aid	64.0	642.3	11.3	105.6	602	1.6
Other Total	**41.3**	**910.5**	**16.0**	**149.7**	**1,323**	**3.6**
Total	**43.0**	**5,676.7**	**100.0**	**933.1**	**7,926**	**21.7**

Note: Each dispatched unit is a separate "run." As multiple units are dispatched to a call, there are more runs than calls. Therefore, CAL FIRE responded to 15.1 calls per day and had 21.7 runs per day.

When we look at the workload by unit, we can evaluate the average runs each day by unit and the total time each units is deployed. From this analysis we have determined that the busiest unit (Engine-67, operating from Station #1) is deployed an average of 148 minutes (approximately 2.46 hours each 24 hours), and Engine-69 (Station #3) was the least busy unit, operating on average, 69.4 minutes (approximately 1 hour 10 minutes) each day. Table 4-6 is an analysis of unit workload.

TABLE 4-6: Call Workload by Unit and Location

Station	Unity Type	Unit	Total Annual Hours				Total Annual Runs			
			Hours	MHFD%	SSCCFD%	Other%	Runs	MHFD%	SSCCFD%	Other%
1	Engine	E-67	901.0	57.7	39.0	3.3	1,691	65.6	32.6	1.8
	Reserve Engine	E-1661	384.9	11.6	50.6	37.8	354	24.6	52.8	22.6
	Reserve Engine	E-1671	229.5	8.5	31.7	59.8	168	25.0	41.1	33.9
	Water Tender	W-67	123.1	5.5	74.4	20.1	91	17.6	71.4	11.0
	Total		**1,638.5**	**36.1**	**43.3**	**20.6**	**2,304**	**54.4**	**37.8**	**7.7**
2	Air Support	BS-768	7.0	0.0	100.0	0.0	2	0.0	100.0	0.0
	Engine	E-68	586.7	4.0	80.6	15.4	881	5.2	75.8	19.0
	Reserve Engine	E-168	27.0	9.2	63.6	27.2	31	25.8	48.4	25.8
	Reserve Engine	E-368	48.6	11.0	53.6	35.4	39	25.6	51.3	23.1
	Utility	SQD-68	22.6	4.1	40.3	55.6	23	8.7	39.1	52.2
	Utility	U-68	1.4	0.0	96.0	4.0	3	0.0	66.7	33.3
	Water Tender	W-68	143.3	0.9	80.8	18.3	98	3.1	76.5	20.4
	Total		**836.6**	**4.0**	**77.6**	**18.4**	**1,077**	**6.4**	**73.4**	**20.1**
3	Engine	E-69	400.1	5.5	67.5	27.1	570	8.1	58.4	33.5
	Reserve Engine	E-167	20.0	33.4	62.7	3.9	14	14.3	78.6	7.1
	Utility	U-69	2.6	0.0	0.0	100.0	1	0.0	0.0	100.0
	Total		**422.7**	**6.8**	**66.8**	**26.4**	**585**	**8.2**	**58.8**	**33.0**
4	Engine	E-57	785.5	77.3	18.6	4.1	1,507	81.5	14.8	3.7
	Ladder Truck	TK-57	101.2	81.6	14.4	4.1	207	83.1	14.0	2.9
	Total		**886.7**	**77.8**	**18.1**	**4.1**	**1,714**	**81.7**	**14.7**	**3.6**
5	Engine	E-58	524.0	67.5	29.3	3.2	1,023	74.0	23.8	2.2
	Engine	E-658	36.0	57.7	24.7	17.6	47	57.4	23.4	19.1
	Total		**560.0**	**66.9**	**29.0**	**4.1**	**1,070**	**73.3**	**23.7**	**3.0**
Aid	Gilroy	Multiple	161.0	0.7	99.3	0.0	336	0.6	99.4	0.0
	Highland	Multiple	23.3	0.0	100.0	0.0	53	0.0	100.0	0.0
	Other CAL Fire	Multiple	755.8	2.5	97.5	0.0	368	12.8	87.2	0.0
	Other Local	Multiple	71.4	0.0	100.0	0.0	10	0.0	100.0	0.0
	San Jose	Multiple	89.7	12.3	87.7	0.0	215	15.3	84.7	0.0
	Station 31	E-1681	230.9	10.6	89.4	0.0	194	5.7	94.3	0.0
	Total		**1,332.1**	**4.2**	**95.8**	**0.0**	**1,176**	**7.9**	**92.1**	**0.0**
Total			**5,676.7**	**31.2**	**57.1**	**11.7**	**7,926**	**46.0**	**45.4**	**8.6**

Note: Workload for E-1681 from Station 31 includes workload for E-1691 as well.

Observations:

- Engine 67 made the most runs (1,691, an average of 4.6 per day) and had the highest total annual deployed time (901 hours, an average of 148 minutes per day).
  - EMS calls accounted for 1,156 of these runs (68 percent) and 604 hours (67 percent) of deployed time.
  - Structure and outside fires accounted for 90 of these runs (5 percent) and 97 hours (11 percent) of deployed time.
  - Calls within MHFD's coverage area accounted for 66 percent of this engine's runs and 58 percent of its deployed hours.
- Engine 57 made the second most runs (1,507, an average of 4.1 per day) and had the second-highest total annual deployed time (786 hours, an average of 129 minutes per day).
  - EMS calls accounted for 1,047 of these runs (69 percent) and 546 hours (70 percent) of deployed time.
  - Structure and outside fires accounted for 66 of these runs (4 percent) and 49 hours (6 percent) of deployed time.
  - Calls within MHFD's coverage area accounted for 82 percent of this engine's runs and 77 percent of its deployed hours.
- One-third of Engine 69's runs were for mutual aid calls, including cancelled calls in other areas.
- Overall, Station 1 was the busiest station, with 2,304 runs and 1,639 hours of deployed time for the year. Of its runs and hours:
  - Calls in MHFD's coverage area accounted for 54 percent of the runs and 36 percent of the deployed hours.
  - Calls in SSCCFD's coverage area accounted for 38 percent of the runs and 43 percent of the deployed hours.
  - Mutual aid calls accounted for 8 percent of the runs and 21 percent of the deployed hours.

Another evaluation of workload involves the frequency distribution of calls. In this analysis we look at the total 8,760 hours of the year and track the frequency in which alarms occur in each hour. From this analysis we can determine that in most instances there are two or fewer calls occurring in each hour. We can determine that 85.7 percent of the time there is no call or one call occurring in an hour. On only 926 occasions do we see two calls occurring in an hour. This indicates that, 96.3 percent of the time, there are two or fewer calls occurring each hour. With the five responding units available throughout the year, the frequency distribution of calls indicates that only infrequently are all units deployed simultaneously on active alarms. Table 4-7 represents the frequency distribution of calls in the combined Morgan Hill and SSCCFD service area. At the same time, it must be pointed out that whenever there is an active fire event, all units will be deployed and the availability of additional units to respond to a simultaneous event will require outside assistance from a mutual aid partner or a Santa Clara County ambulance unit will need to respond to an EMS call without a fire unit.

TABLE 4-7: Frequency Distribution of the Number of Calls

Calls in an Hour	Frequency	Percentage
0	4,832	55.2
1	2,674	30.5
2	926	10.6
3	262	3.0
4	58	0.7
5	8	0.1

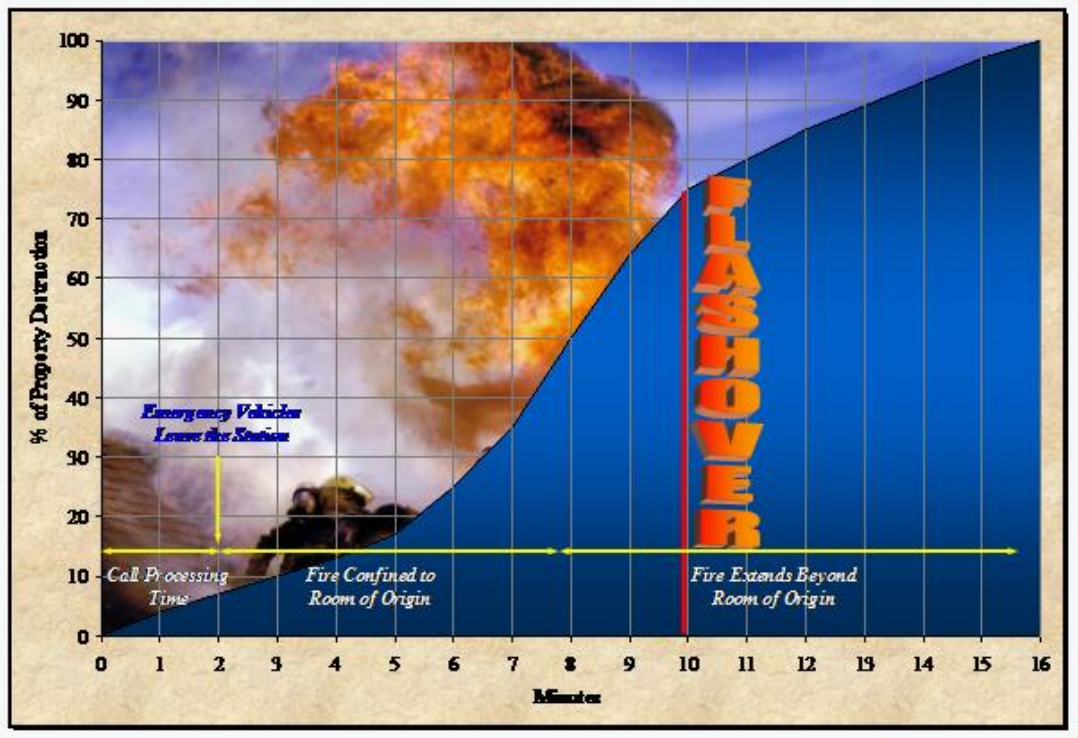
SECTION 5. RESPONSE TIME ANALYSIS

Response times are typically the primary measurement for evaluating fire and EMS services. Most deployment models have been built around a four-minute initial travel time for EMS and an eight-minute full-force travel time for fires. Though these times have validity, the actual impact of a speedy response time is limited to very few incidents. For example, in a full cardiac arrest, analysis shows that successful outcomes are rarely achieved if basic life support (CPR) is not initiated within four minutes of the onset. However, cardiac arrests occur very infrequently; on average they are 1 percent to 1.5 percent of all EMS incidents.[14] There are also other EMS incidents that are truly life-threatening and the speed of response can clearly impact the outcome. These involve full drownings, allergic reactions, electrocutions, and severe trauma (often caused by gunshot wounds, stabbings, and severe motor vehicle accidents, etc.). Again, the frequencies of these types of calls are limited.

Regarding response times for fire incidents, the criterion is based on the concept of "flashover." This is the state at which super-heated gasses from a fire are released rapidly, causing the fire to burn freely and become so volatile that the fire reaches an explosive state. In this situation, usually after an extended period of time (often eight to twelve minutes after ignition but times as quickly as five to seven minutes), and a combination of the right conditions (fuel and oxygen), the fire expands rapidly and is much more difficult to contain. When the fire does reach this extremely hazardous state, initial firefighting forces are often overwhelmed, larger and more destructive fire occurs, and significantly more resources are required to affect fire control and extinguishment. Flashover has been observed to occur more frequently today due to greater quantities of plastic- and foam-based products in homes and businesses. These materials ignite and burn quickly and produce extreme heat and toxic smoke. Figure 5-1 illustrates the flashover phenomenon and its potential impact on firefighters and fire extinguishment as the fire propagation curve.

[14] Myers, Slovis, Eckstein, Goodloe et al. (2007). "Evidence-based Performance Measures for Emergency Medical Services System: A Model for Expanded EMS Benchmarking." *Pre-hospital Emergency Care*.

FIGURE 5-1: Fire Propagation Curve



Another important factor in the whole response time question is what we term "detection time." This is the time it takes to detect a fire or medical situation and notify 911 to initiate the response. In many instances, particularly at night or when automatic detection systems (fire sprinklers and smoke detectors) are unavailable or inoperable, the detection process can be extended.

MEASURING RESPONSE TIMES

There have been no documented studies that have made a direct correlation between response times and outcomes in fire and EMS events. No one has been able to show that a four-minute response time is measurably more effective than a six-minute response time. The logic has been "faster is better," but this has not been substantiated by any detailed analysis. Furthermore, the ability to measure the difference in outcomes (patient saves, reduced fire damage, or some other quantifiable measure) between a six-minute, eight-minute, or ten-minute response is not a performance measure often utilized in the fire service.

It has been the position of CPSM that the level of protection in a community should be based on the specific needs of that community. So, in looking at response times it is prudent to design a deployment strategy around the actual circumstances that exists and the historical service demands that are occurring.

For the purpose of this analysis, ***Response Time*** is a product of three components: ***Dispatch Time***, ***Turnout Time***, and ***Travel Time***.

- *Dispatch time* is the time interval that begins when the alarm is received at the initial public safety answering point (PSAP) or communications center and ends when the response

information begins to be transmitted via voice and/or electronic means to the emergency response facility or emergency response units or personnel in the field.

- *Turnout time* is the time interval that begins when the notification process to emergency response facilities and emergency response personnel and units begins by an audible alarm and/or visual announcement and ends at the beginning point of travel time. The fire department has the greatest control over these first two segments of the total response time.
- *Travel time* is the time interval that initiates when the emergency response unit is actually moving in response to the incident and ends when the unit arrives at the scene.
- *Response time*, also known as ***total response time***, is the time interval that begins when the call is received by the primary dispatch center and ends when the dispatched unit arrives on the scene of the incident to initiate action.

For this study, and unless otherwise indicated, response times and travel times measure the first arriving unit only. The primary focus of this section is the dispatch and response time of the first arriving units for calls responded with lights and sirens.

According to NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments, 2014 Edition*, the alarm processing time or dispatch time should be less than or equal to 64 seconds 90 percent of the time for fire calls and 90 seconds (90 percent of the time) for EMS calls, when emergency medical dispatching is done.

CAL FIRE RESPONSE TIMES

This section focuses on dispatch and response time analysis for the first arriving CAL FIRE unit. We typically focus on emergency calls where the department would respond with lights and sirens—also known as a ***hot response***. CAL FIRE does not record the priority of a call in its records management system, so all eligible calls were included in this analysis. CPSM used 4,050 calls in creating this analysis. Of those, 2,558 calls were in MHFD's coverage area and 1,492 were in SSCCFD's coverage area. We excluded mutual aid calls and calls in which units were cancelled en route. Also excluded were any administrative calls, or calls in which the data were incomplete or inaccurate. We included first arriving units with complete unit dispatch time, unit en route time, and unit on-scene arrival times.

For the CAL FIRE calls analyzed the average dispatch time was 0.5 minutes in the Morgan Hill service area and 0.9 minutes in the SSCCFD service area. ***These times include only the processing time involving the CAL FIRE Dispatch Center and does not include the call handling and call screening times at the Santa Clara 911 Center.*** The average turnout time was 1.7 minutes in the City and 2.1 minutes in the District. It must be noted that at several of the CAL FIRE station sites, the living areas and apparatus bays are apart and this is likely to impact the observed turn-out times. The average travel time showed the greatest difference between the City and District. It was 3.8 minutes in the City and 6.4 minutes in the District. Overall, the average total response time in the City was 6.0 minutes, and in the District it was 9.3 minutes. There was a slight variation between EMS and fire calls and this can be attributed to the need to don fire protection garments and breathing apparatus on fire calls and this added step often extends turnout times when compared to EMS calls.

TABLE 5-1: Average Response Times of First Arriving Unit, by Service Area and Call Type (Minutes)

MHFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	0.5	1.6	3.6	5.7	1,844
MVA	0.6	1.7	3.9	6.5	135
EMS Total	**0.5**	**1.6**	**3.7**	**5.7**	**1,981**
False alarm	0.7	1.9	3.9	6.5	180
Good intent	0.9	1.7	4.6	7.3	26
Hazard	0.8	1.9	4.5	7.2	71
Outside fire	0.8	1.9	3.9	6.7	47
Public service	0.8	1.9	4.5	7.2	245
Structure fire	1.1	2.2	2.1	5.3	3
Fire Total	**0.8**	**1.9**	**4.3**	**7.0**	**572**
Automatic aid	0.6	1.0	7.5	9.1	5
Total	**0.5**	**1.7**	**3.8**	**6.0**	**2,558**
SSCCFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	0.7	1.7	6.1	8.5	731
MVA	1.0	2.3	6.0	9.3	264
EMS Total	**0.8**	**1.9**	**6.0**	**8.7**	**995**
False alarm	1.2	2.4	5.8	9.3	73
Good intent	1.1	2.4	7.5	11.0	36
Hazard	0.9	2.4	7.5	11.7	40
Outside fire	1.3	3.1	7.2	11.7	77
Public service	1.0	1.9	6.9	9.8	61
Structure fire	1.5	3.3	7.5	12.4	18
Fire Total	**1.2**	**2.5**	**7.0**	**10.7**	**305**
Automatic aid	0.8	2.3	7.1	10.3	192
Total	**0.9**	**2.1**	**6.4**	**9.3**	**1,492**

The 90th percentile measurement, often referred as a "fractile response," is a more conservative and stricter measure of total response time. Most fire agencies are unable to meet the NFPA fractile response time standard (60 to 80 second turnout [EMS vs. fire] and 240-second travel time). Simply explained, for 90 percent of calls, the first unit arrives within a specified time. Table 5-2 shows the 90th percentile response times of CAL FIRE units for the various response categories.

TABLE 5-2: 90th Percentile Response Times of First Arriving Unit, by Service Area and Call Type (Minutes)

MHFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	0.8	2.7	5.7	8.2	1,844
MVA	1.2	2.7	7.3	9.6	137
EMS Total	**0.8**	**2.7**	**5.8**	**8.2**	**1,981**
False alarm	1.3	3.0	6.2	9.1	180
Good intent	2.4	3.0	9.2	13.0	26
Hazard	1.5	2.7	6.8	10.3	71
Outside fire	1.4	3.4	5.9	8.7	47
Public service	1.2	3.2	7.6	10.7	245
Structure fire	2.1	2.8	3.3	6.8	3
Fire Total	**1.4**	**3.1**	**7.0**	**10.4**	**572**
Automatic aid	1.5	1.6	11.5	13.0	5
Total	**1.0**	**2.8**	**6.2**	**8.8**	**2,558**
SSCCFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	1.3	2.8	10.6	13.7	731
MVA	1.7	4.0	11.0	14.7	264
EMS Total	**1.5**	**3.1**	**10.8**	**14.1**	**995**
False alarm	2.9	3.3	10.5	14.0	73
Good intent	1.9	3.9	11.8	16.0	36
Hazard	2.1	3.5	14.1	22.3	40
Outside fire	2.4	5.0	13.6	19.3	77
Public service	1.6	3.0	10.9	14.8	61
Structure fire	3.0	5.6	15.5	24.0	18
Fire Total	**2.4**	**4.4**	**12.3**	**17.2**	**305**
Automatic aid	1.5	3.8	9.9	14.2	192
Total	**1.6**	**3.5**	**11.0**	**14.8**	**1,492**

Observations:

MHFD

- The average dispatch time was 0.5 minutes.
- The average turnout time was 1.7 minutes.
- The average travel time was 3.8 minutes.
- The average response time was 6.0 minutes.
- The average response time was 5.7 minutes for EMS calls and 7.0 minutes for fire calls.
- The average response time for structure fires was 5.3 minutes, and for outside fires was 6.7 minutes.

- The 90th percentile dispatch time was 1.0 minutes.
- The 90th percentile turnout time was 2.8 minutes.
- The 90th percentile travel time was 6.2 minutes.
- The 90th percentile response time was 8.8 minutes.
- The 90th percentile response time was 8.2 minutes for EMS calls and 10.4 minutes for fire calls.
- The 90th percentile response time for structure fires was 6.8 minutes, and for outside fires was 8.7 minutes.

SSCCFD

- The average dispatch time was 0.9 minutes.
- The average turnout time was 2.1 minutes.
- The average travel time was 6.4 minutes.
- The average response time was 9.3 minutes.
- The average response time was 8.7 minutes for EMS calls and 10.7 minutes for fire calls.
- The average response time for structure fires was 12.4 minutes, and for outside fires was 11.7 minutes.
- The 90th percentile dispatch time was 1.6 minutes.
- The 90th percentile turnout time was 3.5 minutes.
- The 90th percentile travel time was 11.0 minutes.
- The 90th percentile response time was 14.8 minutes.
- The 90th percentile response time was 14.1 minutes for EMS calls and 17.2 minutes for fire calls.
- The 90th percentile response time for structure fires was 24.0 minutes, and for outside fires was 19.3 minutes.

In general, the response times reflected in this analysis are excellent in the City and are a bit extended in the District given the expanse of the service area being covered. Dispatch handling times are extremely proficient and turnout times appear a bit extended and should be evaluated, as CPSM believes these times can be improved.

