Fire District

LONG-RANGE MASTER PLAN

Central Fire District of Santa Cruz County

California

November 2022

AP TRITON

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Our sincere appreciation is extended to each of you…

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…and each of the firefighters, officers, and support staff who daily serve the citizens and visitors of the Central Fire District and surrounding communities in Santa Cruz County.

Introduction

Central Fire District of Santa Cruz County engaged the services of AP Triton to conduct a Fire Department Master Plan.

Purpose & Approach

The purpose of a master plan is to understand where the District is in relation to the risks the community faces today, anticipate community growth (and therefore risk growth), and recommend steps to position the District to address that growth in advance with appropriate resources and infrastructure. In short, a master plan keeps the fire district from lagging behind community growth, risks and development, maintaining or enhancing service as the community grows. It is an effective policymaking and budgeting tool as well. Knowing where and how the community will grow into the future and what the fire district will need in terms of policy and budget support to address it well in advance is a critical element of the elected officials' deliberation.

The Triton Team analyzed the data provided by the District as well as others to determine the current levels of response performance. From this analysis, the team identified factors influencing risk and response performance and has identified opportunities for delivery system improvement. This document establishes response time objectives, standards for measuring the effectiveness of department resources, and the deployment of those resources. The document ends with findings and recommendations categorized as short, medium, and long-term.

AP Triton does not expect that CFD will implement all recommendations in the short term. Some may wait until economic conditions allow their implementation. However, all the recommendations offered chart a course to improved capability and service.

Section I:
EVALUATION OF CURRENT CONDITIONS

Overview of the Central Fire District of Santa Cruz County

The next section of this report entails a description of the Central Fire District of Santa Cruz County and the other various regional emergency services resources.

History of the Central Fire District

Technically, the Central Fire District (CFD) is a new organization, although the name was originally used in 1987 with the consolidation of the Capitola, Soquel, and Live Oak Fire Districts. In February 2021, the Aptos/La Selva Fire Protection District and the Central Fire Protection District consolidated to become the Central Fire District of Santa Cruz County. It is organized as a California independent special district.

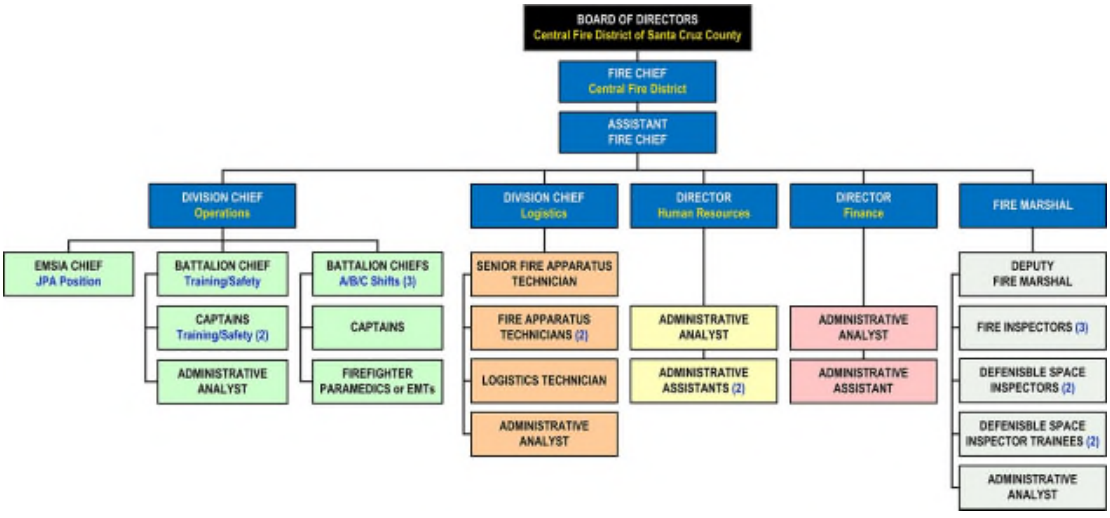
CFD serves the communities of Live Oak, Soquel, Capitola, Rio Del Mar, La Selva Beach, and Aptos, encompassing an area of approximately 55 square miles and an estimated population of 90,000 persons.[1] A 2016 study by the Local Agency Formation Commission (LAFCO) of Santa Cruz County established a Sphere of Influence (SOI) boundary.

The Central Fire District of Santa Cruz County estimates that its service area comprises 25% urban, 5% suburban, 50% rural, and 20% remote communities.

Organizational Structure

The Central Fire District of Santa Cruz County is governed by a five-member elected Board of Directors (BOD). However, the District is currently undergoing a California Voting Rights Act (CVRA) conversion process, which will be on the November 2022 general election ballot.

Figure 1: CFD Organization Structure (2022)



As shown in the preceding figure, the Fire Chief reports directly to the CFD Board of Directors and has a span of control of 1:6, which includes the Assistant Fire Chief and five divisions. The District employs 103 sworn and non-sworn personnel.

The Fire Chief supervises the Assistant Fire Chief. The Operations and Logistics Divisions are each supervised by a Division Chief. Human Resources and Finance are each managed by a Director, and the Fire Marshal oversees Fire Prevention.

Operations & Deployment

The Central Fire District of Santa Cruz County deploys its apparatus and personnel from seven fire stations—all of which are staffed full-time with career personnel. In addition, CFD provides traditional fire protection and wildland firefighting, non-transport Emergency Medical Services (EMS) at the Advanced Life Support (ALS) level. ALS ambulance service is provided through a contract with American Medical Response (AMR).

The Central Fire District of Santa Cruz County was most recently rated by the Insurance Services Office (ISO) in 2019. The District was given a Public Protection Classification (PPC®) rating of Class 2/4 with a Class of 10 for those areas greater than five miles from any of the fire stations.

Special Operations

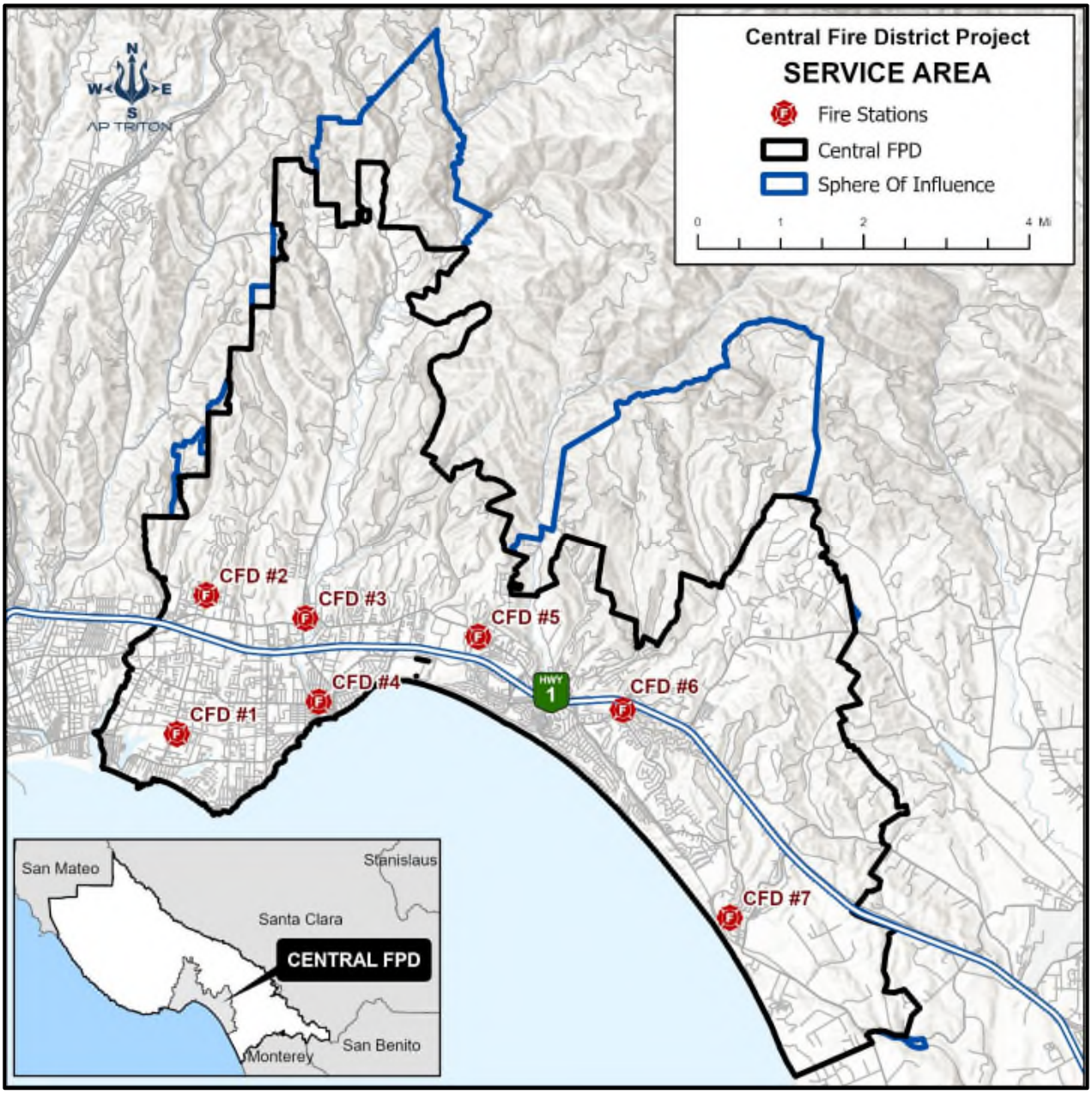
The Central Fire District of Santa Cruz County provides hazardous materials response using its own personnel along with the Santa Cruz Hazardous Materials Interagency Team (SCHMIT). The District also provides an assortment of special operations services, including Marine Rescue, Low- and High-Angle Rescue, Trench Rescue, Confined Space Rescue, and vehicle extrication. These programs are addressed in more detail in "Section II: Support Programs."