STATION LOCATIONS

The fire station is a critical link in service delivery and where these facilities are located is the single most important factor in determining overall response times and workload distribution. CAL FIRE operates from six fire stations, which are located as follows:

- Station 1 (CAL FIRE) – 15670 Monterey St.
- Station 2 (SSCCFD) – 10810 No Name Uno Ave.
- Station 3 (SSCCFD) – 3050 Hecker Pass Highway
- Station 31 (SSCCFD) – 12280 Pacheco Pass Hwy.
- Station 4 (City) – 18300 Old Monterey (El Toro)
- Station 5 (City) – 2100 E. Dunne Ave. (Dunne Hill)

The District owns Station 2 and leases Station 3. Stations 4 & 5 are owned by the City and Station 1 is a state of California complex that serves as the Unit Headquarters for CAL FIRE and also provides response, fleet maintenance, and administrative resources to both the City and District. Station 31 is also a state-owned facility and this facility is operated under an Amador Agreement in which the District shares in the cost of its operation during non-wildfire season (November 15-May15). Typically, fire stations have an anticipated service life of approximately 50 years. In most cases facilities require replacement because of the size constraints of the buildings, a need to relocate the facility to better serve changing population centers, the absence of needed safety features or service accommodations, and the general age and condition of the facility. At the time of this assessment those stations located and owned by the City were found to have up-to-date building systems, such as HVAC, plumbing, and electrical, and the station infrastructure and general upkeep appeared excellent. Both stations are equipped with automatic fire suppression systems and had diesel exhaust removal systems.

The District facilities (Station 2 & 3) were in general disrepair. There were a number of structural and operational shortfalls that were noted. The facilities did not appear to be well maintained, exterior paint was faded and was chipping in multiple locations. We were also advised of water and sewer issues and much of the paving on the bay entrance aprons and parking areas was in need of repair. The District utilizes ***Development Impact Mitigation Fees*** to fund growth related expansion of its facilities, rolling stock, and other capital infrastructure. This funding source, though useful, is often insufficient or unable to fund the needed repairs and ongoing maintenance.

Station 1, though aged, appears well maintained and is an expansive complex housing a number of Unit services including the vehicle maintenance facility, the dispatch center, EOC, and training and administrative offices.

Station 1 (15670 Monterey St.). This facility serves as the Unit Headquarters for CAL FIRE operations in this area. This complex supports a host of administrative and emergency response activities and serves both the City and District via a cost allocation formula. The living areas, including the employee barracks, mess hall and apparatus bay areas, encompass 3,602 square feet. Some of the buildings in the complex were first built in the 1950s but have been well maintained and renovated over the years.

Station 2-Masten (10810 No Name Uno Ave.) is composed of living quarters and an office area that was originally built in 1980 and apparatus bays constructed in 1983. The combined facility is 7,014 square feet in size. This includes five apparatus bays and administrative space.

Station 3-Treehaven (3050 Hecker Pass Hwy.) is a metal building with two bays that was built in 1981. This facility is 2,100 square feet in size. This station has been identified for relocation and expansion in the District's Development Impact Mitigation Plan. The schedule for this relocation is based on the allocation of sufficient funding.

Station 4- El Toro (18300 Old Monterey). This is a substantial building that was constructed in 1975 and has been renovated a number of times in recent years. This is a two-bay, pass-through facility that is 3,610 square feet in size.

Station 5 – Dunne Hill (2100 E Dunne Ave). This is a substantial, well-maintained facility that was constructed in 1978. The building has been renovated and upgraded recently. It is a two-bay, single deep, pass-through facility that is 2,476 square feet in size.

Assessment of Fire Station Locations

CAL FIRE serves an estimated population of 80,568 people and a total service area in excess of 320 square miles. The two City of Morgan Hill stations have primary service responsibility within the city boundaries, which encompass an area of 12.8 square miles. This gives each fire station an estimated service area of approximately 6.4 square miles. The District's three stations have primary responsibility for a very expansive service area that is estimated to be 320 square miles; however, the majority of the service population in the District resides in the areas generally adjacent to the Highway 101 corridor, which runs an estimated 24 miles from Metcalf Road in the north to the Santa Clara/San Benito County line in the south. Much of the service area in the District that extends outward beyond a one to two mile distance from the 101 corridor is made up of uninhabited canyons and mountainous terrain. The District also operates a fourth station in the Pacheco Highway Pass area, which operates in this rural part of the District and sees limited call activity.

In an ICMA Data Report on comparative performance measurement, ICMA evaluated survey information from 76 municipalities with populations ranging from 25,000 to 100,000 people. In this grouping the average fire station service area was 11 square miles.[15] The median service area for this grouping of communities was 6.67 square miles per fire station.[16]

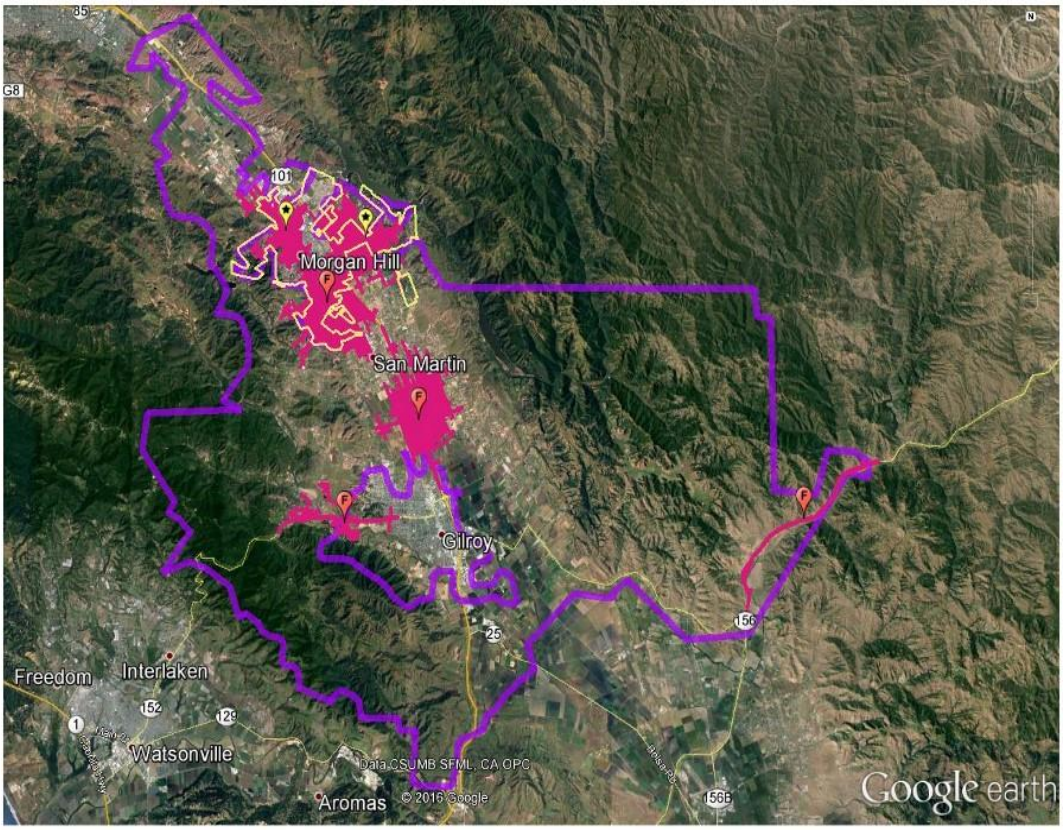
In addition, NFPA and ISO have established indices in determining fire station distribution. The ISO Fire Suppression Rating Schedule, Section 560, indicates that first-due engine companies should serve areas that are within a 1.5-mile travel distance.[17] The placement of fire stations that achieves this type of separation creates service areas that are approximately 4.5 square miles in area, depending on the road network and other geographical barriers (rivers, lakes, railroads, limited access highways, etc.). The National Fire Protection Association (NFPA) references the placement of fire stations in an indirect way. It recommends that fire stations be placed in a distribution that achieves the desired minimum response times. NFPA Standard 1710, Section 5.2.4.1.1, suggests an engine placement that achieves a 240-second (four-minute) travel time.[18] Using an empirical model called the "piece-wise linear travel time function," the Rand Institute has estimated that the average emergency response speed for fire apparatus is 35 mph. At this

[15] *Comparative Performance Measurement*, FY 2011 Data Report - Fire and EMS, ICMA Center for Performance Measurement, August 2012.
[16] Ibid.
[17] Insurance Services Office. (2003) Fire Protection Rating Schedule (edition 02-02). Jersey City, NJ: Insurance Services Office (ISO).
[18] National Fire Protection Association. (2010). 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*. Boston, MA: National Fire Protection Association.

speed the distance a fire engine can travel in four minutes is approximately 1.97 miles.[19] A polygon based on a 1.97 mile travel distance results in a service area that on average is 7.3 square miles.[20]

From these comparisons, it can be seen that the service area covered by the two Morgan Hill stations is very much aligned with the noted references. The District, however, is much more difficult to compare as its service responsibilities incorporate both developed suburban populations and large expanses of agricultural areas and uninhabited wildland areas. This fact is borne out when we observe the overall response times from these facilities. Figures 5-2, 5-3, and 5-4 identify the station locations, along with 240-second (indicated by the red overlay), 360-second (indicated by the green overlay), and 480-second (indicated by the blue overlay) travel time benchmarks.

FIGURE 5-2: City and District Station Locations and Travel Times (red = 240 seconds)



[19] University of Tennessee Municipal Technical Advisory Service, *Clinton Fire Location Station Study*, Knoxville, TN, November 2012. p. 8.
[20] Ibid., p. 9.

FIGURE 5-3: City and District Station Locations and Travel Times (green = 360 seconds)

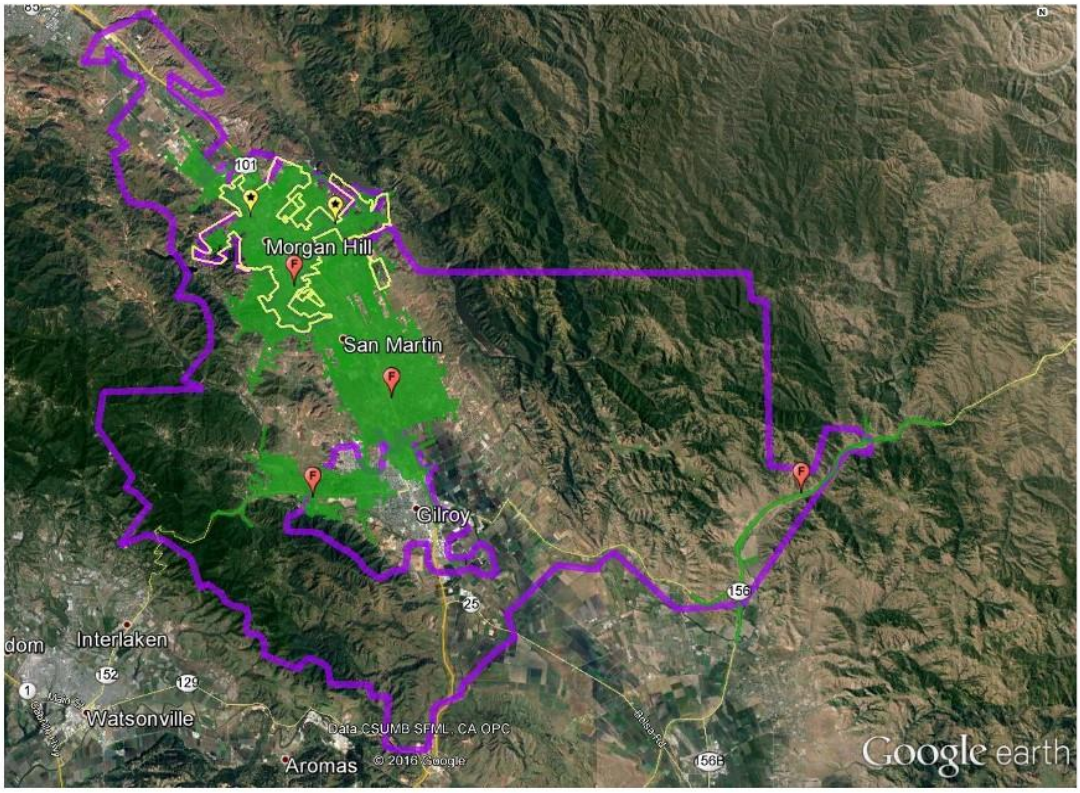


FIGURE 5-4: City and District Station Locations and Travel Times (blue = 480 seconds)

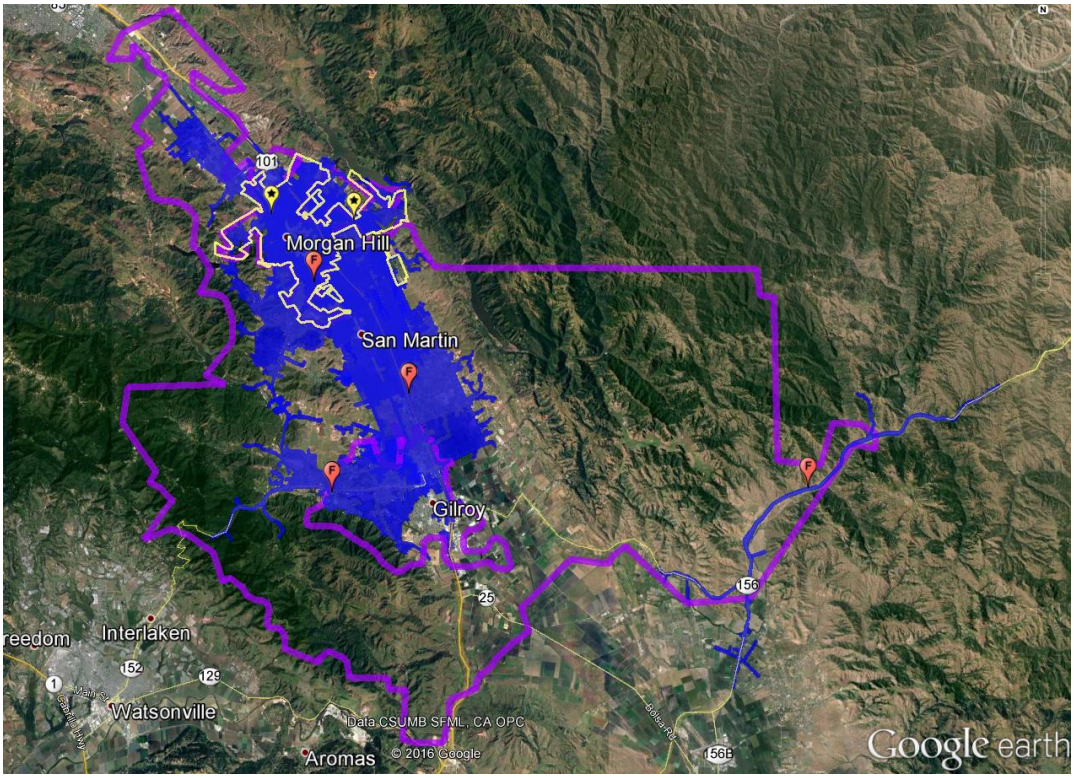


Figure 5-2 shows that approximately 70 percent of the developed areas of the city are covered under the 240-second benchmark. We estimate that approximately 95 percent of the developed area of the city is covered under the 360-second overlay and more than 100 percent is covered under the 480-second benchmark. The majority of the city, the commercial, and the more built-upon areas are well within the 240- and 360-second benchmarks. This is confirmed by the information in Table 5-2 showing 90th percentile travel times; it can be seen that more than 90 percent of the calls handled by CAL FIRE within Morgan Hill result in a travel time of six minutes or less (360 seconds). Assessing the coverages in the District is much more difficult to determine given the larger service areas and the limited number of fire stations serving these areas. However, when looking at the actual call distribution, which generally relates to the population concentrations in the District, the level of coverage is generally acceptable. It is, however, important to note that these travel time distances do not take into consideration alarm handling and turn-out times. ***The maps in Figures 5-2, 5-3, and 5-4 only depict travel distances and not actual response times.***

Figures 5-5, 5-6, and 5-7 show the actual locations of fire and other emergency responses carried out by CAL FIRE. It is apparent that most responses in Morgan Hill are within four to five minutes of travel time from the municipal fire stations. This graphic also reveals that there are a number of call-generating points that are outside the city limits, east and west of the Highway 101 corridor, and which are at the farthest limits of the 480-second travel distance. It is also very apparent that the mutual aid and automatic aid agreements with Gilroy and San Jose are critical in providing both fire and EMS response in the northern and southern stretches of the District boundaries. Also apparent is the limited call activity along Pacheco Pass Highway, east of Gilroy, and the appropriateness of the Amador Agreement that serves this area.