Other CFD Services

Under the supervision of the Fire Marshal, the Community Risk Reduction Division conducts fire inspections and code enforcement, investigations of fire cause and origin, and public education and prevention programs. In addition, through a contractual arrangement, CFD outsources its plan reviews. This program is addressed in more detail in "Section II: Support Programs."

The following figure illustrates the service area and SOI of the Central Fire District.

Figure 2: Central Fire District Study Area Boundary



Mutual & Automatic Aid

A wide variety of mutual and automatic aid resources are available to the Central Fire District in the region. They are comprised of various fire agencies staffed with all career personnel, volunteers, or a combination of both.

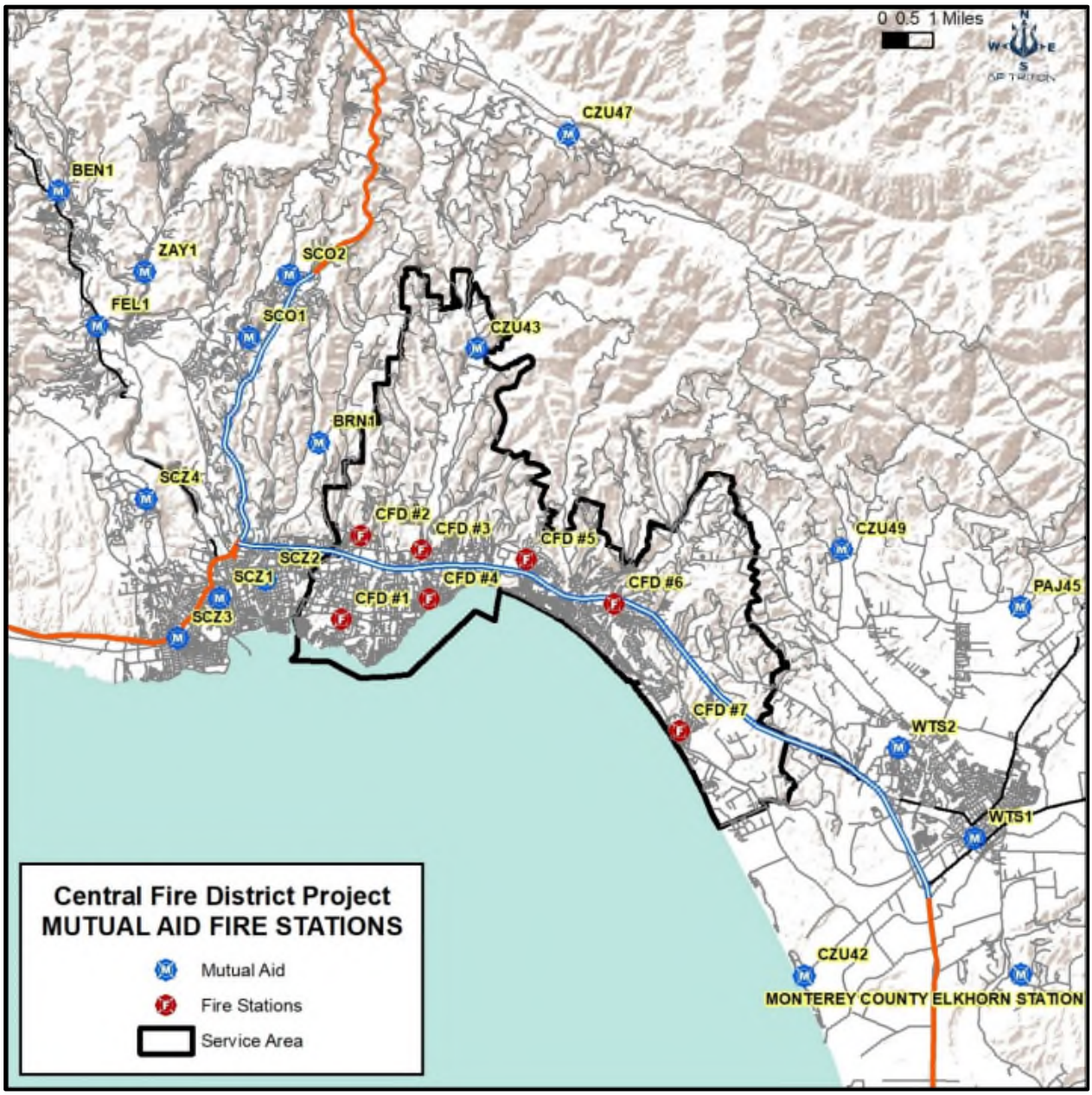
There is a substantial quantity of engines available in the region, several water tenders, four aerial apparatus, various miscellaneous apparatus, command staff, and other resources. The following figure lists the various municipal fire departments and fire districts that have mutual and automatic aid agreements with CFD.

Figure 3: Mutual & Automatic Aid Resources Available to CFD

Agency	Station No.	No. Engines	No. Aerials	Other Units	No. Staff
Santa Cruz City FD	#1	1	1	Battalion Chief	7
Santa Cruz City FD	#2	1	0	N/A	3
Santa Cruz City FD	#3	1	0	N/A	3
Santa Cruz City FD	#4	1	0	N/A	3
Scotts Valley FPD	#1	1	0	Battalion Chief & Tender	4
Scotts Valley FPD	#2	1	0	HazMat Unit	3
Branciforte FPD	#1	1	0	N/A	2
Watsonville FD	#1	1	1	Battalion Chief	7
Watsonville FD	#2	1	0	N/A	3
North County FD	#3	1	0	N/A	2
County Fire (CSA 48)	#33	1	0	N/A	2
County Fire (CSA 4)	#42	1	0	N/A	2
County Fire (CSA 48)	#47	1	0	Tender	2
County Fire (CSA 48)	#49	1	0	Battalion Chief	3
Felton FPD	#1	1	0	Chief Officer, Volunteer	1
Zavante FPD	#1	1	0	BLS Ambulance, Volunteers	1
Pajaro Valley FPD	#45	1	0	Battalion Chief, Tender	3
Ben Lomond FPD	#1	1	0	BLS Ambulance, Volunteers	N/A
Boulder Creek FPD	#1	1	0	BLS Ambulance, Volunteers	N/A
Boulder Creek FPD	#2	1	0	Volunteers	N/A

The following figure illustrates some of the mutual aid fire stations adjacent to the Central Fire District.

Figure 4: Mutual Aid Fire Stations



Financial Analysis

The Central Fire District of Santa Cruz County resulted from a February 2021 reorganization of the Aptos/La Selva Fire Protection District and the Central Fire Protection District. This combination requires Triton to combine the financial operations of the two independent districts prior to the combination. This will provide a good historical perspective on revenue trends of the District, but due to the possible benefit of cost reduction resulting from the combination, may not be applicable to the projected costs of operating the combined district.

CFD operates on a fiscal year, beginning July 1 and ending June 30. As a government entity, the District utilizes the fund accounting method for recording revenues and expenditures. This methodology recognizes all receipts as revenue and all expenditures as expenses—regardless of the typical accounting characterization. For example, loan proceeds and repayment would be treated as revenues and expenditures.

The annual budget is the District's planning tool and includes all proposed expenditures and the source of funds to finance them. In addition, contingency funds are built into the annual budget to provide for unanticipated expenditures or emergency events.

The District utilizes numerous funds to record its transactions, with the General Fund being CFD's chief operating fund and is utilized to record revenues not specifically identified or allocated to designated functions. CFD uses three funds in its governmental fund group: the General Fund (Operations), a Fleet Services Fund, and a Capital Outlay Fund. This study will primarily focus on the General Fund activities but will comment on the impact of the other two funds on the overall health of the District.

For purposes of analysis and presentation of the finances of CFD, Triton classifies revenues and expenses as either recurring or non-recurring, with those identified as recurring being items that are expected on an annual basis and can be quantifiable. Non-recurring items, conversely, are items not expected on an annual basis or are not easily quantifiable. This allows the agency to identify those costs necessary to provide services versus those costs that may be, under circumstances, deferred to future years.

Historical Financial Overview

General Fund

Revenues

Property tax revenues provide the most significant portion of the District's recurring Operations Fund (General Fund) revenue stream. Growth in the Current Secured assessment has averaged approximately 4.5% annually since FY 2017 and is approximately 87.5% of the $36,700,000 in FY 2022 property tax revenues. Other recurring revenues consist of interest on invested cash, intergovernmental revenues, and charges for services. The following figure presents the combined general fund revenues from FY 2017 through the adopted FY 2022 budget.

Figure 5: Historical General Fund Revenues

Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022 Budget
Recurring Revenues						
Property taxes	26,884,402	28,361,759	29,923,341	31,014,293	35,514,292	38,899,614
Penalties	—	—	4,427	8,074	9,412	7,000
Intergov. revenues	889,190	1,377,131	1,597,802	858,310	3,153,323	656,701
Charges for services	483,423	701,735	730,593	1,412,361	1,031,120	—
Total Recurring Revenues:	**28,257,015**	**30,440,625**	**32,256,162**	**33,293,037**	**39,708,147**	**39,563,315**
Non-Recurring Revenues						
Interest income	72,487	132,330	256,727	284,873	107,867	100,000
Miscellaneous revenues	98,168	161,024	179,156	135,718	104,679	—
Sales of assets	5,461	2,000	—	—	—	—
Non-Recurring Revenues:	**176,116**	**295,354**	**435,883**	**420,591**	**212,546**	**100,000**
Total Receipts:	**28,433,131**	**30,735,980**	**32,692,045**	**33,713,628**	**39,920,693**	**39,663,315**

Expenses

Salaries and benefits have historically been almost 87% of recurring expenses of CFD and historically been approximately 80% of total general fund expenditures. Salaries have grown from $12,719,000 in FY 2017 to $17,904,000 in the adopted FY 2022 budget. A portion of these costs has been attributable to normal increases in wage rates and a 15% increase to cover the costs of new employees in FY 2021.

Pension costs have risen from 31% of salaries in FY 2017 to approximately 37% in the adopted FY 2022 budget. The most significant component of this increase and of the pension cost is the payment on the unfunded actuarial liability created by the financial issues experienced by CalPERS. Pension cost has increased from $3,993,000 in FY 2017 to a budgeted $6,634,000 in FY 2022, with approximately 50% of the costs attributable to the amortization of the unfunded liability. The amortization of the unfunded pension liability is anticipated to continue to escalate until 2031, when it peaks and begins to subside.

Services and supplies have increased from $2,850,000 in FY 2017 to $4,829,000 in the adopted budget for FY 2022. Service Center charges and Training costs have seen the most significant dollar growth. Dispatch service costs increased by over 100% between FY 2017 and FY 2022.

During the first two years of the financial review, it was noted that debt service payments and capital expenditures were included in the General Fund expenditures. Beginning in FY 2020, funds were transferred from the General Fund to the Capital Fund to provide for capital improvements, equipment replacement, and remaining debt service payments.

The following figure is the combined historical expenditures in the General Fund between FY 2017 and the adopted FY 2022 budget.

Figure 6: Historical General Fund Expenses (FY 2017–Adopted FY 2022 Budget)

Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022 Budget
Recurring Expenses						
Salaries	*12,719,236*	*14,082,524*	*14,742,897*	*14,885,457*	*17,339,574*	*17,904,356*
Taxes and other	1,560,601	1,440,237	1,793,272	2,120,955	2,176,835	2,418,136
Pension	3,992,843	3,543,916	4,157,794	4,765,092	5,451,473	6,634,099
Employee insurance	3,297,313	3,281,008	3,508,083	3,401,791	4,191,536	4,390,114
Total Benefits	*8,850,758*	*8,265,160*	*9,459,148*	*10,287,838*	*11,819,845*	*13,442,349*
Salaries & Benefits	***21,569,993***	***22,347,684***	***24,202,045***	***25,173,295***	***29,159,419***	***31,346,705***
Services & Supplies	2,849,504	3,488,313	3,622,301	4,310,934	4,566,208	4,829,470
Total Recurring Expenses:	**24,419,497**	**25,835,997**	**27,824,346**	**29,484,228**	**33,725,627**	**36,176,175**
Non-Recurring Expenses						
Debt Service	1,112,683	1,131,055	53,990	—	—	—
Payments to Agencies	31,465	68,846	112,410	40,201	37,670	38,692
Capital Expenditures	173,256	669,910	1,096,593	39,807	83,494	279,605
Transfers to Other Funds	697,300	785,000	995,000	1,745,000	1,725,000	2,100,000
Contingencies	—	—	—	—	—	100,000
Total Non-Recurring:	**2,014,704**	**2,654,811**	**2,257,992**	**1,825,008**	**1,846,164**	**2,518,297**
Total Expenditures:	**26,434,201**	**28,490,808**	**30,082,338**	**31,309,236**	**35,571,791**	**38,694,472**

The General Fund Reserve balance, the amount available to fund operations in the event of an economic downturn or a catastrophic event. On a combined basis, the General Fund reserve balances have increased annually during the review period.

Capital Fund

As a result of the consolidation of the two agencies, an expanded Capital Fund was created into which an annual contribution is transferred from the General Fund. The proceeds and accrued earnings are used to construct/renovate District structures and acquire District apparatus and equipment. The Fund balance has been adjusted to match the results of the June 30, 2021, audit report and the projected June 30, 2022, balance. The following figure combines the activities and balances of the two individual Capital Funds from Aptos and Central Fire.

Figure 7: Capital Fund Activity (FY 2017–Adopted FY 2022 Budget)

Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022 Budget
Interest income	26,542	37,205	59,339	54,020	29,128	50,000
Other	—	—	—	—	—	563,407
Sales of assets	—	—	30,824	42,530	4,850	—
Transfers in from GF	697,300	785,000	995,000	1,745,000	1,725,000	2,100,000
Total Receipts:	**723,842**	**822,205**	**1,085,163**	**1,841,550**	**1,758,978**	**2,713,407**
Principal on leases	—	—	—	—	—	284,899
Interest on Leases	—	—	—	—	—	65,039
Buildings & improvements	372,669	30,386	—	50,558	—	150,000
Equipment	70,507	187,795	57,461	52,316	618,670	—
Mobile equipment	—	—	—	369,608	—	1,618,500
Total Expenditures:	**443,176**	**218,181**	**57,461**	**472,482**	**618,670**	**2,118,438**
Net Increase:	280,666	604,024	1,027,702	1,369,068	1,140,308	594,969
Beginning Fund Balance	430,511	711,177	1,315,201	2,342,903	3,711,971	4,852,279
Ending Fund Balance:	**711,177**	**1,315,201**	**2,342,903**	**3,711,971**	**4,852,279**	**5,447,248**

Fleet Maintenance Fund

CFD had previously operated a mechanical services operation providing maintenance services, and this operation is projected to continue into the future. Revenue charges for these services have increased dramatically during the five-year period reviewed and the adopted FY 2022 budget.