FIGURE 5-5: CAL FIRE Fire Runs

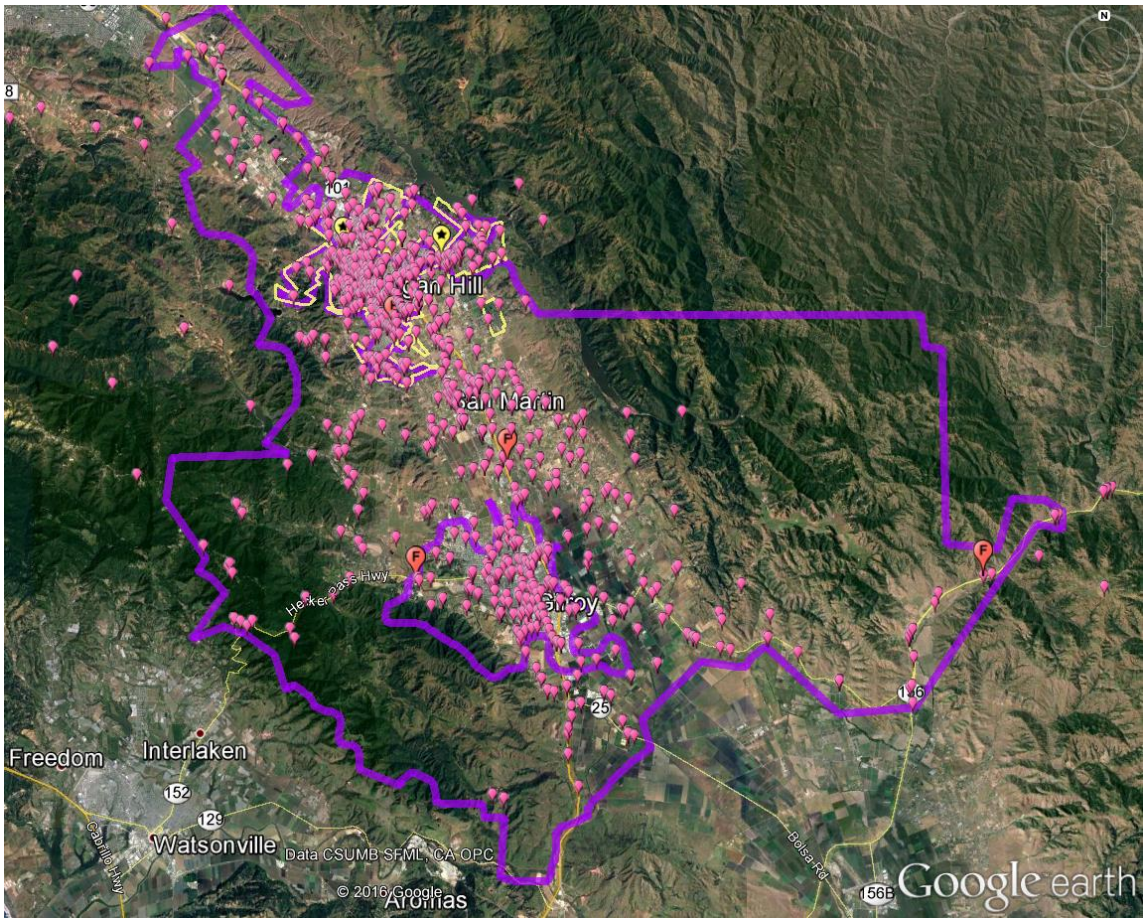


FIGURE 5-6: CAL FIRE EMS Runs

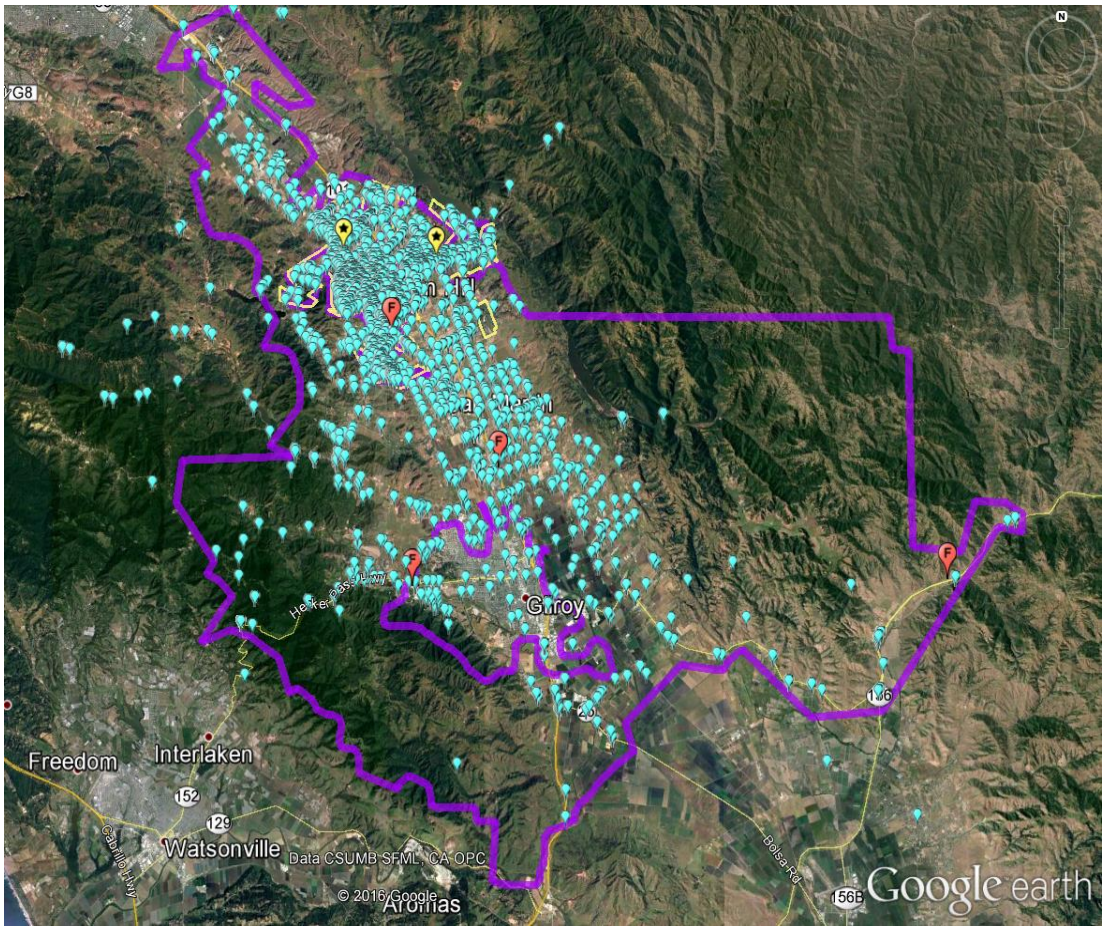
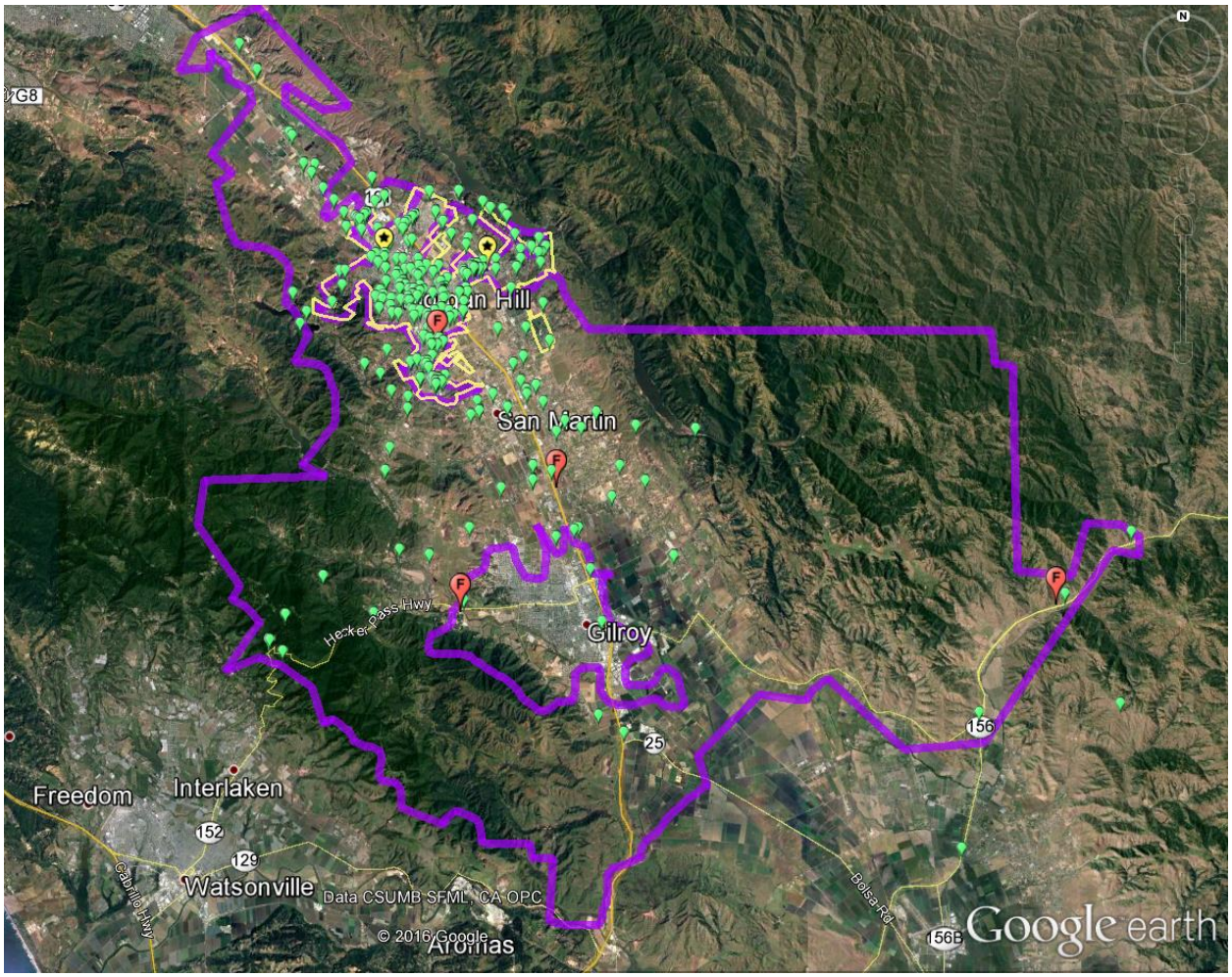


FIGURE 5-7: CAL FIRE Other Runs



SECTION 6. OPERATIONAL SUPPORT AREAS

PERFORMANCE MEASUREMENT

Fire suppression, prevention programs, and safety services need to be planned and managed to achieve specific, agreed-upon results. Determining how well an organization or program is doing requires that these goals be measurable and that they are measured against desired results. This is the goal of performance measurement.

Simply defined, performance measurement is the ongoing monitoring and reporting of progress toward pre-established goals. A performance measurement system captures data about programs, activities, and processes, and displays data in standardized ways that help communicate to service providers, customers, and other stakeholders how well the agency is performing in key areas. Performance measurement provides an organization with tools to assess performance and identify areas in need of improvement. In short, ***what gets measured gets done***.

Incident reporting is the primary medium through which department activities are recorded and can subsequently be measured. Consistency, accuracy, and completeness in incident reporting is critical to an effective performance measurement system. CPSM believes that improved oversight is needed regarding the incident reporting processes currently utilized by CAL FIRE. Our analysis found that nearly 750 of the incident reports reviewed were incomplete or were inaccurate. The frequency of these types of reporting errors is indicative of the need for a more robust and comprehensive internal quality assurance and review process.

> ***Recommendation: CAL FIRE should improve the level of review of its incident reporting to ensure the complete and accurate documentation of its response activities.***

It is important that all personnel be fully trained in the incident reporting process and that clear guidelines be established on when such reporting is required. In addition, CPSM recommends that an assigned person(s) be responsible for the review of these reports for purposes of quality control.

Performance measurement systems vary significantly among different types of public agencies and programs. Some systems focus primarily on efficiency and productivity within work units, whereas others are designed to monitor outcomes produced by major public programs. Still others track the quality of services provided by an agency and the extent to which citizens are satisfied with these services.

Within the fire service, performance measures tend to focus on inputs (the amount of money and resources spent on a given program or activity, number of personnel, daily staffing levels, etc.) and short-term outputs (the number of fires, average response times, etc.). One of the goals of any performance measurement system should be to include efficiency and cost-effectiveness indicators, as well as explanatory information on how these measures should be interpreted. The various types of performance measures are shown in Table 6-1.

TABLE 6-1: The Five GASB Performance Indicators[21]

Category	Definition
Input Indicators	These are designed to report the amount of resources, either financial or other (especially personnel), that have been used for a specific service or program.
Output Indicators	These report the number of units produced or the services provided by a service or program.
Outcome Indicators	These are designed to report the results (including quality) of the service.
Efficiency (and cost-effectiveness) Indicators	These are defined as indicators that measure the cost (whether in dollars or employee hours) per unit of output or outcome.
Explanatory Information	This includes a variety of information about the environment and other factors that might affect an organization's performance.

As CAL FIRE evolves it is critical that a series of measurements be established to track the performance of all operations. Currently, under the terms of the service agreement with Morgan Hill and Santa Clara County EMS, CAL FIRE is required to meet a series of performance measures. These involve response times, fire inspection and plans review turn-around times, dispatch services, and engine company inspection activities. Though these measures are viable their application to the full range of fire, EMS, fire prevention and public outreach efforts are currently limited. To be effective, a full range of performance measures should be utilized and these findings should be published and shared with all the affected stakeholders, including the City Council, the Mayor's Office, the City Manager's Office, the District, and CAL FIRE first responders. CAL FIRE does not provide similar performance monitoring efforts to SSCCFD officials, beyond the required EMS response time measures. Ongoing analysis and the monitoring of trends are most useful to justify program effectiveness, direct training efforts, and to measure service delivery levels.

Establishing a performance management system within the framework of an overall strategic plan would help City and District management and elected officials to gain a better understanding of what CAL FIRE is trying to achieve. Building any successful performance management system that measures more than outputs requires a consistent model.

Recommendation: CAL FIRE should undertake a concerted effort to expand its current performance measures in order to incorporate a comprehensive performance management system that monitors a full range of performance outcomes.

The process of developing these measures should utilize input from CAL FIRE members, the community, elected officials, and city administrators.

CPSM recommends that CAL FIRE undertake a concerted effort to develop a comprehensive listing of performance measures for both emergency and nonemergency activities. The following are a number of suggested measures that may be considered:

[21] From Harry P. Hatry et al., eds. *Service Efforts and Accomplishments Reporting: Its Time Has Come* (Norwalk , CT: GASB, 1990).

Operations:

- Response times (fractal/average/frequency of excessive times).
  - Alarm handling times.
  - Turnout times.
  - Travel times.
  - On-scene time.
  - Call duration.
  - Cancelled en route.
- Workload measures.
  - Emergency vs. nonemergency responses.
  - Response to automatic fire alarms/frequency and outcomes.
  - Smoke detector distribution (installations and follow-up).
  - Prefire planning.
  - Public education–contact hours/numbers by age group.
- Outcome measures.
  - Fire loss/limit of fire spread–point of origin, room of origin, etc.
  - On-duty injuries.
  - Volunteer participation and attendance at events.
  - Vehicle accidents.
  - Equipment lost or broken.

Staff Training and Development:

- Fire training and participation at drills.
- Officer development.
- Specialty training.
- Professional development/formal education/certifications.

Fire Prevention:

- Plans review (numbers/valuation $/completion time).
- Inspections (new and existing).
  - Numbers.
  - Completion time.
  - Violations (found/corrected).
  - Quantification by type of violation and occupancy type.
- Fire investigations.
  - Numbers and determinations.

- Locations and occupancy types.
- Fire loss/structure and contents.
- Arson arrests/convictions.
- Fire deaths (demographics/occupancy type/cause and origin).

Miscellaneous:

- Customer service surveys.
  - Following emergency response.
  - Public assist.
  - Inspections (prevention and company).
  - Public education.
  - In-service training (volunteer assessments).
- Financial/budgetary.
  - Apparatus repair costs and out-of-service time.
  - Revenue generation and trending.

HAZARD ANALYSIS

The state of California is extremely proficient and a national leader in its hazard assessment process, planning, and interagency coordination efforts. All jurisdictions are required to operate under the Standard Emergency Management System (SEMS), when engaged in multi-agency and multi-jurisdictional emergencies. SEMS incorporates the use of the ICS, mutual aid systems, and multi-agency coordination. Local governments must use SEMS in order to be eligible for reimbursement for their response-related personnel costs under state disaster assistance programs. Under SEMS the local government is typically responsible for the management and coordination of the emergency response and recovery activities within its jurisdiction. The City of Morgan Hill has adopted an emergency operations plan (EOP) that guides this effort. The plan identifies the City Manager as the ***Director of Emergency Services*** who is empowered under the municipal code to make a number of decisions and take the necessary actions during an emergency. The plan also identifies a ***Disaster Council*** made up of key elected and city officials to advise the City Manager during disaster events. The plan also delineates a ***Line of Succession*** for emergency services, identifying the Assistant City Manager, then the Police Chief, and then the Director of Public Works to assume the role of Director of Emergency Services in the absence of the City Manager. The Fire Chief and CAL FIRE are identified as key field personnel and members of the Disaster Council. The city's plan is very well written and identifies those potential hazards that can affect the community. These include:

- Seismic hazards.
- Geological hazards (including landslides, mudslides, stream erosion, etc.).
- Wildfire hazards.
- Flooding (including dam failures).
- Drought and extreme weather.
- Energy disruption/shortage.

- Transportation accidents (including hazardous material incidents).
- Public health emergency.
- Terrorism

Morgan Hill and the adjacent areas of South Santa Clara County are vulnerable to a variety of human-caused hazards, including chemical releases, spills, or explosions associated with both fixed storage and mobile transports containing hazardous materials. In addition, the Santa Clara County Local Hazard Mitigation Plan, which encompasses the City of Morgan Hill, is designed to reduce or eliminate long-term risks associated with natural and manmade hazards. These plans include a series of response guides that identify the associated tasks and to whom they are assigned, depending on the type of incident and its magnitude.

Linking a fire department's operational functionality to the community risk and its vulnerability assessment is intended to assist fire personnel in refining its preparedness efforts. Because of CAL FIRE's stature as a state agency and regional service provider, CPSM has observed a level of preparedness and organizational management that would be unmatched if the City or District were operating independently. CPSM believes that this is an added benefit in the contractual arrangement with CAL FIRE. We will discuss this issue and our recommendations further in the Emergency Management section of this report.

FIRE PREPLANNING/COMPANY INSPECTIONS

CAL FIRE has developed a number of fire preplans for major target hazards within the response areas of both the City and District. These documents address routes of travel, occupancies and construction type, water supplies, sprinkler and standpipe connections, and hazards associated with the various occupancies. Each piece of apparatus has a book with running routes and building layout for target hazards.

Risk assessment and vulnerability analysis are not new to the fire service; NFPA 1620, *Recommended Practice for Pre-Incident Planning*, identifies the need to utilize both written narrative and diagrams to depict the physical features of a building, its contents, and any built-in fire protection systems. The occupancies that are typically specified for pre-incident plans, or "preplans," are as follows:

- Large assembly.
- Educational.
- Health care.
- Detention and correction.
- High-rise residential.
- Residential board and care (assisted living).
- Mercantile.
- Business.
- Industrial.
- Warehouse and storage.

CAL FIRE appears very proficient in the management and execution of its fire preplanning process. Engine companies are assigned specific occupancies for inspection and re-inspection. Crews work directly with the Fire Marshal and proper recordkeeping is maintained. There are limited fire preplanning activities occurring in the SSCCFD. This is primarily a by-product of the limited number of occupancies that would necessitate fire preplans and the limited oversight and requirement of these activities in the cooperative agreement with the District as compared with the City. Morgan Hill specifically requires fire preplanning as a component of its agreement.

ACCREDITATION

Accreditation is a comprehensive self-assessment and evaluation model that enables organizations to examine past, current, and future service levels. It is used to evaluate internal performance and compares this performance to industry best practices. The intent of the process is to improve service delivery.

The Center for Public Safety Excellence (CPSE) provides an extensive evaluation process, on a fee basis, to member agencies and which ultimately leads to accreditation. CPSE is governed by the Commission on Fire Accreditation International (CFAI), an 11-member commission representing a cross-section of the fire service, including fire departments, city and county management, code councils, the U.S. Department of Defense, and the International Association of Firefighters.

The CPSE Accreditation Program is built around the following key measurements:

- Determine community risk and safety needs.
- Evaluate the performance of the department.
- Establish a method for achieving continuous organizational improvement.

Local government executives face increasing pressure to "do more with less" and justify expenditures by demonstrating a direct link to improved or measured service outcomes. Particularly for emergency services, local officials need criteria to assess professional performance and efficiency.

CPSE accreditation has national recognition and is widely used throughout the fire service. The key to its success is that it allows communities to set their own standards that are reflective of their needs and a service delivery model that is specific to their needs. In addition, it is a program that is based on ongoing improvement and continuous monitoring. The CPSE accreditation model may be well suited for Morgan Hill and SSCCFD.

Recommendation: Morgan Hill and SSCCFD should consider CPSE fire accreditation in the future.

The current interrelationship between Morgan Hill and SSCCFD in the co-utilization of CAL FIRE in providing fire, EMS, and prevention services would benefit greatly if a joint accreditation process was conducted. Accreditation, CPSM believes, would facilitate this effort and further orchestrate the ongoing cooperative efforts.

ISO (INSURANCE SERVICES OFFICE)

ISO collects data for more than 47,000 communities and fire districts throughout the country. The data is then analyzed using a proprietary Fire Suppression Rating Schedule (FSRS). This analysis then results in a PPC (Public Protection Classification) score between 1 and 10 for the community, with Class 1 representing "superior property fire protection" and Class 10 indicating that an area doesn't meet the minimum criteria set by the ISO. On July 1, 2013, the revised FSRS was released; it adds an emphasis on a community's effort to limit loss before an incident occurs (fire prevention).

In developing a PPC, the following major categories are evaluated:

- Emergency Communications: Fire alarm and communication systems, including telephone systems, telephone lines, staffing and dispatching systems.
- Fire Department: The fire department, including equipment, staffing, training, and geographic distribution of fire companies.
- Water Supply: The water supply system, including the condition and maintenance of hydrants and the amount of available water compared to the amount need to suppress fires.
- Fire Prevention: Programs that contain plan review; certificate of occupancy inspections; compliance follow-up; inspection of fire protection equipment; and fire prevention regulations related to fire lanes on area roads, hazardous material routes, fireworks, barbecue grills, and wildland-urban interface areas.
- Public Fire Safety Education Programs: Fire safety education training and programs for schools, private homes, and buildings with large loss potential or hazardous conditions and a juvenile fire setter intervention program.

The City of Morgan Hill and the SSCCFD each have separate reviews and ratings by ISO. Morgan Hill was last reviewed in April 2014 and received a 3/3X rating. The 3/3X rating is an outstanding achievement for a community the size of Morgan Hill, particularly considering its contracted service relationship with CAL FIRE. SSCCFD was rated in June 2014 and received a 4/10 rating which is also a very good review. In a split classification for a community the first number is the class that applies to properties within five road miles of the responding fire station and 1,000 feet of a credible water supply, such as a fire hydrant, suction point, or dry hydrant. The second number is the class that applies to properties within five road miles of a fire station but beyond 1,000 feet of a credible water supply.

In both reviews the actual scoring was at the lower end of the rating scale for the respective class. Morgan Hill received a 72.11 score and the minimum rating for Class 2 is 80. SSCCFD received a 61.93 rating; a score of 70 would be needed to improve to a class 3 rating. In both instances, however, the more significant point loss was related to the water system, personnel staffing, and deployment. Morgan Hill received 29.10 points for its fire department out of a total of 50 points available. SSCCFD received 28.13 out of the 50 points available. In the water supply category, Morgan Hill received 33.72 of a possible 40 points and SSCCFD received 20.29 out of the 40 points available. It is important to note that the SSCCFD received minimal points for fire hydrant inspection and flow testing: only .01 out of the total 7 points available. In Morgan Hill, however, this same category was rated as 6.4 out of the 7 possible points available. CPSM believes that this scoring could be improved in the District, but the ultimate level of improvement would not be significant enough to jump the overall rating from the current Class 4 rating to a Class 3.

Recommendations: CAL FIRE should improve its fire hydrant inspection and flow testing process in SSCCFD.

CPSM believes that it is wise for an agency to regularly check its fire hydrants in order to identify hydrants that are malfunctioning or inoperable. It is even more important in the District given the limited number of fire hydrants. It is also important to note that CAL FIRE received excellent scoring in the areas of fire training, receiving 7.74 points out of 9 in the District and 7.76 out of 9 in the City. CPSM recognizes this as an ongoing commitment to fire training and employee development and is considered a ***Best Practice***.