Figure 8: Fleet Maintenance Capital Fund Activity (FY 2017–Adopted FY 2022 Budget)

Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022 Budget
Interest	1,454	859	2,781	1,184	(278)	—
Service Center charges	343,707	414,973	456,412	921,924	1,118,399	1,140,767
Transfers in	505,813	435,447	558,288	334,091	366,552	456,448
Total Revenues	**850,974**	**851,279**	**1,017,481**	**1,257,199**	**1,484,673**	**1,597,215**
Wages	218,180	241,470	256,707	358,571	436,823	469,138
Benefits	112,177	130,920	143,420	173,892	219,053	318,920
Wages & Benefits	***330,357***	***372,390***	***400,127***	***532,463***	***655,876***	***788,058***
Services & Supplies	404,765	466,704	617,354	724,736	738,458	809,157
Recurring Expenses	**735,122**	**839,094**	**1,017,481**	**1,257,199**	**1,394,334**	**1,597,215**
Capital Expenditures	—	12,185	—	—	90,339	—
Non-Recurring Expenditures	—	12,185	—	—	90,339	—
Total Expenditures	**735,122**	**851,279**	**1,017,481**	**1,257,199**	**1,484,673**	**1,597,215**
Surplus (Deficit)	**115,852**	—	—	—	—	—

Financial Projections

General Fund

The FY 2023 General Fund budget contains significant increases in property tax revenues. This is based on the historical trend line and conversations with the District's Finance Director. Property taxes comprise approximately 97% of the District's revenue stream and are projected to grow by approximately 4% between FY 2023 and FY 2025, reducing to annual growth of 3% in the remaining two years of the projections. Non-recurring revenues are projected to increase by approximately 1% annually.

Figure 9: General Fund Revenue Projections, FY 2023 Budget–FY 2027

Description	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Property Taxes	38,906,614	40,462,879	42,081,394	43,343,836	44,644,151
Intergov. Revenues	656,701	682,969	710,288	731,596	753,544
Charges for Services	200,000	200,000	200,000	200,000	200,000
Total Recurring Revenues:	**39,763,315**	**41,345,848**	**42,991,682**	**44,275,432**	**45,597,695**
Miscellaneous Revenues	514,871	543,466	573,204	596,401	620,293
Total Non-Recurring:	**514,871**	**543,466**	**573,204**	**596,401**	**620,293**
Total Receipts:	**40,278,186**	**41,889,314**	**43,564,886**	**44,871,833**	**46,217,988**

Expenses

The FY 2022 budget forms the basis for projecting future operating costs of the General Fund. General Fund expenditures are projected to increase by approximately 4% between FY 2023 and FY 2024, approximately 5.3% between FY 2024 and FY 2025, and then between 2 and 3% in the following two years. Salaries and benefits are projected to remain approximately 85% of the total operating expenses of the District during the five-year projection period. Salaries are expected to escalate 4.28%, 4.69%, 0.75%, and 0.75% from FY 2024 through FY 2027, respectively.

Workers' compensation insurance is projected to increase by 33% between FY 2023 and FY 2024, and 15% annually thereafter. Pension costs are expected to increase significantly as the amortization of the unfunded actuarial liability continues to increase throughout the projection period. Service and supply costs are projected to increase marginally during the next five years.

The following figure provides the projected General Fund expenses through FY 2027.

Figure 10: General Fund Expenses (FY 2023 Budget–FY 2027)

Description	FY 2023 Budget	FY 2024	FY 2025	FY 2026	FY 2027
Salaries:	***19,303,871***	***19,937,637***	***20,812,545***	***20,968,639***	***21,125,904***
Taxes and Other	2,266,956	2,852,746	3,111,392	3,420,488	3,871,320
Pension	7,157,927	7,204,990	7,907,554	8,101,458	8,320,541
Employee Insurance	3,893,678	4,042,823	4,219,580	4,430,559	4,652,088
Total Benefits:	***13,318,561***	***14,100,559***	***15,238,526***	***15,952,505***	***16,843,948***
Salaries & Benefits:	**32,622,432**	**34,038,197**	**36,051,071**	**36,921,144**	**37,969,852**
Services & Supplies	5,939,604	6,058,396	6,179,564	6,303,155	6,429,218
Total Recurring Expenses:	**38,562,036**	**40,096,593**	**42,230,635**	**43,224,299**	**44,399,070**
Transfers to Other Funds	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000
Total Non-Recurring:	**2,100,000**	**2,100,000**	**2,100,000**	**2,100,000**	**2,100,000**
Total Expenditures:	**40,662,036**	**42,196,593**	**44,330,635**	**45,324,299**	**46,499,070**

Capital Fund

The Capital Fund is projected to continue to be funded from the General Fund at $2,100,000 annually. The projections contain a projected receipt of approximately $2,600,000 in FY 2025, representing loan proceeds for the acquisition of replacement apparatus. The same year is expenditures in excess of $5,000,000, representing the purchase of fire trucks in a capital replacement project.

The following figure represents the projected receipts and disbursements for the Capital Fund.

Figure 11: Capital Fund Projected Activity (FY 2023 Budget–FY 2027)

Description	FY 2023 Budget	FY 2024	FY 2025	FY 2026	FY 2027
Interest Income	50,000	50,000	50,000	50,000	50,000
Other	8,500	—	2,550,000	—	—
Transfers in from GFD	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000
Total Receipts:	**2,158,500**	**2,150,000**	**4,700,000**	**2,150,000**	**2,150,000**
Buildings & Improvements	750,000	750,000	—	—	244,971
Equipment	—	—	—	56,275	—
Mobile Equipment	869,419	1,543,360	5,211,070	1,878,747	640,820
Total Expenditures:	**1,619,419**	**2,293,360**	**5,211,070**	**1,935,022**	**885,791**
Net Increase (Decrease):	539,081	(143,360)	(511,070)	214,978	1,264,209
Beginning Fund Balance	6,607,106	7,146,187	7,002,827	6,491,757	6,706,735
Ending Fund Balance:	**7,146,187**	**7,002,827**	**6,491,757**	**6,706,735**	**7,970,944**

Fleet Maintenance Fund

The Fleet Maintenance Fund revenues are projected to continue to increase annually, outpacing the growth in expenses. This will reduce the amount of funding required from the General Fund on an annual basis, but only marginally. Growth in expenditures is expected to be similar to those projected in the General Fund. The following figure projects the activity of the Fleet Maintenance Fund.

Figure 12: Fleet Maintenance Fund Financial Activity (FY 2023 Budget–FY 2027)

Description	FY 2023 Budget	FY 2024	FY 2025	FY 2026	FY 2027
Service Center Charges	670,530	704,056	915,273	961,037	1,009,089
Transfers in	814,049	799,743	652,058	641,385	633,174
Total Receipts:	**1,484,579**	**1,503,799**	**1,567,331**	**1,602,422**	**1,642,263**
Wages	492,538	513,619	537,707	541,740	545,803
Benefits	355,846	341,262	367,727	385,547	407,822
Wages & Benefits:	***848,384***	***854,880***	***905,434***	***927,287***	***953,625***
Services & Supplies:	***636,195***	***648,919***	***661,897***	***675,135***	***688,638***
Recurring Expenses:	**1,484,579**	**1,503,799**	**1,567,331**	**1,602,422**	**1,642,263**
Surplus (Deficit):	—	—	—	—	—

Fund Balances

Crucial to any organization, but more so to governmental agencies, is the accumulation of reserve balances to allow the agency to be able to successfully navigate sudden changes in economic conditions or provide funding for emergency needs. Activity in the General Fund and the Capital Fund produce changes on an annual basis. The General Fund revenues are projected to not provide for complete coverage of the General Fund expenditures.

As previously mentioned, the operation of the Fleet Maintenance Fund does not break even and requires support from the General Fund. This support produces the break-even effect. The following figure summarizes the activity by fund, the impact on the balances, and the summarization of the three funds. As indicated in the following figure, the reserve balances experience a reduction in FY 2023–FY 2026, followed by a marginal increase in FY 2027.

Figure 13: Fund Activity and Balances (FY 2023 Budget–FY 2027)

Description	FY 2023 Budget	FY 2024	FY 2025	FY 2026	FY 2027
General Fund					
Revenues	40,278,186	41,889,314	43,564,886	44,871,833	46,217,988
Expenses	(38,562,036)	(40,096,593)	(42,230,635)	(43,224,299)	(44,399,070)
Transfers Out–Capital	(2,100,000)	(2,100,000)	(2,100,000)	(2,100,000)	(2,100,000)
Net Change	**(383,850)**	**(307,279)**	**(765,749)**	**(452,466)**	**(281,082)**
Beginning Balance	28,248,100	27,864,250	27,556,971	26,791,222	26,338,756
Ending Balance:	**27,864,250**	**27,556,971**	**26,791,222**	**26,338,756**	**26,057,674**
Revenues	40,278,186	41,889,314	43,564,886	44,871,833	46,217,988
Capital Fund					
Revenues	58,500	50,000	2,600,000	50,000	50,000
Transfers In	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000
Expenses					
Capital Purchases	(1,619,419)	(2,293,360)	(5,211,070)	(1,935,022)	(885,791)
Net Change:	**539,081**	**(143,360)**	**(511,070)**	**214,978**	**1,264,209**
Beginning Balance	6,607,106	7,146,187	7,002,827	6,491,757	6,706,735
Ending Balance:	**7,146,187**	**7,002,827**	**6,491,757**	**6,706,735**	**7,970,944**
Fleet Fund					
Revenues	670,530	704,056	915,273	961,037	1,009,089
Revenues from GF	814,049	799,743	652,058	641,385	633,174
Expenses	(1,484,579)	(1,503,799)	(1,567,331)	(1,602,422)	(1,642,263)
Net Change:	**—**	**—**	**—**	**—**	**—**
Beginning Balance	328,093	328,093	328,093	328,093	328,092
Ending Balance:	**328,093**	**328,093**	**328,093**	**328,092**	**328,092**
Consolidated					
Revenues	41,007,216	42,643,370	47,080,159	45,882,870	47,277,077
Transfers in	2,914,049	2,899,743	2,752,058	2,741,385	2,733,174
Expenses	(40,046,615)	(41,600,392)	(43,797,966)	(44,826,721)	(46,041,333)
Transfers Out–Capital	(2,100,000)	(2,100,000)	(2,100,000)	(2,100,000)	(2,100,000)
Capital purchases	(1,619,419)	(2,293,360)	(5,211,070)	(1,935,022)	(885,791)
Net Change:	155,231	(450,639)	(1,276,819)	(237,488)	983,127
Beginning Balance	35,183,299	35,338,530	34,887,891	33,611,072	33,373,583
Ending Balance:	**35,338,530**	**34,887,891**	**33,611,072**	**33,373,583**	**34,356,710**

Management Components

Creating appropriate management systems, policies, and philosophies is critical for modern fire service leaders. In addition, members, managers, and leaders need simple, consistent tools. Fire agencies that wish to improve and incorporate strategic thinking must have these systems thoroughly entrenched in their culture. When these principles and tools are present, agencies can more readily address management complexities such as organizational structure, staffing, and operational excellence.

Foundational Management Principles

Most successful organizations know why they exist and how they will improve. They understand what they feel their organization should be and what common values hold them together and accountable. Organizations collect these basic philosophies in their adopted mission, vision, and values statements. CFD has created and adopted mission, strategy, vision, and values statements to guide all levels of followers, leaders, and directors.

Mission Statement

Effective mission statements are concise statements that capture the reason an agency exists. It should be a brief statement that efficiently and effectively states why the agency exists and for whom they provide its services.[2] Answering these two questions can clarify for communities and members why they commit their time and other resources.

CFD adopted and published the following mission statement.[3]

> *"To improve quality of life by protecting the community from the risks and consequences of fire, medical, rescue, hazardous material, and natural disaster incidents."*

This mission has the necessary elements of what they want to do, improve quality of life, but does not necessarily address whose lives they are improving. However, the mission limits their responsibilities and is general enough to include both response and prevention.

Strategy

CFD chose to add a strategy statement. This statement explores how the agency will protect the community from risks and consequences. This is an imaginative approach to expanding on how it will accomplish its mission. Accordingly, CFD has adopted the following strategy statement.[4]

> *"We will achieve our mission by the aggressive and well-planned incident response, focused prevention programs, and effective public education, all conducted by a well-trained and well-equipped team."*

It is challenging to discuss the effectiveness of this statement, as it is not a typical method fire service agencies use to communicate founding principles. While it does help add clarity to the implementation of the mission, its usefulness as a founding concept or management decision beacon is undetermined.

Vision

Vision statements provide a direction for the entire organization and a common goal to work towards. The vision statement should succinctly articulate what the agency or its leaders see as the ultimate success in providing service. It should reflect where the organization is heading and provide an end state for decision makers to use as a guide.[5] CFD adopted the following vision statement.[6]

> *"We stay in touch with our community to identify their changing needs. Innovation is a key element of our leadership. We investigate new programs and techniques and implement them to maintain or improve our service levels. We aspire to be leaders in our profession and will actively participate when it is the most effective means to achieve our mission. We earn the respect of our peers and the community we serve by being effective, innovative, customer-friendly, and reliable. We will consider changes to our District boundaries with neighboring communities when the result is a higher quality of service for all involved. We support regional approaches to training, fire prevention, incident response, and administrative support."*

For CFD to have a vision is a positive asset. However, this vision statement is not concise and does not clearly articulate the organization's goals. The message should answer the question of where the organization wants to be in the future. A statement that starts with "we will consider" and "we earn" are too passive for a vision.

Values

For members of an organization to work together smoothly and to the same ends, they must share common values. Excellent agencies clearly state their organizational values and either create rules to defend them, a culture of value-driven decisions, or in most cases, both.[7] CFD adopted five core values, each with a clarifying statement. These values appear effective. The following is the list of CFD's values as listed on their website.[8]

- Safety: Safety is paramount. Our profession is dangerous by nature and requires that we provide service and train with minimal risk to our personnel and the public.
- Readiness: We are prepared to serve at any moment by being trained, physically and mentally fit, and well equipped.
- Service: Our services must be provided to the community with compassion, respect, and sincerity. Good service results from our knowledge, ability, and commitment.
- Leadership: Leadership creates commitment, communication, desire, action, and growth and is demonstrated through our actions.
- Work ethic: We plan, manage, accomplish, and enjoy our work with dedication, respect, teamwork, and accountability.

Applied Management Principles

Understanding fundamental management principles, especially the mission, vision, and values, is critical for managers and leaders to create direction. A clear sense of who and what the agency is will help progressive leaders define their purpose, unify the members, and find opportunities to grow and improve. Applying these principles may come in day-to-day interaction with the members, deciding whom to hire, what to purchase, or other instances.

These foundational principles should also be applied when developing plans and goals and identifying gaps in performance and critical issues. In addition, reviewing strategic, operational, and other planning documents assists members and outside interested parties in understanding management's focus on the organizational mission, vision, and values.

Management Planning

CFD has undergone significant changes in recent years. The consolidation of the Aptos/La Selva Fire Protection District (A/LSFPD) and Central Fire Protection District of Santa Cruz County was planned for several years. They officially consolidated on February 4, 2021.[9] The two district boards commissioned three studies that would facilitate the merger. The master plan and standards of cover/management assessment documents did not tie back directly to the agency's mission, vision, and values statements. However, the information in these reports is especially helpful in understanding base performance metrics and CFD capabilities. The third report, a consolidation feasibility study, did identify both A/LSFPD and CFD's mission, vision, and values. It was focused on how compatible these founding principles were. The current mission, vision, and values came after the consolidation.

CFD has been working on updating its documents since the previous master plan, and standards of cover documents were completed before consolidation. In addition, CFD is working on updating its strategies to include its mission, vision, and values. The process starts with this master plan and then moves on to a strategic planning session with AP Triton.

Management Goals & Objectives

Management does not explicitly define goals and objectives, especially organizational improvement. A review of the budgets, recent annual reports, and other planning documents did not uncover any official goals and objectives. However, management is aware of this and is attempting to rectify this shortcoming with this master plan and the upcoming strategic plan. They have identified this lack of goals and objectives as a critical issue to be addressed.

Internal Assessment of Critical Issues

AP Triton asked for a list of the critical issues from the Fire Chief's perspective. The identified concerns are consistent with any agency that has undergone recent executive leadership changes and consolidation. The following list is the critical issues from the Fire Chief's perspective.

- Establishing mission, vision, and values for the new, consolidated organization.
- Establishing and acting on goals and objectives for the new organization.
- Completing the new organization's policy and procedure transition into Lexipol.
- Prioritizing financial resources towards increasing levels of service.
- Addressing facility improvement priorities.
- Work towards and gain CFAI accreditation.