SECTION 7. ESSENTIAL RESOURCES

FIRE PREVENTION, CODE ENFORCEMENT, PUBLIC EDUCATION, AND INVESTIGATIONS

The fire prevention services currently provided in the City and District are separate and unique operations. Both entities operate under the same fire code (2013 California Fire Code), but the code review process including fire plans review and fire inspection processes are carried out separately. CAL FIRE provides fire prevention services in the City as part of their contractual arrangements. CAL FIRE has assigned a Fire Marshal (Captain) who oversee all aspects of the municipal code enforcement processes. The Fire Marshal is assisted by a part-time contract employee who has primary responsibility for fire plans review for new construction projects. In addition, the plans review and permit process is managed through the City Building Department and the Fire Marshal and the contract employee work closely with city officials in managing a significant workload. Fire code review and inspection services in the County are managed through the County Fire Marshal. The County Fire Marshall is an employee of the Santa Clara Fire Department often referred to as "Central Fire Protection District." Central is a dependent fire protection district that provides a full range of fire, EMS, and fire prevention services in the northwest sections of unincorporated Santa Clara County. Central Fire was the previous provider of fire and EMS services in the City. Both Fire Marshals work closely with their respective Planning and Building Departments in the management of the development process. The District also employs a part-time contract employee who is responsible for maintenance inspections and code violations that are typically complaint driven. The City of Morgan Hill has established a number of performance measures related to the fire plans review and inspection processes utilized in the City. There are no related performance measures that are applicable in the District. In addition, CAL FIRE engine companies conduct an estimate 600 in-service fire inspections annually in Morgan Hill. There are very few in-service engine company fire inspection currently being done in the District.

Recommendation: CAL FIRE should institute an in-service engine company fire inspection process in SSCCFD.

Fire suppression and response, although necessary in minimizing property damage, have little impact on preventing fires. Rather, public fire education, fire prevention, and built-in fire protection and notification systems are essential elements in protecting citizens from death and injury due to fire. Both the City and District currently utilize the 2013 California Fire Code (CFC), which utilizes by reference the 2012 International Fire Code. Both agencies are in the process of updating the current version of the code with plans to move to the 2016 version.

Automatic fire sprinklers have proven to be very effective in reducing fire loss and minimizing fire deaths in residential structures. Many communities have been reluctant to impose code provisions that require these installations. The 2013 California Fire Code includes the requirement for automatic fire sprinklers in single family and duplex residential structures. This provision is applicable in both the District and the City. According to the NFPA, the average cost nationally for installing automatic fire sprinklers in new, single family residential structures is estimated to be $1.61 per square foot.[22] For a 2000 square-foot home, the estimated cost would be approximately $3,220. This can be less than the cost of granite counter tops or a carpeting upgrade. In addition, many homeowner insurance policies provide a discount for homes

[22] NFPA, "Cost of Installing Residential Fire Sprinklers Averages $1.61 per Square Foot" Quincy, MA: September 11, 2008.

equipped with residential fire sprinklers. CPSM recognizes the application of the automatic fire sprinklers in both the City and District as a ***Best Practice***.

CAL FIRE plays a significant role in fire prevention efforts, mainly through public fire safety education and during Fire Prevention Week each October. Members of the fire department routinely respond throughout the year to requests from schools, civic groups, and the community to see the department's fire apparatus. Department members review basic fire safety with the public such as exit drills in the home; stop, drop and roll; and changing smoke/carbon monoxide detector batteries in the spring and fall. These public fire safety efforts are a ***Best Practice***. The city Fire Marshal has limited staffing to perform the public fire safety education function, but makes a significant commitment to participate in public education events, special events and community outreach efforts.

The City of Morgan Hill has enacted a ***Weed Abatement Ordinance*** that requires removal of hazardous weeds and brush in an effort to prevent or mitigate the spread of wild fires. The Fire Department is charged with the enforcement of this ordinance and this responsibility has been delegated to the Fire Marshall's Office. The Fire Marshall has anticipated that this added requirement will add in excess of 600 hours of additional workload to oversee this process in the City. Currently this capacity does not exist and additional staffing will be required to fulfill this responsibility. Weed abatement in the District is provided through the County's Department of Agriculture. The weed abatement program applicable in the District is voluntary, though mitigation efforts may be required if the situation is deemed to be a fire hazard.

The fire prevention efforts in the District and the City are not unified. Different aspects of this effort are supervised and coordinated through the different levels of government. Though CAL FIRE is under contract to provide fire prevention services in both areas, there are differences in the management of these efforts because of the processing and enforcement differences between the City and County. The situation is compounded because of the involvement of the Santa Clara County Central Fire Protection District, which has been charged with much of the fire prevention oversight, yet its jurisdictions does not include SSCCFD. Though the agencies attempt to work cooperatively in the administration of fire prevention efforts, there are gaps and differences in these efforts.

Recommendation: Morgan Hill and Santa Clara County should consider consolidating their fire prevention efforts (permitting, plans review, inspections and code enforcement) under CAL FIRE in the delivery of fire prevention services.

EDUCATION AND TRAINING PROGRAMS

Education and training programs create the character of a fire service organization. Agencies that place a real emphasis on their training have a tendency to be more proficient in carrying out day-to-day duties. The prioritization of training also fosters professionalism and teamwork and instills pride in the organization. An effective fire department training program must cover all of the essential elements in the department's core missions and responsibilities. The program must include an appropriate combination of technical/classroom training and manipulative or hands-on/practical evolutions. Most of the training, but particularly the practical hands-on training evolutions, should be developed based upon the department's own operating procedures. It is also important that all training evolutions are reflective of those accepted practices and industry standards.

CAL FIRE has an excellent training program and there is a dedicated effort focused on a wide array of training activities. The training functions of CAL FIRE are primarily handled by three

personnel, a Battalion Chief in charge of training, an EMS Captain, and a Fire Training Captain. Other members of the organization may assist in providing certain aspects of the training depending on their particular skill set and desire to take on additional duties. The training guidelines and the overall structure of training activities are specified in a very structured process utilized throughout the CAL FIRE system. All employees enter the system as a state certified Fire Fighter-I. This training utilizes a defined a curriculum that is managed for all CAL FIRE Units. Employees must complete a 16-week training academy in which they follow the IFSTA (International Fire Service Training Association) firefighter training curriculum. Upon completion of the fire training academy, employees are placed on a one-year probationary period and assigned to a unit in which their training and skills are assessed and monitored. Upon completion of the training probationary period, all CAL FIRE employees enter a three-year ***Joint Apprenticeship Program*** that requires 144 hours of annual training through a defined curriculum. This program is administered jointly by the unit training staff and the employee's supervisor. CAL FIRE employees are also expected to utilize an ***Individual Development Plan*** that specifies individual goals and achievement levels that are utilized in employee evaluations and in consideration for promotion and grade advancements.

The Training Division distributes a monthly training calendar that specifies the block of training to be carried out by each of the crews under the supervision of their officer. These include fire training and multi-company drills, wildland training, EMS training, and other specialty training drills or new equipment training and familiarization. CAL FIRE also utilizes online resources to supplement its training activities (Target-Solutions). The unit has access to training simulators for command training and driver operator training. In addition, employees are offered multiple opportunities to attend training offerings throughout the state for enhanced skills and proficiencies that can be included as part of the individual development plan.

The CAL FIRE training program is well organized and is monitored on the basis of employee outcomes and individual personnel development. The process is tied to the organizational needs, is closely aligned with the various job descriptions, and is utilized in grade advancement and promotion. The training requirements include regular skill assessments, personal fitness, and an annual medical health evaluation. The training and development process utilized by CAL FIRE is one of the most organized and comprehensive training program CPSM has evaluated in its review of numerous fire departments. We recognized CAL FIRE's training program as a ***Best Practice***.

EMERGENCY MANAGEMENT/COOP/HAZARD MITIGATION

Emergency management in the City of Morgan Hill is coordinated by the city's Office of Emergency Services (OES), which operates the under Police Administration. The city has appointed a staff member who serves as its Emergency Services Coordinator. This individual is charged with the oversite of the city's Emergency Operations Plan and maintaining the readiness of the Emergency Operations Center (EOC). The city's EOP is a very comprehensive and well-written document that is kept up to date and exercised regularly. The City Manager is designated as the Director of Emergency Services and is empowered to make a variety of decisions that will guide the city during significant emergency events. The City Manager works closely with the city's Disaster Council, which is made up of the Mayor, Council Members, and other key city officials (Police Chief, Public Works Director, Fire Chef, Emergency Services Coordinator, and others as needed). The Disaster Council works in an advisory capacity in guiding the City Manager in decision making during a disaster.

The EOP and the guiding structure of California law through its Standardized Emergency Management System (SEMS), delegates to local government the authority and responsibility to manage and coordinate the overall response and recovery activities within its jurisdiction. This includes the restoration of services and the safety of people and properties impacted by the event. County government is responsible for the broader duties of the operational area in supporting local government by providing resources, and providing linkages to regional and state agencies.

CAL FIRE is recognized and operates as a key agency and member of the Disaster Council within the city's EOP. The CAL FIRE EOC, located at the Monterey Street compound, is designated as the city's alternate EOC. The City is well positioned and appears well trained in it emergency management duties.

The City of Morgan Hill has developed a Continuity of Operations Plan (COOP) and a Continuity of Government (COG) plan for the city as a whole. The purpose of continuity of operations planning is to ensure that essential city services are provided in the wake of catastrophic or disruptive events.

Continuity of operations planning is the process in which government formally reviews and makes contingency plans in the event that government can no longer operate under normal conditions. COOP looks at the potential inability of a local government to utilize key public buildings, including fire stations or police stations, city hall, or other key structures. The planning process identifies alternative sites that could be utilized if these facilities are no longer functional. COOP also looks at contingencies if current service levels must be curtailed due to wide-scale employee absences. Agencies are asked to formulate plans if their workforce is reduced by various increments (15 percent, 25 percent, 50 percent, etc.). This exercise requires each department to define its plan for which of its services will continue and which other services could be modified or discontinued. There are numerous guides that provide insights or models for COOP. FEMA provides a template that is often utilized to assist local government and federal agencies in this process; it can be found at http://www.fema.gov/pdf/about/org/ncp/coop/continuity_plan_federal_d_a.pdf

Hazard mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. Federal, state, and local governments engage in hazard mitigation planning to identify natural hazards that impact them, identify strategies and activities to reduce any losses from those hazards, and establish a coordinated approach to implementing the plan, taking advantage of a wide range of resources. Mitigation plans are key to federal, state, and local governments' efforts to break the cycle of disaster damage, reconstruction, and repeated damage.

Developing hazard mitigation plans enables federal, state, and local governments to:

- Increase education and awareness around threats, hazards, and vulnerabilities.
- Build partnerships for risk reduction involving government, organizations, businesses, and the public.
- Identify long-term strategies for risk reduction that are agreed upon by stakeholders and the public.
- Identify cost effective mitigation actions, focusing resources on the greatest risks and vulnerabilities.
- Align risk reduction with other community objectives.
- Communicate priorities to potential sources of funding.

The City of Morgan Hill, as a political subdivision of Santa Clara County, has taken the necessary planning efforts to ensure that hazard mitigation strategies and investments meet the needs of the city. CPSM recognizes the emergency preparedness and hazard mitigation strategies of the City of Morgan Hill and Santa Clara County as a ***Best Practice***. The level of effort we observed and the degree of coordination is truly commendable.

EMERGENCY COMMUNICATIONS CENTER (ECC)

The City of Morgan Hill operates its Public Safety Answering Point (PSAP) at the Morgan Hill Police Department. 911 calls that originate from landlines within the City are received at the Police Center. Fire calls that are received by the Police Center are then routed to the CAL FIRE Emergency Command Center, which is located on the CAL FIRE campus on Monterey Street. When the city Police Dispatch Center receives an EMS call, it is first routed to the County 911 Center, which is operated by the Santa Clara County Communication Center. The County 911 Center is responsible for screening all EMS calls and will then dispatch a County Ambulance and advise the CAL FIRE Center of an EMS call that requires a fire response. All calls originating in the District are routed through the County 911 Center and on the basis of the call type will be processed by either County 911 or CAL FIRE.

The CAL FIRE Emergency Command Center is operated by CAL FIRE communication operators and supervised by a Captain who also serves as the Duty Officer. The center is operated on a 24/7 basis, with a minimum staffing of one dispatcher during nonpeak periods and up to three personnel during peak periods. The center is designed to handle CAL FIRE operations during wildfire events. Dispatchers are not trained to the EMD (Emergency Medical Dispatching) level but have limited training on dealing with EMS calls. CAL FIRE dispatchers do not typically talk with callers who have EMS complaints. The center does not utilize a quality assurance process to evaluate the actions of its dispatch operations. The center does not routinely establish any call prioritizations, and subsequently most CAL FIRE units respond hot (lights and sirens) on most assignments. CAL FIRE units do not talk directly with County EMS units and any unit radio contact must be first processed through the Dispatch Center. CAL FIRE units carry an additional portable radio to enable direct communications with County EMS units. Santa Clara County is attempting to institute a pilot program to facilitate unit-to-unit radio communications between fire and EMS; however, at the date of this report the pilot program has not been implemented.

The current dispatching operations utilized by CAL FIRE appears redundant and may be more efficiently operated through a cooperative agreement between Santa Clara County or a joint dispatching operation with neighboring jurisdictions. The CAL FIRE command center appears to have wildland dispatch and air operations as its primary focus rather than day-to-day EMS operations and structural firefighting.

Recommendation: Morgan Hill and SSCCFD should initiate discussions with CAL FIRE regarding options that can achieve greater efficiencies and operability in their fire and EMS dispatch operations.

SECTION 8. DATA ANALYSIS

INTRODUCTION

This data analysis, prepared as a key component of the study of the Morgan Hill Fire Department (MHFD) and South Santa Clara County Fire District (SSCCFD), was conducted by the Center for Public Safety Management, LLC (CPSM). This analysis examines all calls for service between January 1, 2015, and December 31, 2015, as recorded in the computer-aided dispatch (CAD) system and the National Fire Incident Reporting System (NFIRS).

This analysis is made up of four sections. The first section focuses on call types and dispatches. The second section explores time spent and workload of individual units. The third section presents an analysis of the busiest hours in the year studied. The fourth, and final, section provides a response time analysis of MHFD and SSCCFD units.

During the period covered by this study, both MHFD and SSCCFD stations were staffed and operated under separate contracts with the California Department of Forestry and Fire Protection (CAL FIRE) and were part of the CAL FIRE Santa Clara Unit. During this time, the two departments operated out of five stations utilizing six engines, five reserve engines, one ladder truck, two water tenders, six utility vehicles, one air support trailer, and various administrative units. While the Pacheco Pass fire station (station 31) is funded half of the year (six months) by SSCCFD and provides coverage to the far eastern portion of SSCCFD's area all year, it was not treated as a SSCCFD station in this study. Station 31 was, however, included when looking at automatic aid received from other agencies.

During the study period, there were 5,508 calls for service, of which 56 percent occurred in the MHFD coverage area and 35 percent occurred in the SSCCFD coverage area. The remaining calls occurred in other departments' coverage areas. MHFD and SSCCFD responded to 5,250 calls, and an additional 258 calls in the MHFD and SSCCFD coverage areas were handled by other agencies under automatic aid agreements. Overall, 60 percent of calls were EMS calls. The total combined yearly workload (deployed time) for all calls was 5,677 hours, which included 4,345 hours for all MHFD and SSCCFD units and 1,332 hours for units from other agencies. The average response time of the first arriving unit was 6.0 minutes to MHFD calls and 9.3 minutes to SSCCFD calls. The 90th percentile response time was 8.8 minutes to MHFD calls and 14.8 minutes to SSCCFD calls.

METHODOLOGY

In this report we analyze calls and runs. A call is an emergency service request or incident. A run is a dispatch of a unit. Thus, a call might include multiple runs.

We received CAD data and NFIRS data for both departments. We first matched the CAD and NFIRS data. Calls were then categorized based on NFIRS incident type, where possible, and on CAD problem description when no matching NFIRS call was found. For the purposes of this report, only calls outside of both departments' coverage areas were considered mutual aid calls. This was determined using both the NFIRS mutual aid field and city. Calls to which a neighboring agency responded under automatic aid agreements and no MHFD or SSCCFD non-administrative units responded were categorized as automatic aid received. Calls to which no units responded, such as burn authorizations, were excluded.

A total of 76 incidents to which administrative units were the sole responders are not included in the analysis sections of the report. However, the workload of administrative units is documented in Attachment III.

In this report, cancelled and mutual aid calls are included in all analyses except the response time analyses.

AGGREGATE CALL TOTALS AND DISPATCHES

In this report, each citizen-initiated emergency service request is considered a call. During the year studied, there were 5,508 calls in the MHFD and SSCCFD coverage areas. Of these, 28 were structure fire calls and 164 outside fire calls. Each dispatched unit is a separate "run." As multiple units are dispatched to a call, there are more runs than calls. The department's total runs and workload are reported in the second section of this analysis.

Calls by Type

Table 8-1 shows the number of calls by call type, average calls per day, and the percentage of calls that fall into each call type category. Figures 8-1 and 8-2 show the percentage of fire calls by type separated by the call's location in either MHFD's or SSCCFD's coverage area.

TABLE 8-1: Call Types

Call Type	Number of Calls by Location		Total Calls	Calls per Day	Call Percentage
	MHFD	SSCCFD			
EMS	2,037	824	2,861	7.8	52.0
MVA	166	299	465	1.3	8.4
EMS Total	**2,203**	**1,123**	**3,326**	**9.1**	**60.4**
False alarm	223	115	338	0.9	6.1
Good intent	38	69	107	0.3	2.0
Hazard	82	51	133	0.4	2.4
Outside fire	57	107	164	0.4	3.0
Public service	311	96	407	1.1	7.4
Structure fire	5	23	28	0.1	0.5
Fire Total	**716**	**461**	**1,177**	**3.2**	**21.4**
Automatic aid received	9	249	258	0.7	4.7
Cancelled	138	96	304	0.8	5.5
Mutual aid	NA	NA	443	1.2	8.0
Total	**3,066**	**1,929**	**5,508**	**15.1**	**100.0**

Note: All mutual aid calls and 70 cancelled calls occurred outside of both MHFD's and SSCCFD's areas.

FIGURE 8-1: Fire Calls by Type – Morgan Hill Fire Department

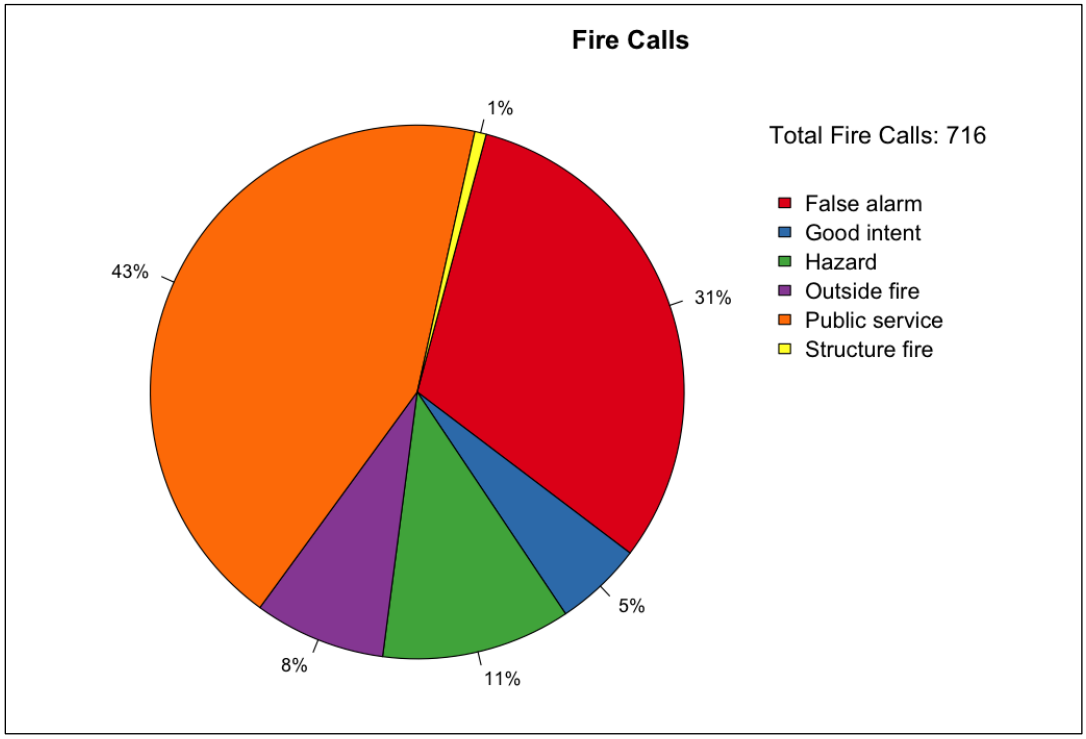
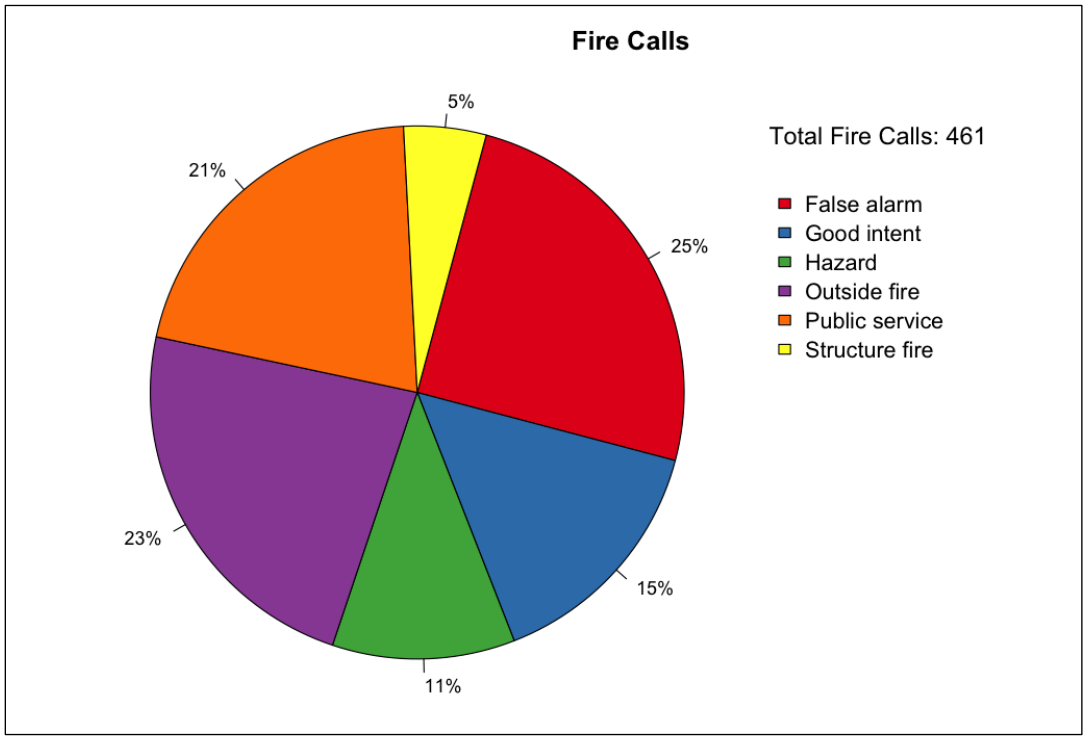


FIGURE 8-2: Fire Calls by Type – South Santa Clara County Fire District



Observations:

Overall

- The departments received an average of 15.1 calls per day, which includes 0.8 cancelled and 1.2 mutual aid calls.
- There were an average 0.7 automatic aid received calls per day to which other agencies responded.
- EMS calls for the year totaled 3,326 (60 percent of all calls), an average of 9.1 per day.
- Fire calls for the year totaled 1,177 (21 percent of all calls), an average of 3.2 per day.

Fires

- Structure and outside fires combined for a total of 192 calls during the year, an average of one call every 1.9 days.
- A total of 28 structure fire calls accounted for 2 percent of the fire calls, with 82 percent occurring in SSCCFD's coverage area.
- A total of 164 outside fire calls accounted for 14 percent of the fire calls, with 65 percent occurring in SSCCFD's coverage area.
- Public service calls were the largest fire call category, making up 35 percent of the fire calls.
- False alarm calls made up 29 percent of the fire calls.

Calls by Type and Duration

Table 8-2 shows the duration of calls by type using four duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, and more than two hours.

TABLE 8-2: Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	More than Two Hours	Total
EMS	1,483	1,186	178	14	2,861
MVA	187	210	60	8	465
EMS Total	**1,670**	**1,396**	**238**	**22**	**3,326**
False alarm	218	100	18	2	338
Good intent	66	31	10	0	107
Hazard	61	41	23	8	133
Outside fire	32	45	57	30	164
Public service	299	84	18	6	407
Structure fire	0	9	8	11	28
Fire Total	**676**	**310**	**134**	**57**	**1,177**
Automatic aid received	159	77	20	2	258
Cancelled	269	30	5	0	304
Mutual aid	207	141	48	47	443
Total	**2,981**	**1,954**	**445**	**128**	**5,508**

Observations:

EMS

- A total of 3,066 EMS category calls (92 percent) lasted less than one hour, 238 EMS category calls (7 percent) lasted between one and two hours, and 22 EMS category calls (1 percent) lasted more than two hours.
- On average, there were 0.7 EMS category calls per day that lasted more than one hour.
- A total of 397 motor vehicle accidents (85 percent) lasted less than one hour, and 68 motor vehicle accidents (15 percent) lasted more than an hour.

Fire

- A total of 986 fire category calls (84 percent of fire calls) lasted less than one hour, 134 fire category calls (11 percent) lasted between one and two hours, and 57 fire category calls (5 percent) lasted more than two hours.
- On average, there were 0.5 fire category calls per day that lasted more than one hour.
- A total of 9 structure fires (32 percent of structure fire calls) lasted less than one hour, 8 structure fires (29 percent) lasted between one and two hours, and 11 structure fires (39 percent) lasted more than two hours.
- A total of 77 outside fires (47 percent outside fire calls) lasted less than one hour, 57 outside fires (35 percent) lasted between one and two hours, and 30 outside fires (18 percent) lasted more than two hours.

- A total of 318 false alarms (94 percent of fire alarm calls) lasted less than one hour, and 20 false alarms (6 percent) lasted more than an hour.

Average Calls per Day and per Hour

Figure 8-3 shows the monthly variation in the average daily number of calls for service in the MFHD and SSCCFD coverage areas during the year studied. Similarly, Figure 8-4 illustrates the average number of calls received each hour of the day over the course of the year.

FIGURE 8-3: Average Calls per Day, by Month

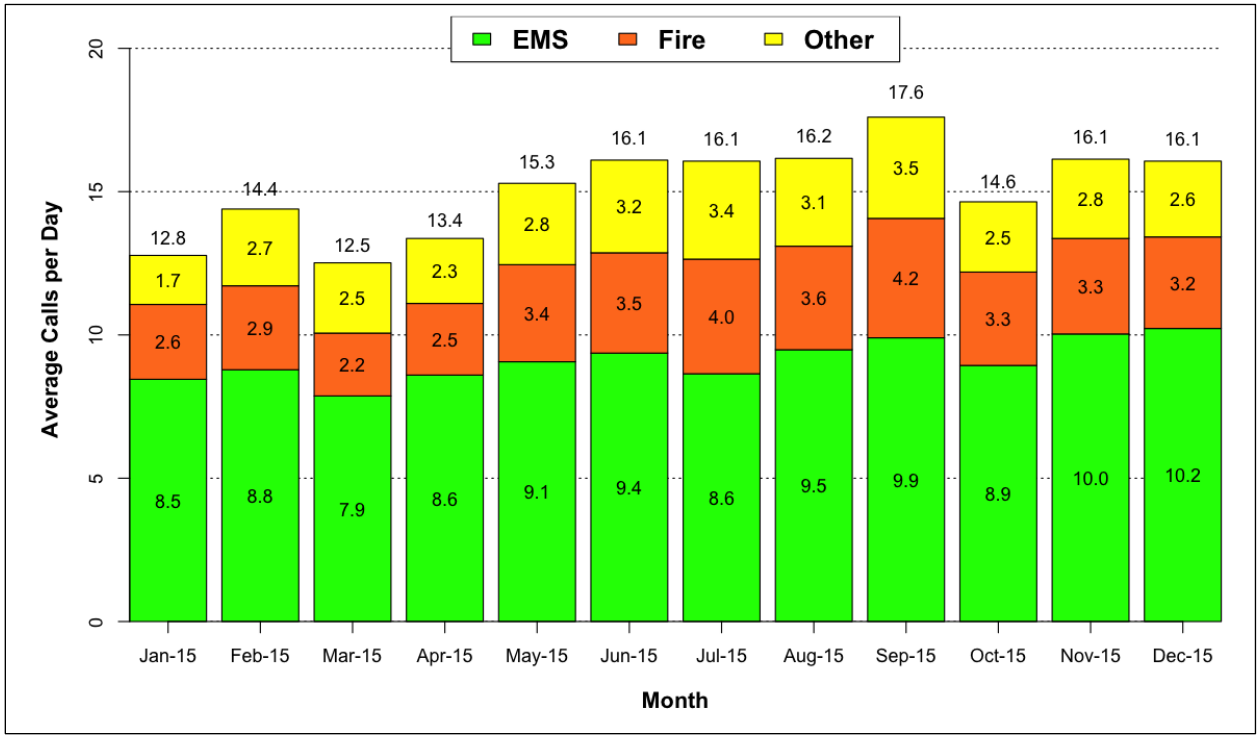
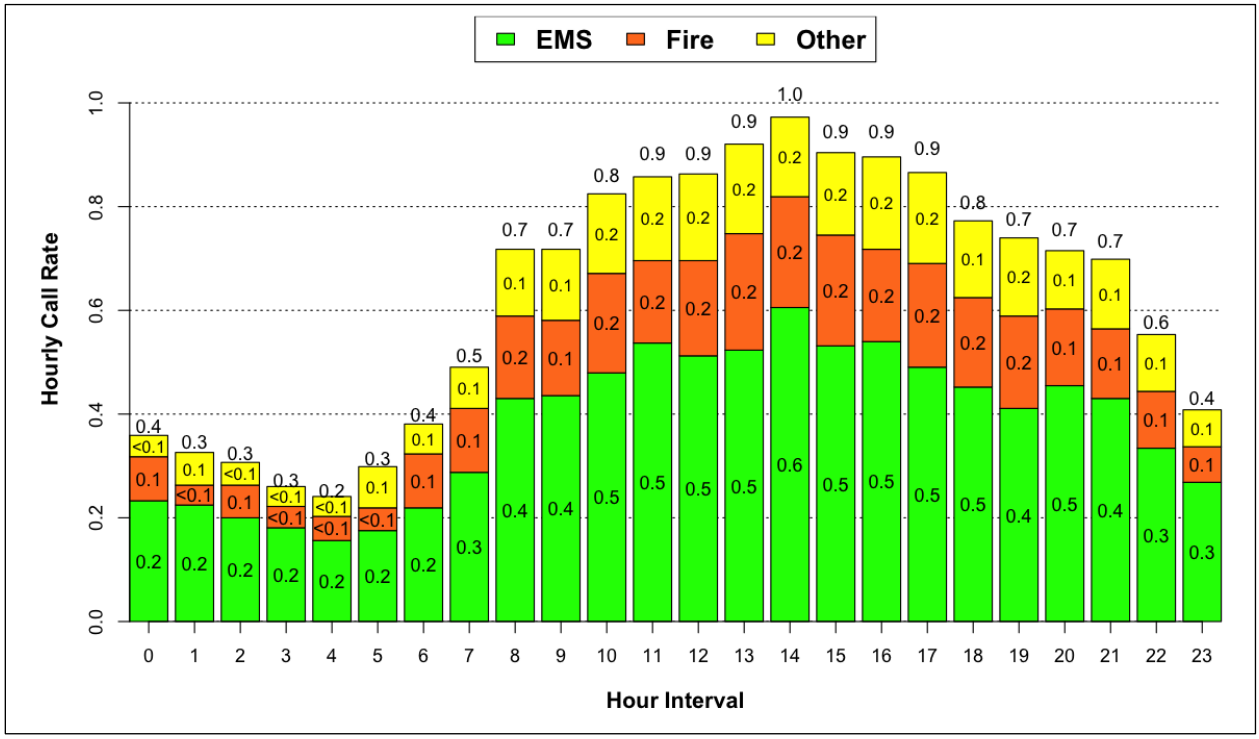


FIGURE 8-4: Calls by Hour of Day



Observations:

Average Calls per Day

- Average calls per day ranged from a low of 12.5 calls per day in March 2015 to a high of 17.6 calls per day in September 2015. The highest monthly average was 41 percent greater than the lowest monthly average.
- Average EMS calls per day ranged from a low of 7.9 calls per day in March 2015 to a high of 10.2 calls per day in December 2015.
- Average fire calls per day ranged from a low of 2.2 calls per day in in March 2015 to a high of 4.2 calls per day in September 2015.
- Average other calls per day ranged from a low of 1.7 calls per day in January 2015 to a high of 3.5 calls per day in September 2015.
- The highest number of calls received in a single day was 32, which occurred on September 26, 2015.

Average Calls per Hour

- Average hourly call rates ranged from 0.2 to 1.0 calls per hour.
- Call rates were highest between 2:00 p.m. and 3:00 p.m., averaging 1 call per hour.
- Call rates were lowest between 4:00 a.m. and 5:00 a.m., averaging 0.2 calls per hour.

Units Dispatched to Calls

Figure 8-5 and Table 8-3 detail the number of units dispatched to calls overall and broken down by call type. The number of units includes MHFD and SSCCFD units as well as units from neighboring agencies responding to calls in MHFD or SSCCFD's coverage areas.

FIGURE 8-5: Number of Units Dispatched to Calls

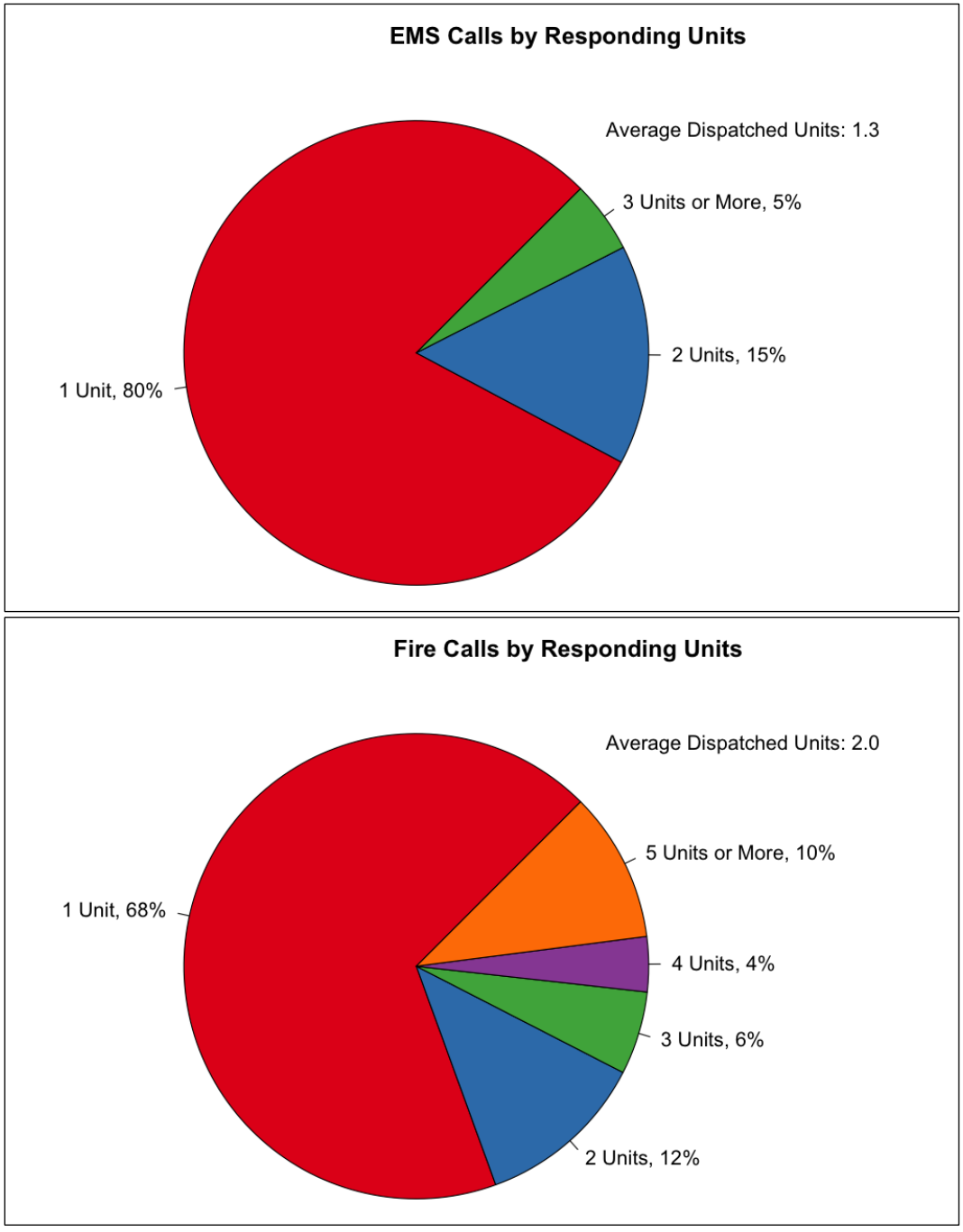


TABLE 8-3: Number of Units Dispatched to Calls by Call Type

Call Type	Number of Calls				
	One	Two	Three	Four or More	Total
EMS	2,539	273	34	15	2,861
MVA	112	236	88	29	465
EMS Total	**2,651**	**509**	**122**	**44**	**3,326**
False alarm	231	53	18	36	338
Good intent	67	14	8	18	107
Hazard	85	26	10	12	133
Outside fire	43	25	25	71	164
Public service	373	20	7	7	407
Structure fire	2	2	0	24	28
Fire Total	**801**	**140**	**68**	**168**	**1,177**
Automatic aid received	240	15	3	0	258
Cancelled	224	70	15	12	443
Mutual aid	342	70	16	15	443
Total	**4,258**	**787**	**224**	**239**	**5,508**
Percentage	**77.3**	**14.3**	**4.1**	**4.3**	**100.0**

Note: Number of units dispatched to mutual aid calls includes only MHFD and SSCCFD units.

Observations:

Overall

- On average, 1.4 units were dispatched to all calls, including cancelled and mutual aid calls, and for 77 percent of calls only one unit was dispatched.
- Overall, three or more units were dispatched to 8 percent of calls.

EMS

- On average, 1.3 units were dispatched per EMS call.
- For EMS calls, one unit was dispatched 80 percent of the time; two units were dispatched 15 percent of the time; and three or more units were dispatched 5 percent of the time.

Fires

- On average, 2.0 units were dispatched per fire call.
- For fire calls, one unit was dispatched 68 percent of the time; two units were dispatched 12 percent of the time; and three or more units were dispatched 20 percent of the time.
- For structure fire calls, four or more units were dispatched 86 percent of the time.

WORKLOAD: CALLS AND TOTAL TIME SPENT

In this section, the workload of each unit is reported in two ways: deployed time and runs. A dispatch of a unit is defined as a run; thus, one call might include multiple runs, which results in a higher total number of runs than total number of calls. The deployed time of a run is from the time a unit is dispatched through the time the unit is cleared.

Runs and Deployed Time – All Units

Deployed time, also referred to as deployed hours, is the total deployment time of all the units deployed on all calls. Table 8-4 shows the total deployed time, both overall and broken down by type of call, for all units responding to calls in MHFD and SSCCFD's coverage areas during the year studied. Table 8-5 shows the percentage of total annual hours and annual runs broken out by call location. Workload for MHFD and SSCCFD units is broken out from workload for units from agencies providing automatic aid in the next section.

TABLE 8-4: Annual Runs and Deployed Time by Call Type

Call Type	Avg. Deployed Min. per Run	Total Annual Hours	Percent of Total Hours	Avg. Deployed Min. per Day	Total Annual Runs	Avg. Runs per Day
EMS	32.5	1,761.0	31.0	289.5	3,251	8.9
MVA	32.2	520.1	9.2	85.5	970	2.7
EMS Total	**32.4**	**2,281.1**	**40.2**	**375.0**	**4,221**	**11.6**
False alarm	26.6	265.1	4.7	43.6	598	1.6
Good intent	27.5	102.1	1.8	16.8	223	0.6
Hazard	39.2	146.3	2.6	24.1	224	0.6
Outside fire	106.9	1,170.3	20.6	192.4	657	1.8
Public service	32.4	252.9	4.5	41.6	468	1.3
Structure fire	155.2	548.3	9.7	90.1	212	0.6
Fire Total	**62.6**	**2,485.1**	**43.8**	**408.5**	**2,382**	**6.5**
Automatic aid received	32.0	148.6	2.6	24.4	279	0.8
Cancelled	16.2	119.6	2.1	19.7	442	1.2
Mutual aid	64.0	642.3	11.3	105.6	602	1.6
Other Total	**41.3**	**910.5**	**16.0**	**149.7**	**1,323**	**3.6**
Total	**43.0**	**5,676.7**	**100.0**	**933.1**	**7,926**	**21.7**

TABLE 8-5: Runs and Deployed Time by Call Type – Percentage by Call Location

Call Type	Total Annual Hours			Total Annual Runs		
	Hours	MHFD	SSCCFD	Runs	MHFD	SSCCFD
EMS	1,761.0	61.7	38.3	3,251	67.5	32.5
MVA	520.1	24.9	75.1	970	30.4	69.6
EMS Total	**2,281.1**	**53.3**	**46.7**	**4,221**	**58.9**	**41.1**
False alarm	265.1	49.2	50.8	598	51.5	48.5
Good intent	102.1	18.0	82.0	223	23.8	76.2
Hazard	146.3	54.0	46.0	224	54.5	45.5
Outside fire	1,170.3	6.9	93.1	657	19.6	80.4
Public service	252.9	75.3	24.7	468	73.9	26.1
Structure fire	548.3	2.5	97.5	212	10.8	89.2
Fire Total	**2,485.1**	**20.6**	**79.4**	**2,382**	**41.2**	**58.8**
Automatic aid received	148.6	7.1	92.9	279	4.7	95.3
Cancelled	119.6	28.4	54.8	442	37.6	44.3
Mutual aid	642.3	NA	NA	602	NA	NA
Other Total	**910.5**	**4.9**	**22.4**	**1,323**	**13.5**	**34.9**
Total	**5,676.7**	**31.2**	**57.1**	**7,926**	**46.0**	**45.4**

Note: The columns for hours and runs are the total annual deployed hours and runs for the year. The two columns to the right of each are the percentage of hours or runs in that category for calls in each coverage area.