Internal Assessment of Future Challenges

Based on their critical issues assessment, future challenges for CFD revolve primarily around continuing to create a single organization and organizational culture after the consolidation. They have significant efforts underway to address these concerns. However, one area that may include serious challenges is the needed funding for improving services and addressing obvious issues with CFD's facilities.

Communication Process

Communications are the manager's primary tool to effect change and help members perform their best service for the community. There are several dimensions when working with communications. The sender/receiver dynamic, the context, the content, and the method are all required to ensure messages are delivered accurately and effectively. In addition, form and content typically change when communicating with internal and external customers. This change is especially true in the fire service industry since it relies heavily on industrial jargon and technical concepts.

Internal

Accomplishing internal communications is more straightforward due to the shared context of the sender and receiver. However, this familiarity can also cause a significant communication barrier as the internal sender has shared experience, historical, and emotional ties to the sender, the organization, or both. For this reason, managers must carefully choose their method when communicating with the members. They must also ensure the information is accurate, especially free from vague language that may allow for inference. The information must be consistent with previous statements and positions.

CFD utilizes several internal communications techniques. The staff attends regular meetings. There is a daily conference call between the Chiefs and Captains, a division head meeting every two weeks, and an all-officer meeting every six weeks. The Community Risk Reduction Division meets quarterly. The organization has a stated chain of command and an open-door policy. Formal, in writing, communications are accomplished through agency e-mail, policies, standard operating guidelines, and memorandum. Policies and procedures are communicated via the Lexipol system, with annual training required by all members.

CFD does not utilize an intranet or publish a member newsletter. They also do not have a scheduled all-hands meeting. Instead, they choose to schedule one when one is needed.

External

Communicating with external customers carries challenges but can significantly reward the organization. A well-informed public can be an agency champion, its harshest critic, or in many cases, both. External customers have no inherent context with the terminology or historical perspective, unlike internal customers. Therefore, managers must approach each communique with external customers without assuming they know or understand fire service operations. For optimal communication with the public, management must use multiple methodologies.

In addition, external customers must get information with a consistent message that agrees with those the internal customers receive. However, organizations cannot share some information with external customers. In these cases, staff must know what information should be kept private and why privacy is necessary.

CFD utilizes several external communication techniques. They use social media accounts such as Facebook, Twitter, and Instagram. However, their most extensive base is on the Nextdoor network, with approximately 36,547 followers. In addition, CFD has a website that is actively managed and provides news and information to the public, and access to essential documents, including studies, budgets, and annual reports.

Documentation

Fire service agencies produce a variety of information and documents in the ordinary course of daily business. These documents are maintained for regulatory and organizational needs and can significantly impact the agency's health. Therefore, agencies must produce policies and procedures to safeguard these documents and ensure that they make adequate and valuable information.

Regulatory documents such as policy manuals, employee handbooks, standard operating guidelines, and incident reporting must be maintained, kept current, and protected from unauthorized use. In addition, informational documents such as official memorandums, agency performance reporting, and general agency information should comply with the agency, local, state, and federal policies and regulations.

Agencies should also understand their members, the public, and other stakeholder informational needs. The agency must balance consumer needs, transparency, and organizational confidentiality. The agency must produce policies and procedures to direct information flow to internal and external consumers.

CFD maintains processes and policies to assist with document management. In addition, they report to their governing body specific information at regular intervals.

Reporting

An elected board of directors governs CFD. The administration attempts to inform the board of directors about agency performance and specific programs through verbal and written operational and management reports during monthly board meetings. Financial information is delivered to the board quarterly. In addition, they produce an annual report that details the operational and incident data. These reports, board meeting minutes, and other public documents are available on the organization's website.

Recordkeeping

CFD maintains records as required by federal, state, and local statutes and regulations. They document their incident responses in a computer-based records management system. Electronic patient records are kept on a separate system.

The equipment records are maintained in multiple sites, depending on the equipment. Self-contained breathing apparatus and air meter testing records are maintained internally by specially trained firefighters. Vendors accomplish hose, breathing air, and the logistics division keeps ladder testing and records. The logistics division manages pump testing and vehicle repair records.

CFD Human Resources maintain employee records electronically and with hard copies. The system and user passwords secure electronic file access. In contrast, paper records are secured in locked offices and file cabinets. Additionally, employee exposure records are maintained internally and utilize an external reporting system.

Information Technology Systems

Information technology management and systems are a requirement of the modern fire service. Agencies need access to computers and data to record activities, provide modern communications, and maintain management awareness. Access should be available to those who create the information and those who need to use this data to complete evaluations or reports. Modern information technology systems must have a solid infrastructure, including data retention, back-ups, and hardware and software maintenance.

Infrastructure

CFD has computers, software, and network access available at all facilities. Infrastructure is maintained by a vendor who has a presence at headquarters during certain days of the week. The vendor supports the network, servers, and computers.

Management, Control, & Security

CFD technology is managed and secured within District policies. While the District owns the computers and software, technical management is accomplished by the District's vendor. Computers and software are password protected, and access is granted and maintained at the user level. In addition, electronic records are backed up remotely.

RMS/PCR Systems

CFD utilizes technology to document incident responses. They use the Emergency Reporting software to record incidents in an NFIRS-based system. While CFD does not provide medical transport, they capture patient records in Image Trend®, a cloud-based documentation software.

Planning for Fire Protection & EMS

Emergency service environments and communities change rapidly, so planning efforts are critical to organizational health. Whether committed to continuous improvement or just survival, agencies must look to the future and develop plans to be successful. At a minimum, an agency must try to keep up with its changing environment. However, improvement requires agencies to evolve much faster than their environment changes.

Survival and improvement do not happen by chance. Benjamin Franklin, credited with saying, "if you fail to plan, you are planning to fail," understood this. However, changing an organization's structure or direction to meet the future is difficult. It requires incremental steps, effective communications, vision, and purpose. In short, organizations must proactively manage their future or react or dissolve when the inevitable changes occur.

Fire Service Planning Process Overview

Education is abundant for strategic, master, and operational planning. Unfortunately for the fire service, most publications and courses focus on private, for-profit industries. As a result, non-profit and public organizations receive little guidance. However, there are a few resources. This section relies heavily on the highly regarded works of Mark Wallace[10], John M. Bryson[11], and the Commission on Fire Accreditation International (CFAI) for direction.

Historically, agencies attempting to use for-profit planning methodologies often struggle with effectiveness. For-profit strategies focus on profitability and market share, while public agencies prioritize fiscal responsibility and continued service. Profitability in the public sector is rarely a consideration. Therefore, public agencies need to focus on different types of planning processes.

The first step in any planning process is to understand the current situation. Agencies must understand their risks, define metrics to measure performance, and evaluate existing performance and service levels. In addition, they must understand community expectations, mandates, the agency mission, values, culture, and responsibilities. Effective agencies can state these clearly and share them throughout the organization. Effective agencies also have a clear vision of anticipated future performance.

Once the current situation is thoroughly understood and the vision defined, agencies should document their steps to meet the future. However, these are rarely published in a single plan. Typically, a series of planning documents are needed to deal with levels of strategic and operational concepts.

Strategic planning provides clear direction and understanding of future needs. Operational plans identify specific steps and resources needed to accomplish the strategies. These can range from very short-term dealing with the present to long-term plans dealing with projections many years in the future. The following figure lists the methods and how they can be utilized.

Figure 14: Planning for the Future

Planning Level	Description	Time Period	Examples
Operational Planning	These deal with specific resource needs, time frames, directions, or processes to meet the strategic direction or mission requirements.	Immediate	• Standard operating procedures and policies. • Incident tactical plans. • Incident preplanning.
		Short-Term	• Annual budgets. • Annual project plans.
		Mid-Term	• Apparatus Replacement. • SCBA/Radio replacement schedules. • Emergency Management plans.
		Long-Term	• Facilities replacement.
Strategic Planning	Creating a pathway to address critical issues within the organization's mission, vision, & values framework.	Mid-Term	• 3–5 Year Strategic Plan.
Master Planning	Part operational and part strategic, this plan combines current and potential forecasted changes in the agency's environment to provide strategic direction.	Mid- & Long-Term	• 5–20 Year Master Plan

In the preceding figure, the immediate plans define ongoing activities. Accomplishing short-term objectives requires only current resources. These plans get completed during the current budget cycle. Mid-term plans will spill over budget cycles but typically are complete with the sitting elected government officials and current leadership. Long-term plans will likely outlast the sitting government and potentially the current administration.