Observations:

Overall

- Total deployed time for the year was 5,677 hours (MHFD and SCCFD totaled 4,634). The daily average was 15.6 hours for all units combined.
  - 1,773 hours of deployed time (4.9 hours per day on average) were for calls in MHFD's coverage area, which is 31 percent of total deployed hours for the year.
  - 3,241 hours (8.9 hours per day on average) were for calls in SSCCFD's coverage area, which is 57 percent of total deployed hours for the year.
  - 12 percent of hours were for mutual aid and cancelled calls in other areas.
- There were 7,926 runs, including 602 runs dispatched for mutual aid calls. The daily average was 21.7 runs.
  - 3,648 runs (46 percent) were for calls in MHFD's coverage area, which is 10 runs per day on average.
  - 3,596 runs (45 percent) were for calls in SSCCFD's coverage area, which is 9.9 runs per day on average.
  - 9 percent of runs were for mutual aid or cancelled calls in other areas.

EMS

- EMS calls accounted for 40 percent of the total workload.

- The average deployed time for EMS calls was 32.4 minutes. The deployed time for all units dispatched to EMS calls averaged 6.2 hours per day.
- There were 4,221 runs for EMS calls overall, with a total workload of 2,281.1 hours. Of all EMS calls, calls in MHFD's coverage area accounted for 59 percent of runs and 53 percent of hours.
- There were 970 runs for motor vehicle accidents, with a total workload of 520 hours. In this category of call, calls in SSCCFD's coverage area accounted for 70 percent of runs and 75 percent of hours.

Fires

- Fire calls accounted for 44 percent of the total workload.
- There were 869 runs for structure and outside fire calls, with a total workload of 1,719 hours. This accounted for 30 percent of the total workload.
- For structure fires, 90 percent of runs and 98 percent of hours were to calls in SSCCFD's coverage area.
- For outside fires, 80 percent of runs 93 percent of hours were to calls in SSCCFD's coverage area
- The average deployed time for structure fire calls was 155.2 minutes, and the average deployed time for outside fire calls was 106.9 minutes.

Workload by Unit

Table 8-6 provides a summary of each unit's workload overall. Table 8-7 shows the percentage of each unit's total annual hours and annual runs broken out by call location. Tables 8-8 and 8-9 provide a more detailed view of workload, showing each unit's runs broken out by call type (Table 8-8) and the resulting daily average deployed time by call type (Table 8-9). Finally, the percentage of each engine's runs by call type and call location is given in Table 8-10.

Workload for units from agencies providing automatic aid are given as a single total for the agency rather than detailed by unit. The workload from all other agencies is then subtotaled under a station labeled "Aid."

Stations 4 and 5 are MHFD stations. Stations 1, 2, and 3 are SSCCFD stations; although Station 1 is located inside Morgan Hill. Engine 67 is a shared unit and responds to calls in both areas as a first-due unit.

TABLE 8-6: Call Workload by Unit

Station	Unit Type	Unit	Avg. Deployed Min. per Run	Total Annual Hours	Avg. Deployed Min. per Day	Total Annual Runs	Avg. Runs per Day
1	Engine	E-67	32.0	901.0	148.1	1,691	4.6
	Reserve Engine	E-1661	65.2	384.9	63.3	354	1.0
	Reserve Engine	E-1671	82.0	229.5	37.7	168	0.5
	Water Tender	W-67	81.1	123.1	20.2	91	0.2
	Total		**42.7**	**1,638.5**	**269.3**	**2,304**	**6.3**
2	Air Support	BS-768	210.1	7.0	1.2	2	0.0
	Engine	E-68	40.0	586.7	96.4	881	2.4
	Reserve Engine	E-168	52.3	27.0	4.4	31	0.1
	Reserve Engine	E-368	74.7	48.6	8.0	39	0.1
	Utility	SQD-68	59.1	22.6	3.7	23	0.1
	Utility	U-68	27.3	1.4	0.2	3	0.0
	Water Tender	W-68	87.7	143.3	23.6	98	0.3
	Total		**46.6**	**836.6**	**137.5**	**1,077**	**3.0**
3	Engine	E-69	42.1	400.1	65.8	570	1.6
	Reserve Engine	E-167	85.7	20.0	3.3	14	0.0
	Utility	U-69	156.8	2.6	0.4	1	0.0
	Total		**43.4**	**422.7**	**69.5**	**585**	**1.6**
4	Engine	E-57	31.3	785.5	129.1	1,507	4.1
	Ladder Truck	TK-57	29.3	101.2	16.6	207	0.6
	Total		**31.0**	**886.7**	**145.8**	**1,714**	**4.7**
5	Engine	E-58	30.7	524.0	86.1	1,023	2.8
	Engine	E-658	46.0	36.0	5.9	47	0.1
	Total		**31.4**	**560.0**	**92.1**	**1,070**	**2.9**
Aid	Gilroy	Multiple	28.8	161.0	26.5	336	0.9
	Hollister	Multiple	26.4	23.3	3.8	53	0.1

Station	Unit Type	Unit	Avg. Deployed Min. per Run	Total Annual Hours	Avg. Deployed Min. per Day	Total Annual Runs	Avg. Runs per Day
	Other CAL FIRE	Multiple	123.2	755.8	124.2	368	1.0
	Other Local	Multiple	428.7	71.4	11.7	10	0.0
	San Jose	Multiple	25.0	89.7	14.8	215	0.6
	Station 31	E-1681	71.4	230.9	38.0	194	0.5
	Total		**68.0**	**1,332.2**	**219.0**	**1,176**	**3.2**
Total			**43.0**	**5,676.7**	**933.1**	**7,926**	**21.7**

Note: Workload for E-1681 from Station 31 includes workload for E-1691 as well.

TABLE 8-7: Call Workload by Unit – Percentage by Call Location

Station	Unit Type	Unit	Total Annual Hours				Total Annual Runs			
			Hours	MHFD %	SSCCFD %	Other %	Runs	MHFD %	SSCCFD %	Other %
1	Engine	E-67	901.0	57.7	39.0	3.3	1,691	65.6	32.6	1.8
	Reserve Engine	E-1661	384.9	11.6	50.6	37.8	354	24.6	52.8	22.6
	Reserve Engine	E-1671	229.5	8.5	31.7	59.8	168	25.0	41.1	33.9
	Water Tender	W-67	123.1	5.5	74.4	20.1	91	17.6	71.4	11.0
	Total		**1,638.5**	**36.1**	**43.3**	**20.6**	**2,304**	**54.4**	**37.8**	**7.7**
2	Air Support	BS-768	7.0	0.0	100.0	0.0	2	0.0	100.0	0.0
	Engine	E-68	586.7	4.0	80.6	15.4	881	5.2	75.8	19.0
	Reserve Engine	E-168	27.0	9.2	63.6	27.2	31	25.8	48.4	25.8
	Reserve Engine	E-368	48.6	11.0	53.6	35.4	39	25.6	51.3	23.1
	Utility	SQD-68	22.6	4.1	40.3	55.6	23	8.7	39.1	52.2
	Utility	U-68	1.4	0.0	96.0	4.0	3	0.0	66.7	33.3
	Water Tender	W-68	143.3	0.9	80.8	18.3	98	3.1	76.5	20.4
	Total		**836.6**	**4.0**	**77.6**	**18.4**	**1,077**	**6.4**	**73.4**	**20.1**
3	Engine	E-69	400.1	5.5	67.5	27.1	570	8.1	58.4	33.5
	Reserve Engine	E-167	20.0	33.4	62.7	3.9	14	14.3	78.6	7.1
	Utility	U-69	2.6	0.0	0.0	100.0	1	0.0	0.0	100.0
	Total		**422.7**	**6.8**	**66.8**	**26.4**	**585**	**8.2**	**58.8**	**33.0**
4	Engine	E-57	785.5	77.3	18.6	4.1	1,507	81.5	14.8	3.7
	Ladder Truck	TK-57	101.2	81.6	14.4	4.1	207	83.1	14.0	2.9
	Total		**886.7**	**77.8**	**18.1**	**4.1**	**1,714**	**81.7**	**14.7**	**3.6**
5	Engine	E-58	524.0	67.5	29.3	3.2	1,023	74.0	23.8	2.2
	Engine	E-658	36.0	57.7	24.7	17.6	47	57.4	23.4	19.1
	Total		**560.0**	**66.9**	**29.0**	**4.1**	**1,070**	**73.3**	**23.7**	**3.0**

Station	Unit Type	Unit	Total Annual Hours				Total Annual Runs			
			Hours	MHFD %	SSCCFD %	Other %	Runs	MHFD %	SSCCFD %	Other %
Aid	Gilroy	Multiple	161.0	0.7	99.3	0.0	336	0.6	99.4	0.0
	Hollister	Multiple	23.3	0.0	100.0	0.0	53	0.0	100.0	0.0
	Other CAL FIRE	Multiple	755.8	2.5	97.5	0.0	368	12.8	87.2	0.0
	Other Local	Multiple	71.4	0.0	100.0	0.0	10	0.0	100.0	0.0
	San Jose	Multiple	89.7	12.3	87.7	0.0	215	15.3	84.7	0.0
	Station 31	E-1681	230.9	10.6	89.4	0.0	194	5.7	94.3	0.0
	Total		**1,332.1**	**4.2**	**95.8**	**0.0**	**1,176**	**7.9**	**92.1**	**0.0**
Total			**5,676.7**	**31.2**	**57.1**	**11.7**	**7,926**	**46.0**	**45.4**	**8.6**

Note: Workload for E-1681 from Station 31 includes workload for E-1691 as well.

TABLE 8-8: Total Annual Runs by Call Type and Unit

Station	Unit	EMS	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Automatic Aid Received	Cancelled	Mutual Aid	Total
1	E-67	985	171	126	30	46	69	149	21	0	66	28	1,691
	E-1661	80	49	31	19	9	49	13	13	0	14	77	354
	E-1671	31	8	13	5	1	41	3	6	0	3	57	168
	W-67	1	1	18	5	4	35	1	13	0	3	10	91
	Total	**1,097**	**229**	**188**	**59**	**60**	**194**	**166**	**53**	**0**	**86**	**172**	**2,304**
2	BS-768	0	0	0	0	0	1	0	1	0	0	0	2
	E-68	289	133	80	38	22	62	29	22	0	69	137	881
	E-168	9	2	2	1	1	0	1	3	0	5	7	31
	E-368	7	2	1	2	5	10	0	2	0	1	9	39
	SQD-68	5	4	0	0	0	1	1	0	0	0	12	23
	U-68	0	0	0	1	0	0	0	1	0	1	0	3
	W-68	0	1	14	10	3	30	1	16	0	4	19	98
	Total	**310**	**142**	**97**	**52**	**31**	**104**	**32**	**45**	**0**	**80**	**184**	**1,077**
3	E-69	116	114	28	21	13	29	19	16	0	51	163	570
	E-167	3	1	2	2	1	1	1	2	0	0	1	14
	U-69	0	0	0	0	0	0	0	0	0	0	1	1
	Total	**119**	**115**	**30**	**23**	**14**	**30**	**20**	**18**	**0**	**51**	**165**	**585**
4	E-57	935	112	96	18	48	57	100	9	0	86	46	1,507
	TK-57	115	13	23	1	10	3	16	5	0	15	6	207
	Total	**1,050**	**125**	**119**	**19**	**58**	**60**	**116**	**14**	**0**	**101**	**52**	**1,714**
5	E-58	513	123	90	20	39	44	105	14	0	54	21	1,023
	E-658	18	3	2	1	1	7	6	0	0	1	8	47
	Total	**531**	**126**	**92**	**21**	**40**	**51**	**111**	**14**	**0**	**55**	**29**	**1,070**

Note: Workload for E-1681 from Station 31 includes workload for E-1691 as well.

Station	Unit	EMS	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Automatic Aid Received	Cancelled	Mutual Aid	Total
Aid	Gilroy	35	108	21	14	6	35	4	17	76	20	0	336
	Hollister	5	22	0	5	2	4	2	1	6	6	0	53
	Other CAL FIRE	67	42	35	19	4	130	7	32	14	18	0	368
	Other Local	2	0	0	0	2	1	0	5	0	0	0	10
	San Jose	17	26	11	0	3	18	3	6	120	11	0	215
	Station 31	18	35	5	11	4	30	7	7	63	14	0	194
	Total	**144**	**233**	**72**	**49**	**21**	**218**	**23**	**68**	**279**	**69**	**0**	**1,176**
Total		**3,251**	**970**	**598**	**223**	**224**	**657**	**468**	**212**	**279**	**442**	**602**	**7,926**

TABLE 8-9: Daily Average Deployed Minutes per Day by Call Type and Unit

Station	Unit	EMS	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Automatic Aid Received	Cancelled	Mutual Aid	Total
1	E-67	86.6	12.6	8.6	1.8	4.9	10.4	10.4	5.5	0.0	2.5	4.8	148.1
	E-1661	9.3	3.7	3.3	1.6	0.8	14.1	0.8	5.3	0.0	0.6	23.8	63.3
	E-1671	2.6	0.6	1.2	0.4	0.1	8.1	0.1	1.9	0.0	0.2	22.6	37.7
	W-67	0.0	0.2	1.4	0.3	0.3	7.4	0.1	6.4	0.0	0.1	4.1	20.2
	Total	**98.6**	**17.1**	**14.5**	**4.2**	**6.1**	**39.9**	**11.3**	**19.1**	**0.0**	**3.3**	**55.2**	**269.3**
2	BS-768	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.6	0.0	0.0	0.0	1.2
	E-68	28.3	13.4	7.0	2.9	2.4	14.8	2.8	8.2	0.0	2.8	13.8	96.4
	E-168	0.6	0.2	0.1	0.1	0.1	0.0	0.0	1.9	0.0	0.3	1.2	4.4
	E-368	0.6	0.2	0.1	0.2	0.5	1.7	0.0	1.8	0.0	0.0	2.8	8.0
	SQD-68	1.0	0.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.1	3.7
	U-68	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
	W-68	0.0	0.1	1.3	1.0	0.1	9.0	0.1	7.4	0.0	0.3	4.2	23.6
	Total	**30.4**	**14.5**	**8.5**	**4.3**	**3.1**	**26.2**	**2.9**	**20.2**	**0.0**	**3.5**	**24.1**	**137.5**
3	E-69	12.6	14.8	1.8	2.0	1.9	6.5	2.0	4.8	0.0	2.5	16.9	65.8
	E-167	0.2	0.1	0.2	0.2	0.0	0.2	1.0	1.3	0.0	0.0	0.1	3.3
	U-69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
	Total	**12.7**	**14.9**	**2.0**	**2.2**	**2.0**	**6.8**	**3.0**	**6.1**	**0.0**	**2.5**	**17.4**	**69.5**
4	E-57	79.8	10.0	6.4	1.3	5.0	6.9	10.5	1.1	0.0	3.6	4.6	129.1
	TK-57	9.5	1.0	1.8	0.0	1.3	0.3	1.1	0.4	0.0	0.5	0.7	16.6
	Total	**89.3**	**11.0**	**8.2**	**1.3**	**6.3**	**7.2**	**11.5**	**1.5**	**0.0**	**4.0**	**5.2**	**145.8**
5	E-58	43.6	9.3	6.0	1.2	4.9	6.1	6.8	3.4	0.0	2.3	2.6	86.1
	E-658	1.5	0.2	0.0	0.0	0.3	1.5	1.2	0.0	0.0	0.0	1.0	5.9
	Total	**45.2**	**9.5**	**6.0**	**1.2**	**5.2**	**7.6**	**8.0**	**3.4**	**0.0**	**2.3**	**3.6**	**92.1**

Note: Workload for E-1681 from Station 31 includes workload for E-1691 as well.

Station	Unit	EMS	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Automatic Aid Received	Cancelled	Mutual Aid	Total
Aid	Gilroy	1.9	7.3	0.9	0.8	0.3	4.7	0.3	3.8	5.4	0.9	0.0	26.5
	Hollister	0.4	1.6	0.0	0.3	0.1	0.2	0.1	0.3	0.5	0.4	0.0	3.8
	Other CAL FIRE	6.6	3.9	2.4	1.4	0.5	81.9	0.5	23.9	1.7	1.2	0.0	124.2
	Other Local	0.1	0.0	0.0	0.0	0.0	4.6	0.0	6.9	0.0	0.0	0.0	11.7
	San Jose	0.9	1.0	0.6	0.0	0.0	1.3	0.1	1.7	8.8	0.4	0.0	14.8
	Station 31	3.3	4.6	0.5	1.0	0.5	11.9	3.8	3.2	8.0	1.2	0.0	38.0
	Total	**13.2**	**18.5**	**4.4**	**3.6**	**1.5**	**104.6**	**4.8**	**39.9**	**24.4**	**4.1**	**0.0**	**219.0**
Total		**289.5**	**85.5**	**43.6**	**16.8**	**24.1**	**192.4**	**41.6**	**90.1**	**24.4**	**19.7**	**105.6**	**933.1**

Note: Workload for E-1681 from Station 31 includes workload for E-1691 as well.

TABLE 8-10: Total Annual Runs by Engines by Call Type, with Percentage by Call Location

Unit	EMS	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Cancelled	Mutual Aid	Total
E-67 Total Runs	**985**	**171**	**126**	**30**	**46**	**69**	**149**	**21**	**66**	**28**	**1,691**
MHFD	72.4	46.8	57.9	46.7	71.7	33.3	86.6	19.0	60.6	NA	65.6
SSCCFD	27.6	53.2	42.1	53.3	28.3	66.7	13.4	81.0	34.8	NA	32.6
E-68 Total Runs	**289**	**133**	**80**	**38**	**22**	**62**	**29**	**22**	**69**	**137**	**881**
MHFD	3.8	5.3	15.0	7.9	18.2	3.2	3.4	13.6	4.3	NA	5.2
SSCCFD	96.2	94.7	85.0	92.1	81.8	96.8	96.6	86.4	52.2	NA	75.8
E-69 Total Runs	**116**	**114**	**28**	**21**	**13**	**29**	**19**	**16**	**51**	**163**	**570**
MHFD	23.3	0.9	17.9	4.8	15.4	10.3	15.8	12.5	3.9	NA	8.1
SSCCFD	76.7	99.1	82.1	95.2	84.6	89.7	84.2	87.5	41.2	NA	58.4
E-57 Total Runs	**935**	**112**	**96**	**18**	**48**	**57**	**100**	**9**	**86**	**46**	**1,507**
MHFD	89.1	63.4	86.5	77.8	83.3	63.2	86.0	11.1	74.4	NA	81.5
SSCCFD	10.9	36.6	13.5	22.2	16.7	36.8	14.0	88.9	14.0	NA	14.8
E-58 Total Runs	**513**	**123**	**90**	**20**	**39**	**44**	**105**	**14**	**54**	**21**	**1,023**
MHFD	78.9	67.5	86.7	65.0	64.1	50.0	85.7	35.7	66.7	NA	74.0
SSCCFD	21.1	32.5	13.3	35.0	35.9	50.0	14.3	64.3	29.6	NA	23.8

Note: Engine 658 was excluded due to its low number of runs. The remaining percentages of runs for cancelled calls were for calls in other areas.

Observations:

- Engine 67 made the most runs (1,691 or an average of 4.6 per day) and had the highest total annual deployed time (901 hours or an average of 148 minutes per day).
  - EMS calls accounted for 1,156 of these runs (68 percent) and 604 hours (67 percent) of deployed time.
  - Structure and outside fires accounted for 90 of these runs (5 percent) and 97 hours (11 percent) of deployed time.
  - Calls within MHFD's coverage area accounted for 66 percent of this engine's runs and 58 percent of its deployed hours.
- Engine 57 made the second most runs (1,507 or an average of 4.1 per day) and had the second highest total annual deployed time (786 hours or an average of 129 minutes per day).
  - EMS calls accounted for 1,047 of these runs (69 percent) and 546 hours (70 percent) of deployed time.
  - Structure and outside fires accounted for 66 of these runs (4 percent) and 49 hours (6 percent) of deployed time.
  - Calls within MHFD's coverage area accounted for 82 percent of this engine's runs and 77 percent of its deployed hours.
- One-third of Engine 69's runs were for mutual aid calls, including cancelled calls in other areas.
- Overall, Station 1 was the busiest station with 2,304 runs and 1,639 hours of deployed time for the year. Of its runs and hours:
  - Calls in MHFD's coverage area accounted for 54 percent of the runs and 36 percent of the deployed hours.
  - Calls in SSCCFD's coverage area accounted for 38 percent of the runs and 43 percent of the deployed hours.
  - Mutual aid calls accounted for 8 percent of the runs and 21 percent of the deployed hours.

ANALYSIS OF BUSIEST HOURS

There is significant variability in the number of calls from hour to hour. One special concern relates to the resources available for hours with the heaviest workload. We tabulated the data for each of the 8,760 hours in the year. Table 8-11 shows the number of hours in the year where there were from zero to five calls during the hour. Table 8-12 shows the 10 one-hour intervals during the year with the most calls.

TABLE 8-11: Frequency Distribution of the Number of Calls

Calls in an Hour	Frequency	Percentage
0	4,832	55.2
1	2,674	30.5
2	926	10.6
3	262	3.0
4	58	0.7
5	8	0.1

TABLE 8-12: Top 10 Hours with the Most Calls Received

Hour	Number of Calls	Number of Runs	Total Deployed Hours
05/20/2015 – 5:00 p.m. to 6:00 p.m.	5	13	5.7
08/27/2015 – Noon to 1:00 p.m.	5	11	13.1
11/18/2015 – 3:00 p.m. to 4:00 p.m.	5	8	2.2
12/21/2015 – 5:00 p.m. to 6:00 p.m.	5	7	4.3
04/16/2015 – 4:00 p.m. to 5:00 p.m.	5	6	2.8
08/05/2015 – 11:00 a.m. to Noon	5	6	2.1
11/13/2015 – 2:00 p.m. to 3:00 p.m.	5	5	2.3
02/13/2015 – 5:00 p.m. to 6:00 p.m.	5	4	1.2
05/29/2015 – 11:00 a.m. to Noon	4	21	13.9
08/13/2015 – 3:00 p.m. to 4:00 p.m.	4	17	24.1

Note: Total deployed hours is the total time spent responding to calls received in the hour, and which may extend into the next hour or hours. Number of runs and deployed hours only includes dispatches of MHFD and SSCCFD units.

Observations:

- During 66 hours (1 percent of all hours), four or more calls occurred; in other words, the departments responded to four or more calls in an hour roughly once every six days.
- The highest number of calls to occur in an hour was five, which happened eight times.
- One of the hours with the most calls and the most individual dispatches was noon to 1:00 p.m. on Aug 27, 2015. The hour's five calls involved 11 individual dispatches resulting in 13.1 hours of deployed time. These five calls included one cancelled call, one EMS call, one good intent call, one hazard call, and one outside fire call.

- Another similar hour was 5:00 p.m. to 6:00 p.m. on May 20, 2015. The hour's five calls and 11 individual dispatches resulted in 5.7 hours of deployed time. These five calls included three EMS calls, one mutual aid call, and one outside fire call.
- Of the 10 hours with the most calls, the hour that resulted in the most deployed hours was 3:00 p.m. to 4:00 p.m. on August 13, 2015. There were four calls with 17 individual dispatches resulting in 24.1 hours of deployed time. The four calls included two EMS calls, one outside fire, and one cancelled call.

RESPONSE TIME

This section presents response time statistics for different call types.

Different terms are used to describe the components of response time. Dispatch time is the difference between the time a call is received and the time a unit is dispatched. Dispatch time includes call processing time, which is the time required to determine the nature of the emergency and types of resources to dispatch. Turnout time is the difference between dispatch time and the time a unit is en route. Travel time is the difference between the time en route and arrival on scene. Response time is the total time elapsed between receiving a call to arriving on-scene.

In this section, we analyze calls to which MHFD and SSCCFD units responded, excluding cancelled and mutual aid calls. Calls were analyzed in two groups based on their location either within MHFD's coverage area or within SSCCFD's coverage area, regardless of which units responded.

We analyzed response times for the first arriving, non-administrative unit. Calls with a total response time of more than 30 minutes were excluded. In addition, we included only calls where the first arriving unit had complete timestamps, that is, units with all components recorded so as to be able to calculate each segment of response time.

Based on the methodology above, out of the 3,066 calls in the MHFD's coverage area, the following calls were excluded: 138 cancelled calls, 9 calls with a response time of more than 30 minutes, 21 calls where only an administrative unit had an arrival time recorded, 92 non-cancelled calls where no unit recorded an arrival time, and 248 calls where the unit en-route time was missing, was identical to the unit dispatch time, or was after unit arrival time. As a result, 2,558 calls in MHFD's coverage area were used in the analysis.

Based on the methodology above, out of the 1,929 calls in in SSCCFD's coverage area, the following calls were excluded: 96 cancelled calls, 22 calls with a response time of more than 30 minutes, 46 calls where only an administrative unit had an arrival time recorded, 113 non-cancelled calls where no unit recorded an arrival time, and 160 calls where the unit en-route time was missing, was identical to the unit dispatch time, or was after unit arrival time. As a result, 1,492 calls in SSCCFD's coverage area were used in the analysis.

Response Times by Type of Call

Table 8-13 provides average dispatch, turnout, travel, and total response time for the first arriving unit to each call, broken out by call type. Figures 8-6 and 8-7 illustrate the same information. Table 8-14 gives the 90th percentile time broken out in the same manner. A 90th percentile time means that 90 percent of calls had response times at or below that number.

TABLE 8-13: Average Response Times of First Arriving Unit, by Call Type, and Coverage Area (Minutes)

MHFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	0.5	1.6	3.6	5.7	1,844
MVA	0.6	1.7	3.9	6.5	135
EMS Total	**0.5**	**1.6**	**3.7**	**5.7**	**1,981**
False alarm	0.7	1.9	3.9	6.5	180
Good intent	0.9	1.7	4.6	7.3	26
Hazard	0.8	1.9	4.5	7.2	71
Outside fire	0.8	1.9	3.9	6.7	47
Public service	0.8	1.9	4.5	7.2	245
Structure fire	1.1	2.2	2.1	5.3	3
Fire Total	**0.8**	**1.9**	**4.3**	**7.0**	**572**
Automatic aid received	0.6	1.0	7.5	9.1	5
Total	**0.5**	**1.7**	**3.8**	**6.0**	**2,558**
SSCCFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	0.7	1.7	6.1	8.5	731
MVA	1.0	2.3	6.0	9.3	264
EMS Total	**0.8**	**1.9**	**6.0**	**8.7**	**995**
False alarm	1.2	2.4	5.8	9.3	73
Good intent	1.1	2.4	7.5	11.0	36
Hazard	0.9	2.4	7.5	11.7	40
Outside fire	1.3	3.1	7.2	11.7	77
Public service	1.0	1.9	6.9	9.8	61
Structure fire	1.5	3.3	7.5	12.4	18
Fire Total	**1.2**	**2.5**	**7.0**	**10.7**	**305**
Automatic aid received	0.8	2.3	7.1	10.3	192
Total	**0.9**	**2.1**	**6.4**	**9.3**	**1,492**

FIGURE 8-6: Average Response Times of First Arriving Unit, by Call Type – MHFD

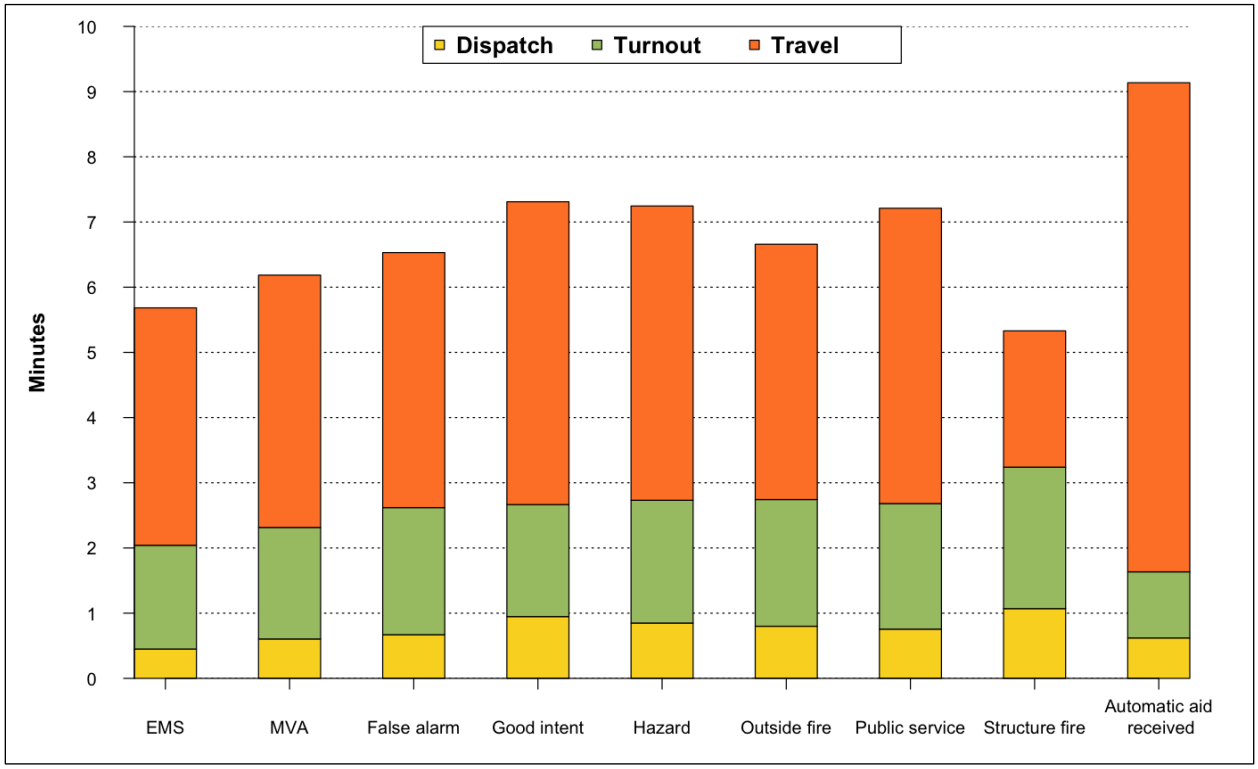


FIGURE 8-7: Average Response Times of First Arriving Unit, by Call Type – SSCCFD

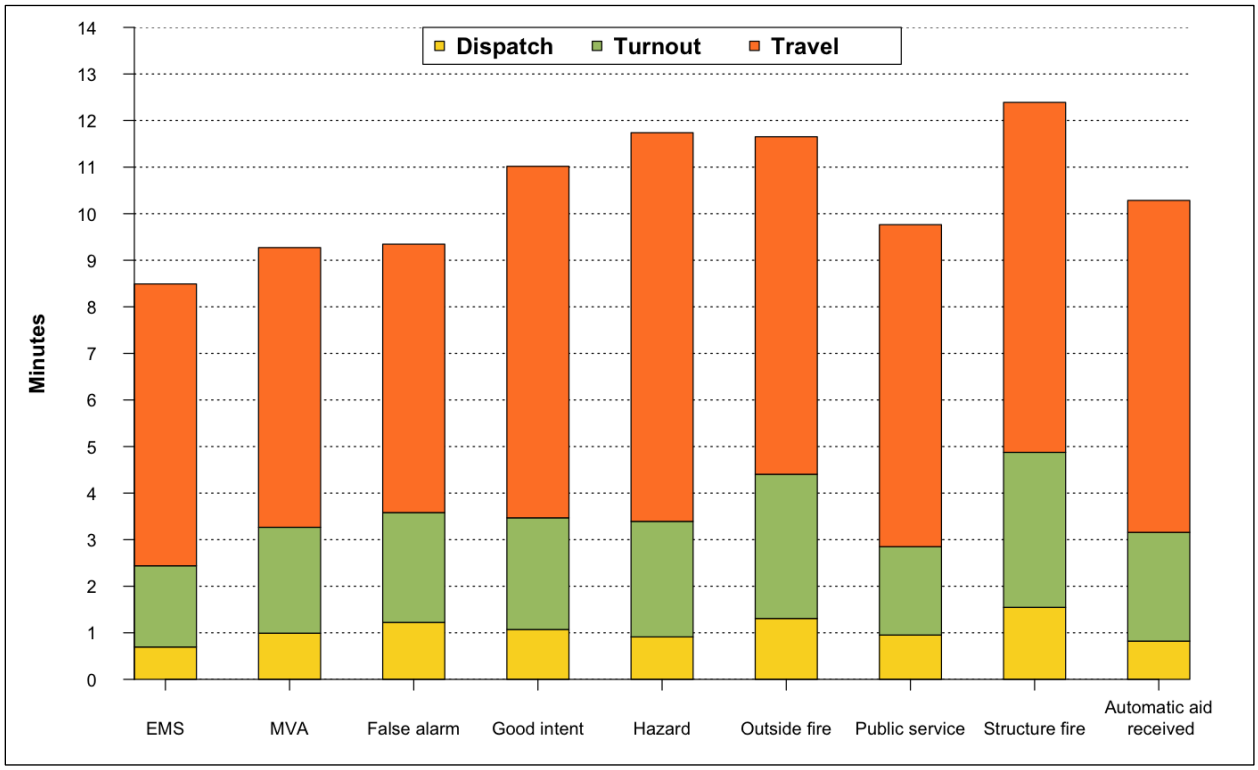


TABLE 8-14: 90th Percentile Response Times of First Arriving Unit, by Call Type, and Coverage Area (Minutes)

MHFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	0.8	2.7	5.7	8.2	1,844
MVA	1.2	2.7	7.3	9.6	137
EMS Total	**0.8**	**2.7**	**5.8**	**8.2**	**1,981**
False alarm	1.3	3.0	6.2	9.1	180
Good intent	2.4	3.0	9.2	13.0	26
Hazard	1.5	2.7	6.8	10.3	71
Outside fire	1.4	3.4	5.9	8.7	47
Public service	1.2	3.2	7.6	10.7	245
Structure fire	2.1	2.8	3.3	6.8	3
Fire Total	**1.4**	**3.1**	**7.0**	**10.4**	**572**
Automatic aid received	1.5	1.6	11.5	13.0	5
Total	**1.0**	**2.8**	**6.2**	**8.8**	**2,558**
SSCCFD					
Call Type	**Dispatch**	**Turnout**	**Travel**	**Total**	**Number of Calls**
EMS	1.3	2.8	10.6	13.7	731
MVA	1.7	4.0	11.0	14.7	264
EMS Total	**1.5**	**3.1**	**10.8**	**14.1**	**995**
False alarm	2.9	3.3	10.5	14.0	73
Good intent	1.9	3.9	11.8	16.0	36
Hazard	2.1	3.5	14.1	22.3	40
Outside fire	2.4	5.0	13.6	19.3	77
Public service	1.6	3.0	10.9	14.8	61
Structure fire	3.0	5.6	15.5	24	18
Fire Total	**2.4**	**4.4**	**12.3**	**17.2**	**305**
Automatic aid received	1.5	3.8	9.9	14.2	192
Total	**1.6**	**3.5**	**11.0**	**14.8**	**1,492**

Observations:

MHFD

- The average dispatch time was 0.5 minutes.
- The average turnout time was 1.7 minutes.
- The average travel time was 3.8 minutes.
- The average response time was 6.0 minutes.
- The average response time was 5.7 minutes for EMS calls and 7.0 minutes for fire calls.

- The average response time for structure fires was 5.3 minutes, and for outside fires was 6.7 minutes.
- The 90th percentile dispatch time was 1.0 minutes.
- The 90th percentile turnout time was 2.8 minutes.
- The 90th percentile travel time was 6.2 minutes.
- The 90th percentile response time was 8.8 minutes.
- The 90th percentile time was 8.2 minutes for EMS calls and 10.4 minutes for fire calls.
- The 90th percentile time for structure fires was 6.8 minutes, and for outside fires was 8.7 minutes.

SSCCFD

- The average dispatch time was 0.9 minutes.
- The average turnout time was 2.1 minutes.
- The average travel time was 6.4 minutes.
- The average response time was 9.3 minutes.
- The average response time was 8.7 minutes for EMS calls and 10.7 minutes for fire calls.
- The average response time for structure fires was 12.4 minutes, and for outside fires was 11.7 minutes.
- The 90th percentile dispatch time was 1.6 minutes.
- The 90th percentile turnout time was 3.5 minutes.
- The 90th percentile travel time was 11.0 minutes.
- The 90th percentile response time was 14.8 minutes.
- The 90th percentile time was 14.1 minutes for EMS calls and 17.2 minutes for fire calls.
- The 90th percentile time for structure fires was 24.0 minutes, and for outside fires was 19.3 minutes.

Response Times by Hour

Average dispatch, turnout, travel, and total response times by hour are shown in Tables 8-15 and 8-16 and Figures 8-8 and 8-9. The tables also show 90th percentile times.

TABLE 8-15: Average and 90th Percentile Response Times of First Arriving Unit, by Hour of Day – MHFD

Hour	Dispatch	Turnout	Travel	Response Time	90th Percentile Response Time	Sample Size
0	0.6	2.7	3.8	7.1	8.9	65
1	0.5	2.6	4.2	7.3	10.4	66
2	0.4	2.7	4.8	7.8	11.4	57
3	0.5	2.8	4.2	7.4	11.1	48
4	0.4	2.6	3.9	6.9	9.8	44
5	0.4	2.7	4.1	7.3	9.1	44
6	0.4	2.5	4.1	7.0	10.1	54
7	0.5	1.9	3.7	6.0	7.9	92
8	0.4	1.6	3.6	5.6	7.7	135
9	0.6	1.4	3.5	5.5	8.2	122
10	0.7	1.4	3.8	5.9	8.7	137
11	0.7	1.3	4.1	6.1	9.2	143
12	0.6	1.3	3.9	5.8	9.4	132
13	0.5	1.2	3.6	5.3	7.8	149
14	0.6	1.3	3.8	5.7	7.9	140
15	0.6	1.3	3.6	5.5	8.7	151
16	0.6	1.3	3.6	5.4	8.3	142
17	0.5	1.4	4.1	6.1	8.9	154
18	0.5	1.4	3.6	5.5	8.2	135
19	0.5	1.5	3.6	5.6	8.1	122
20	0.4	1.7	3.5	5.6	7.4	121
21	0.5	1.8	3.8	6.1	8.8	124
22	0.5	2.1	3.9	6.5	9.0	104
23	0.4	2.4	3.9	6.7	9.5	77

TABLE 8-16: Average and 90th Percentile Response Times of First Arriving Unit, by Hour of Day – SSCCFD

Hour	Dispatch	Turnout	Travel	Response Time	90th Percentile Response Time	Sample Size
0	0.9	3.1	6.7	10.6	17.2	37
1	0.6	2.9	6.5	10.0	13.4	22
2	0.9	3.2	7.4	11.5	16.2	34
3	0.9	3.6	6.7	11.3	16.3	31
4	0.9	3.1	6.9	11.0	17.2	31
5	0.7	3.2	6.3	10.3	13.8	31
6	0.8	2.7	7.0	10.6	16.4	56
7	0.7	2.3	6.2	9.2	14.8	46
8	0.7	1.8	5.6	8.2	11.4	66
9	1.2	1.7	6.1	9.0	14.8	75
10	0.8	1.7	6.1	8.6	14.9	79
11	0.9	1.8	6.5	9.2	13.2	80
12	1.0	1.6	6.4	9.0	13.8	89
13	0.9	1.8	6.5	9.1	13.7	95
14	0.9	1.7	6.0	8.6	14.2	103
15	0.8	1.9	6.6	9.3	15.3	95
16	0.9	1.9	6.6	9.3	15.3	98
17	1.0	1.8	6.3	9.2	14.7	65
18	0.7	1.8	6.5	9.0	13.8	84
19	0.8	1.7	6.5	9.1	14.3	64
20	0.8	2.2	6.0	9.0	15.2	76
21	0.9	2.1	6.0	9.0	15.8	53
22	0.8	2.3	7.3	10.4	17.8	46
23	0.6	2.9	5.2	8.8	13.1	36