Agencies may produce or combine any number of plans to help them address their challenges. They may have the resources to follow an internally developed or predefined process. On the other hand, they may need outside professional assistance to help them develop their plans and planning process. The key to success is not necessarily to follow one approach over another or create a standardized document. Instead, success comes through creating clear, concise, relevant information that is publicized and used by members and leaders in their everyday decisions.

Exceptionally effective plans are frequently reviewed. They are closely followed or changed as the situation warrants. They are updated periodically, reported to the governing body, and used as a leadership and decision tool. Plans written to fulfill an obligation and spend their entire lifespan on a shelf gathering dust are little more than an entertaining exercise in creative writing. Effective agencies choose living plan documents that add value.

Effectiveness of the Planning Efforts

CFD is taking steps to create a more proactive change environment. It has completed many foundational planning steps, and this master plan document will help fill in some of the gaps.

CFD planning efforts are primarily operational and center on the immediate and short-term plans that assist daily operations. They established a planning group in January 2022. While the strategic planning efforts are somewhat remiss, they are attempting to rectify this. This master plan document may help fulfill some strategic requirements for effective management. In addition, CFD has contracted with AP Triton to complete a strategic plan.

Planning Preparation

CFD maintains control and planning documents to assist management and the members with daily and near-term decisions. They have documented mission, vision, value, and additional guidance statements. However, the administration has indicated that the adopted mission statement came from Aptos/La Selva Fire Protection District (A/LSFPD) after the February 2021 merger.

They intend to update the mission, vision, and values as part of the upcoming strategic plan process. A/LSFPD completed a master plan study, and the Central Fire District of Santa Cruz County (CFDSCC) completed a standard of cover and management/administrative assessment in 2017. An additional consolidation feasibility study was conducted in 2018. These documents provide a good foundation for the service delivery definition of each agency before the merger. This master plan will further define their service and community risk positions with the updated community risk study.

CFD has not recently completed an environmental study, but one was included in the 2018 feasibility study. However, they have contracted with AP Triton to better understand the environment post-merger to update its awareness. This assessment will be completed as part of this master plan and further defined during the community-driven strategic plan. During this and the next phase, AP Triton will conduct evaluations that include:

- A community survey to understand the priorities, opinions, and expectations related to service delivery, core services, and programs,
- An anonymous member survey to gather feedback on the members' priorities, opinions, expectations, core service, and programs,
- A review of the mission, vision, and value statements to ensure they still represent the agency,
- An evaluation of the agency's strengths, processes, or resources that the agency wants to continue to capitalize on,
- Assistance in evaluating CFD's weaknesses. This process and its findings should be made public, but the temptation to minimize agency issues is compelling. However, addressing these weaknesses is at the heart of strategic improvement and should not be ignored,
- An evaluation of those opportunities outside the agency's control but on which the agency may be able to capitalize,
- It will evaluate the threats and outside pressures put upon the agency.

CFD's Immediate Planning

CFD maintains immediate operational planning documents internally and within the County and region. They are updating their operational guidelines in the Lexipol system to align the documentation with the post-merger organization. In addition, they are in the process of consolidating the A/LSFPD and CFDSCC hazard and pre-fire plans.

Santa Cruz County publishes and maintains a *Hazardous Materials Area Plan,* last updated in January 2017. The County is also responsible for an area emergency operations plan (EOP). However, as of this writing, the EOP was unavailable and listed as "in progress" on the County website. This is also the case for the hazard-specific and function-specific annexes. These plans, policies, guidelines, and the labor memorandum of understanding comprise the agency's immediate planning processes.

CFDSCC and A/LSFPD had pre-fire planning and pre-incident aids for responder processes before their merger. These processes are now under development for the consolidated CFD organization. These plans are valuable and effective for all size buildings and occupancies. However, at a minimum, they should exist for target hazard facilities. Target hazards are buildings defined by:

- Large potential occupant loads,
- Populations that are wholly or partially non-ambulatory,
- Institutionalized people with limited access,
- Larger than 12,000 square feet,
- Also, those that contain hazardous materials, equipment, or hazardous storage.

Pre-incident plans must be easy to use under intense operational situations and readily available to all arriving companies and commanders. These plans should contain information that is useful for responders and includes information such as:

- Building layout and specific characteristics,
- Building construction,
- Occupant characteristics,
- Location and types of fire protection and hazard containment systems,
- Water supply volume and access locations,
- Exposures,
- Also, there needs to be an indication of the employee or industrial response personnel capabilities.

Typically, developing a process from a pre-established system or program has the highest probability of success and adoption. Resources such as NFPA 1620 provide detailed information on creating and using pre-incident plans.

Short-Term Planning

CFD creates and operates under an annual budget. However, they do not appear to have a yearly project list or other short-term planning methods. This information complements the operational, strategic, and master planning elements. At a minimum, these plans should include:

- Project description and a specific person or position that is responsible for its completion,
- The budget for the project,
- Project timeline,
- Definition of the successful completion of the project,
- The project's relationship to operational requirements or strategic and master plan objectives.

Mid-Term Planning

CFD does not have a strategic plan in place. However, they do have the beginnings of plans for facilities, equipment, and apparatus replacement. This master plan and the contracted strategic plan should help improve the mid-term planning position of the District.

AP Triton is engaged in developing an effective strategic plan for CFD as a foundational roadmap for change. This plan drives many operational scenarios, including program and project development, capital replacement and maintenance, recruitment, development, and promotional strategies. While not a requirement of the strategic plan, CFD has engaged AP Triton to produce a community-driven plan as recommended by the Commission on Fire Accreditation International and other resources. Plan development will include goals and objectives that are specific, measurable, actionable, realistic, and time-bound (SMART). The plan will allow clear communication, frequent review, assignment, evaluation, and updating. The customer-focused strategic plan to be completed by AP Triton as the next phase of this project will include:

- An environmental study, as referenced in the planning preparation section above,
- Development of strategic goals and objectives that fulfill community, organizational, and environmental priorities,
- Clearly defined metrics used to judge the effectiveness of the goals and objectives and the expected outcome of implementing the objectives.

As designed, the organizational strategic plan, in tandem with this master plan, will assist the agency with a better understanding and positioning in the future.

Long-Term Planning

This master plan, developed by AP Triton, the 10-year capital outlay plan, and the 2017 A/LSFPD master plan appeared to be the only long-term planning documents on record. While the lack of long-term planning is a shortcoming for the agency, they are trying to correct this. Their 10-year capital could be a proper capital improvement plan (CIP). However, it should expand the systems, especially the expensive systems at facilities. The current capital outlay accomplishes much of the minimum parts of a complete CIP, including:

- Identifying all capital assets of the agency, including buildings, vehicles, and long service equipment such as vehicles, radios, computers, SCBAs, and turnout gear,
- Identifying the service life of these assets,
- It should identify the service life of portions of facility systems such as heating, air conditioning, and concrete,
- The potential replacement costs when the asset expires, adjusted for expected inflation,
- Operational and maintenance cost estimates for each resource by year.

The mid-term actionable planning portion of the CIP should be either parallel to or part of the strategic plan. The long-term area of the CIP will forecast far enough into the future to address the service cycle of the longest-lived asset, typically a fixed facility. The mid-term portion of the CIP and station assessment that either parallels or is part of the strategic plan should include the minimum information for each project:

- The overall cost of the project,
- Cost of the project segment for the current fiscal year,
- Timeline for project completion,
- Priority,
- Available funding.

Planning, funding, and completing a master mitigation plan for significant hazards are also valuable for managing risks. NFPA standards and the FEMA website provide mitigation plan references and examples.

Staffing & Personnel

Public safety is, at its heart, a service industry. An organization's ability to meet its obligations and mission requires active recruiting, managing, and maintaining sufficient staffing. Appropriate operational, administrative, managerial, and supervisory staffing levels and effective allocation of resources are imperative to agency success.

Fire service staff functions fall into two distinct groups, administrative and operational. Both groups must have appropriate resources to complete their tasks for an agency to operate effectively. Allocating organizational resources to balance the two can be difficult, but adequate staffing is crucial.

An organization also needs to have proper rules for effective personnel management. Well-defined, consistent, and documented policies and practices help employees understand their responsibilities and benefits. It also helps them chart their road to success and professional advancement.