FIGURE 8-8: Average Response Time of First Arriving Unit, by Hour of Day–MHFD

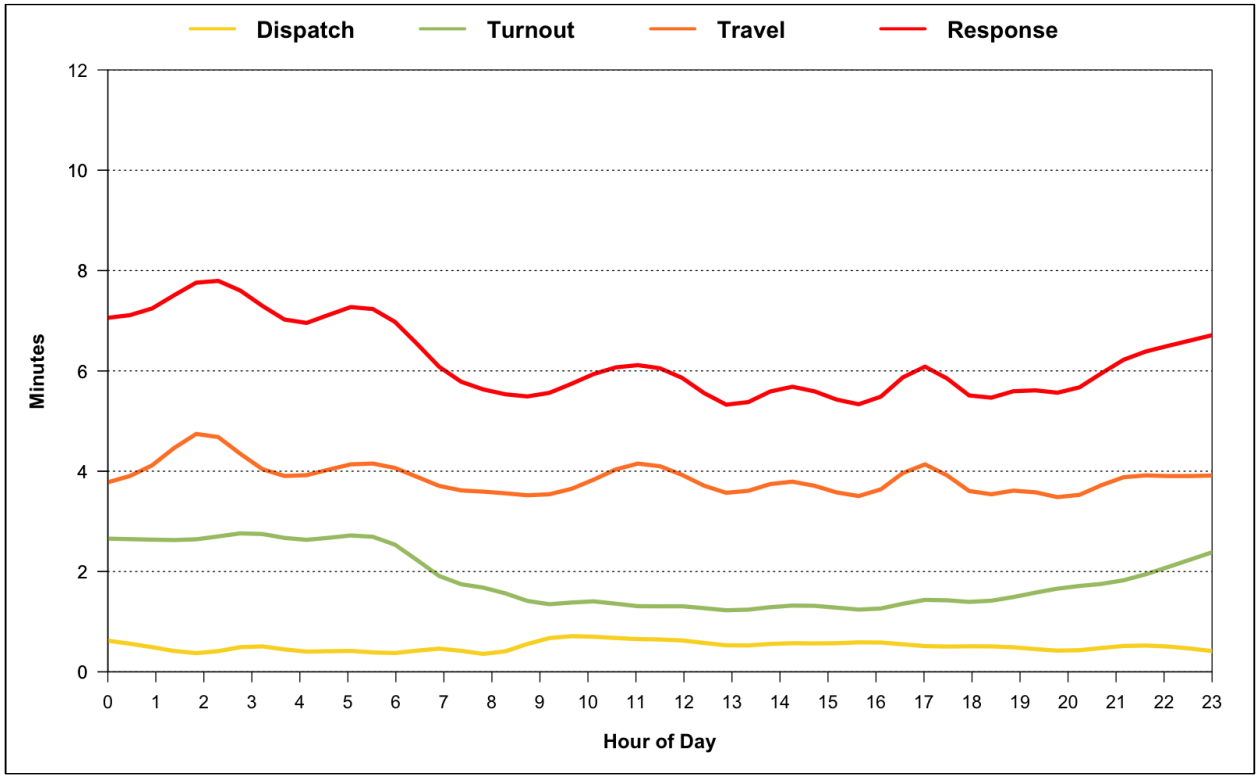
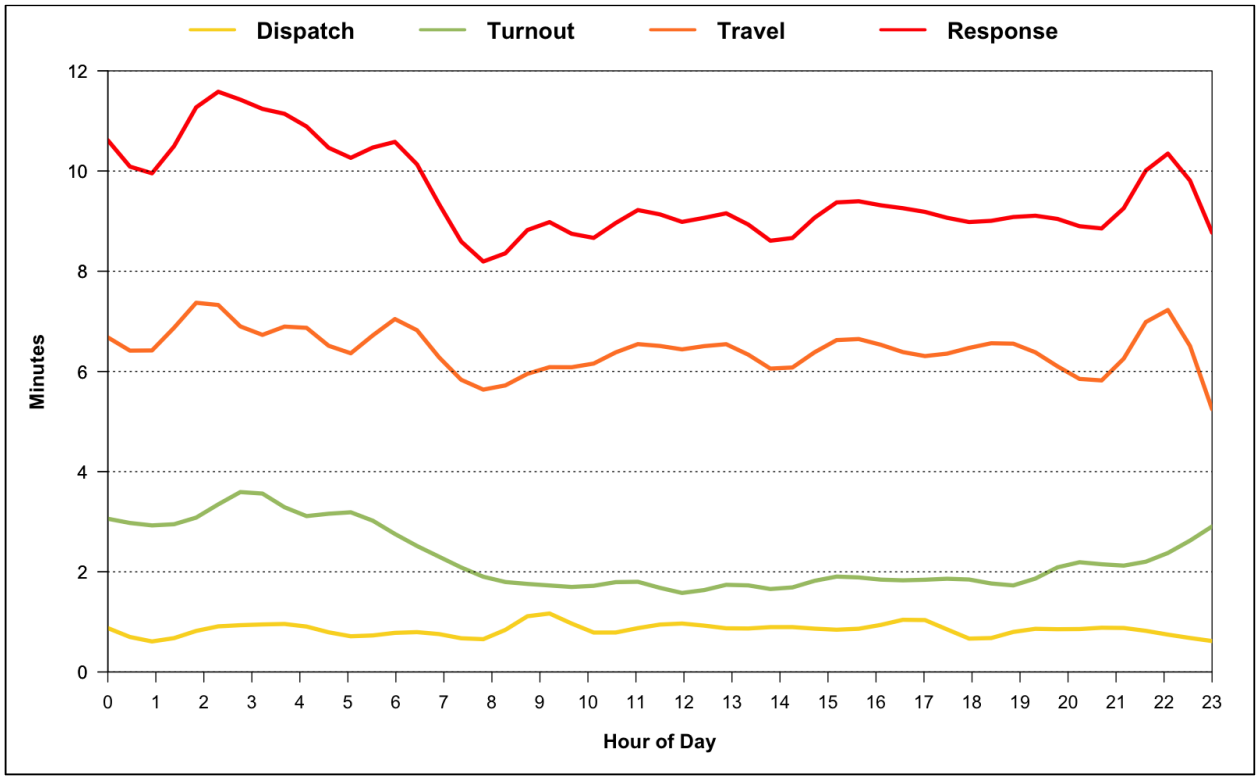


FIGURE 8-9: Average Response Time of First Arriving Unit, by Hour of Day–SSCCFD



Observations:

MHFD

- Average dispatch time was between 0.4 minutes and 0.7 minutes.
- Average turnout time was between 1.2 minutes and 2.8 minutes.
- Average travel time was between 3.5minutes and 4.8minutes.
- Average response time was between 5.3 minutes and 7.8 minutes.
- 90th percentile total response time by hour ranged from 7.3 minutes to 11.4 minutes.

SSCCFD

- Average dispatch time was between 0.6 minutes and 1.2 minutes.
- Average turnout time was between 1.6 minutes and 3.6 minutes.
- Average travel time was between 5.2 minutes and 7.4 minutes.
- Average response time was between 8.2 minutes and 11.5 minutes.
- 90th percentile total response time by hour ranged from 11.4 minutes to 17.8 minutes.

Response Time Distribution

A more detailed look at how response times are distributed is presented here. Figure 8-10 shows the cumulative distribution of total response time for the first arriving unit to EMS calls, and Table 8-17 gives the same information. Figure 8-11 and Table 8-18 show the cumulative distribution of total response time for the first arriving unit to structure and outside fires combined.

FIGURE 8-10: Cumulative Distribution of Response Time – First Arriving Unit – EMS

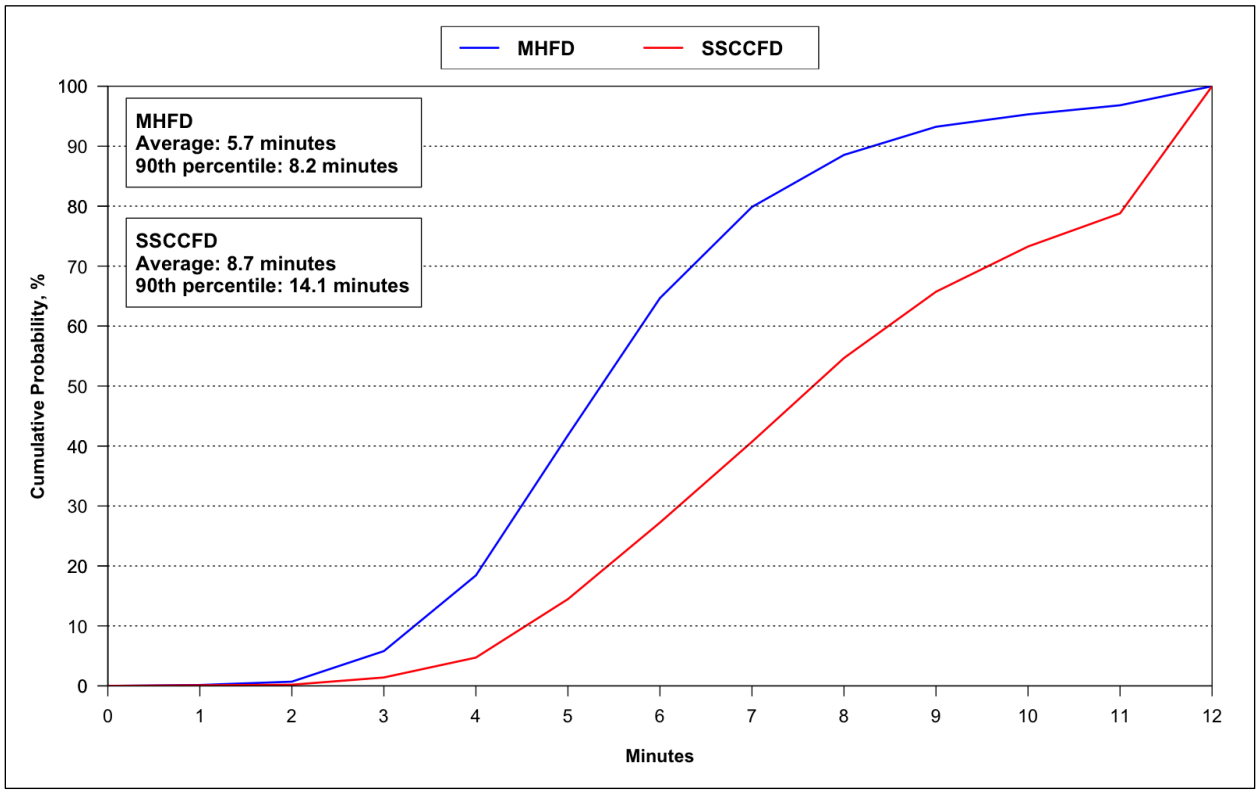


TABLE 8-17: Cumulative Distribution of Response Time – First Arriving Unit – EMS

Response Time (minute)	MHFD		SSCCFD	
	Frequency	Cumulative Percentage	Frequency	Cumulative Percentage
0 - 1	3	0.2	1	0.1
1 - 2	11	0.7	1	0.2
2 - 3	101	5.8	12	1.4
3 - 4	250	18.4	33	4.7
4 - 5	463	41.8	97	14.5
5 - 6	453	64.7	127	27.2
6 - 7	301	79.9	134	40.7
7 - 8	172	88.5	139	54.7
8 - 9	93	93.2	110	65.7
9 - 10	41	95.3	75	73.3
10 - 11	30	96.8	55	78.8
11+	63	100.0	211	100.0

FIGURE 8-11: Cumulative Distribution of Response Time – First Arriving Unit – Structure and Outside Fires

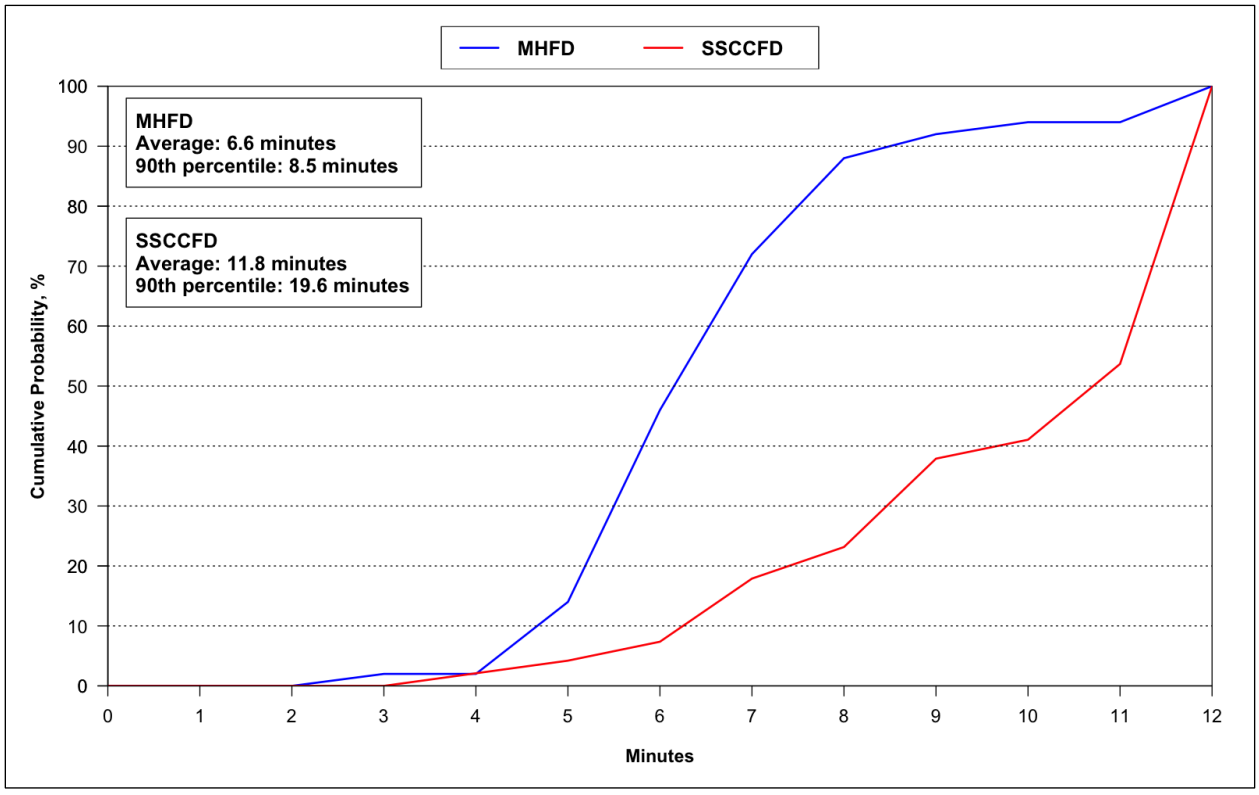


TABLE 8-18: Cumulative Distribution of Response Time – First Arriving Unit – Structure and Outside Fires

Response Time (minute)	MHFD		SSCCFD	
	Frequency	Cumulative Percentage	Frequency	Cumulative Percentage
0 - 1	0	0.0	0	0.0
1 - 2	0	0.0	0	0.0
2 - 3	1	2.0	0	0.0
3 - 4	0	2.0	2	2.1
4 - 5	6	14.0	2	4.2
5 - 6	16	46.0	3	7.4
6 - 7	13	72.0	10	17.9
7 - 8	8	88.0	5	23.2
8 - 9	2	92.0	14	37.9
9 - 10	1	94.0	3	41.1
10 - 11	0	94.0	12	53.7
11+	3	100.0	44	100.0

Observations:

MHFD

- For 89 percent of EMS calls, the response time of the first arriving unit was less than 8 minutes.
- For 46 percent of structure and outside fire calls, the response time of the first arriving unit was less than 6 minutes.

SSCCFD

- For 55 percent of EMS calls, the response time of the first arriving unit was less than 8 minutes.
- For 7 percent of structure and outside fire calls, the response time of the first arriving unit was less than 6 minutes.

ATTACHMENT I

TABLE 8-19: Actions Taken Analysis for Structure and Outside Fire Calls

Action Taken	Number of Calls	
	Structure Fire	Outside Fire
Fire control or extinguishment, other	0	4
Extinguishment by fire service personnel	18	104
Salvage & overhaul	12	12
Establish fire lines (wildfire)	1	2
Contain fire (wildland)	2	11
Confine fire (wildland)	0	1
Control fire (wildland)	1	8
Ventilate	2	0
Evacuate area	1	0
Establish safe area	1	1
Provide air supply	1	0
Provide manpower	0	1
Information, investigation & enforcement, other	0	1
Refer to proper authority	0	2
Investigate	2	18
Investigate fire out on arrival	3	10
Standby	0	1
Action taken, other	0	1
Total	**44**	**177**

Note: Totals are higher than the total number of calls because some calls had more than one action taken.

Observations:

- A total of 18 structure fire calls were extinguished by fire service personnel, which accounted for 64 percent of structure fire calls in MHFD's and SSCCFD's coverage areas.
- A total of 104 outside fire calls were extinguished by fire service personnel, which accounted for 63 percent of outside fire calls in MHFD's and SSCCFD's coverage areas.

ATTACHMENT II

TABLE 8-20: Content and Property Loss – Structure and Outside Fires

Call Type	MHFD			
	Property Loss		Content Loss	
	Loss Value	Number of Calls	Loss Value	Number of Calls
Outside fire	$172,620	18	$84,020	13
Structure fire	$11,500	3	$8,560	4
Total	**$184,120**	**21**	**$92,580**	**17**
Call Type	**SSCCFD**			
	Property Loss		**Content Loss**	
	Loss Value	**Number of Calls**	**Loss Value**	**Number of Calls**
Outside fire	$611,200	43	$209,850	26
Structure fire	$2,499,700	19	$331,600	14
Total	**$3,110,900**	**62**	**$541,450**	**40**

Note: This analysis only includes calls with recorded loss greater than 0.

Observations:

Overall

- Out of 164 outside fires, 61 had recorded property loss, with a combined $783,820 in loss.
- 39 outside fires also had content loss with a combined $293,870 in loss.
- Out of 28 structure fires, 22 had recorded property loss, with a combined $2,511,200 in loss.
- 18 structure fires also had content loss with a combined $340,160 in loss.
- The average total loss for structure fires was $123,972.

MHFD

- Out of 57 outside fires, 18 had recorded property loss, with a combined $172,620 in loss.
- 13 outside fires also had content loss with a combined $84,020 in loss.
- Out of five structure fires, three had recorded property loss, with a combined $11,500 in loss.
- Four structure fires also had content loss with a combined $8,560 in loss.
- The average total loss for structure fires was $5,015.

SSCCFD

- Out of 107 outside fires, 43 had recorded property loss, with a combined $611,200 in loss.
- 26 outside fires also had content loss with a combined $209,850 in loss.
- Out of 23 structure fires, 19 had recorded property loss, with a combined $2,499,700 in loss.
- 14 structure fires also had content loss with a combined $331,600 in loss.
- The average total loss for structure fires was $149,016.

TABLE 8-21: Total Fire Loss Above and Below $20,000

Call Type	MHFD			SSCCFD		
	No Loss	Under $20,000	$20,000 plus	No Loss	Under $20,000	$20,000 plus
Outside fire	38	15	4	62	37	8
Structure fire	1	4	0	4	10	9
Total	**39**	**19**	**4**	**66**	**47**	**17**

Observations:

Overall

- 100 outside fires (61 percent) and 5 structure fires (17 percent) had no recorded loss.
- 12 outside fires (7 percent) and 9 structure fires (30 percent) had $20,000 or more in loss.
- The highest total loss for an outside fire was $200,000.
- The highest total loss for a structure fire was $1,318,700.

MHFD

- 38 outside fires (67 percent) and 1 structure fire (20 percent) had no recorded loss.
- 4 outside fires (7 percent) and no structure fires had $20,000 or more in loss.
- The highest total loss for an outside fire was $60,000.
- The highest total loss for a structure fire was $10,060.

SSCCFD

- 62 outside fires (58 percent) and 4 structure fires (17 percent) had no recorded loss.
- 8 outside fires (7 percent) and 9 structure fires (39 percent) had $20,000 or more in loss.
- The highest total loss for an outside fire was $200,000.
- The highest total loss for a structure fire was $1,318,700.

ATTACHMENT III

TABLE 8-22: Workload of Administrative Units

Unit ID	Annual Hours	Annual Runs
B1605	14.2	15
B1609	122.0	203
B1611	51.6	113
B1620	175.2	167
B57	113.8	221
B67	30.9	93
B70	206.6	400
CH1600	0.2	2
CPT1630	0.3	1
CPT1631	6.1	14
CPT57	8.7	29
CPT68	44.8	70
DC1601	10.0	12
DC1602	30.4	5
DC1603	13.5	4
DC1604	4.2	3
P1621	10.9	14
P1622	43.6	12
P1623	47.8	4
P1627	4.1	8
TRN1606	4.7	7
TRN1607	31.3	47
TRN1651	11.2	20
TRN1652	12.6	13

Note: Includes only runs associated with calls within MHFD's and SSCCFD's coverage areas. B57, B67, and B70 are units that are not staffed full-time.