The number of positions and personnel deployment depends on the organization's needs, mission, and resources. Similarly, the organization's structure, size, and legal requirements drive the administrative and managerial policies and practices. This section overviews CFD's staffing structure and human resources practices.

Administrative & Support Staffing

The administrative and support functions are diverse, and the list of tasks can be extensive. Organizational planning and coordination, asset management, program evaluation, and overall direction are typical administrative and support staff functions. Some agencies are departments within a larger organization and share some support functions with a municipality or other larger government agencies. Since CFD is a special district, it must provide its own administrative and support services. Therefore, resource allocation to these functions is much more critical.

Twenty-six full-time equivalent (FTE) employees provide support and administrative services. The Fire Chief is the most senior executive administrator of CFD and reports directly to the elected board. The Assistant Fire Chief reports to the Fire Chief. The Operations Division Chief, Logistics Division Chief, Human Resources Director, Finance Director, and Fire Marshal report to the Assistant Fire Chief. The span of control of five subordinates for the Assistant Fire Chief is within established best practices. Most administrative staff operate during regular business hours, 8:00 a.m. until 5:00 a.m., Monday through Friday. The following figure lists each full-time equivalent (FTE) position and the staffing count for the administrative functions.

Figure 15: Administrative Staff Full-Time Equivalent Count

Position	FTEs
Fire Chief	1
Assistant Fire Chief	1
Division Chief of Logistics	1
Senior Fire Apparatus Technician	1
Fire Apparatus Technicians	2
Logistics Technician	1
Administrative Analyst, Logistics	1
Director of Human Resources	1
Administrative Analyst, Human Resources	1
Administrative Assistants, Human Resources	2
Director of Finance	1
Administrative Analyst, Finance	1
Administrative Assistant, Finance	1
Fire Marshal	1
Deputy Fire Marshal	1
Fire Inspectors	3
Defensible Space Inspectors (2)	2
Defensible Space Trainee	2
Administrative Analyst, Community Risk Reduction	1
Administrative Analysis, Training/Safety	1
TOTAL FTEs	**26**

Administrative Support

CFD operates with civilian administrative support positions. These civilians assist in developing and managing the budget and other district assets, general office and clerical support, human resources, records management, and finance. Each support area reports to a Director or Division Chief within a traditional organization, structured by function.

Payroll, benefits, recruitment, and general employee recordkeeping are completed by the Human Resources Director, Administrative Analyst, and two Administrative Assistants in the Human Resources Division. In addition, the Director of Finance, an Administrative Analyst, and an Administrative Assistant manage the finances and accomplish general accounting tasks. There are two additional Administrative Analysts, one in training and the other in community risk reduction, to assist with administrative work in these areas.

Community Risk Reduction

CFD's community risk reduction (CRR) division is responsible for preventing loss and injury through code enforcement, investigation, and education. A Fire Marshal, the Deputy Fire Marshal, and three Inspectors complete the required inspections and public education. CFD also has a wildland interface loss prevention program which four dedicated defensible space inspectors accomplish.

Logistics

CFD's logistics division is unusual because it supports apparatus maintenance for several surrounding agencies. Because of this, the logistics section operates as a business unit and strives to pass on no indirect costs to the District. One senior and two regular fire apparatus technicians report directly to the Division Chief of Logistics/Fleet. In addition, a logistics technician who manages consumable goods and equipment for the District and an Administrative Analyst also report directly to the Division Chief.

Operations Staffing

Operations personnel are assigned various duties consistent with fulfilling emergency response objectives. They are also responsible for additional collateral duties to support the response mission. The Operations Division Chief supervises three shift Battalion Chiefs, the training and safety Battalion Chief, and the Emergency Medical Services Integration Authority (EMSIA) Chief. The following figure lists full-time equivalent position counts for the operations division.

Figure 16: Operations Staff Full-Time Equivalent Count

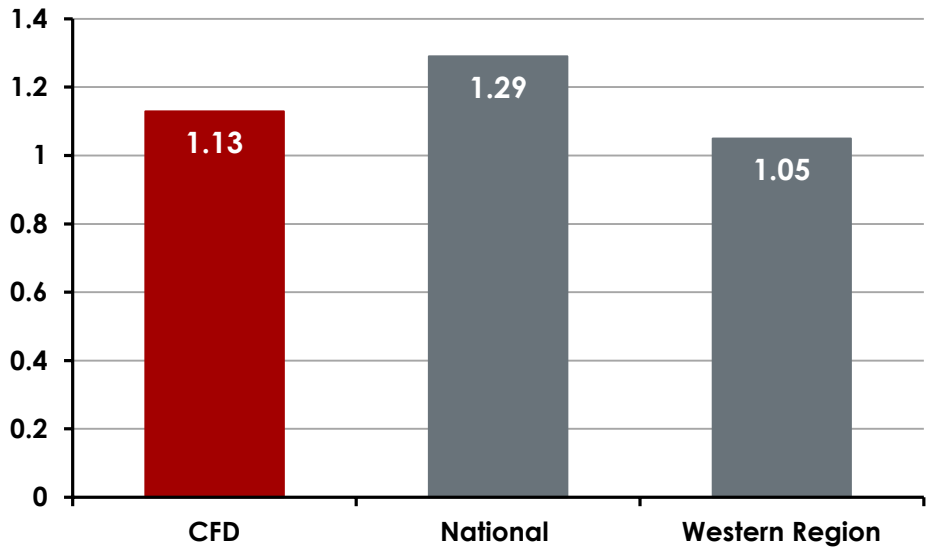
Position	FTEs
Division Chief of Operations	1
EMSIA Chief	1
Battalion Chief	4
Captain/Captain Paramedics	23
Firefighter/Firefighter Paramedics	51
Paid Call Firefighter (10–20)	2–4[1]
TOTAL FTEs:	**82–84**

[1] Based on a paid call Firefighter working 12 hours a month = 0.2 FTE

Staff Allocation

CFD has an operational staffing level of 1.13 Firefighters per 1,000 population served. The staffing level includes the full-time equivalent paid call Firefighters but not the EMSIA Chief. Comparing CFD staffing levels against regions and the nation shows the staff levels exceed the western region and are under the national levels.[12] The following figure is a comparison of Firefighters per 1,000 in population protected.

Figure 17: Firefighters Per 1,000 in Population Comparison



Firefighter Staff Distribution

The Operations Staff is allocated evenly throughout the three shifts except for the Division Chiefs, EMSIA Chief, Training Battalion Chief, and Training Captains, who work an administration schedule. Seven primary apparatus equipping the seven fire stations and five additional units can be cross-staffed. The minimum staffing on the six engine companies is a Captain and two Firefighters. The truck is minimally staffed with a Captain, a Truck Operator, and two Firefighters. All front-line apparatus is equipped for ALS, and at least one of the responders is a Paramedic.

At least one Battalion Chief is always on duty, operating a command car from one of the stations: the Operations and Logistics Division Chiefs, Assistant Chief, and Fire Chief assist with standby duty for additional command support. The following figure lists the primary and cross-staffed apparatus by the station.

Figure 18: Operational Staffing & Allocation

Unit	Type	Minimum Staffing
Live Oak Station (1): 930 17th Avenue, Santa Cruz		
E3511	Type 1 Engine	1 Captain, 2 Firefighters
Thurber Station (2): 3445 Thurber Lane, Santa Cruz		
T3572	Ladder/Platform	1 Captain, 1 Truck Operator, 2 Firefighters
E3512	Type 1 Engine	Cross-Staffed
Soquel Station (3): 4747 Soquel Drive, Soquel		
E3513	Type 1 Engine	1 Captain, 2 Firefighters
E3537	Type 3 Engine	Cross-Staffed
E3543	Type 6 Engine	Cross-Staffed
Capitola Station (4): 405 Capitola Avenue, Capitola		
E3514	Type 1 Engine	1 Captain, 2 Firefighters
Aptos Station (5): 6934 Soquel Drive, Aptos		
E3515	Type 1 Engine	1 Captain, 2 Firefighters
B3505	Battalion Chief	1 Battalion or Acting Battalion
A3566	Ambulance	Cross-Staffed
E3538	Type 3 Engine	Cross-Staffed
Rio Del Mar Station (6): 300 Bonita Drive, Aptos		
E3516	Type 1 Engine	1 Captain, 2 Firefighters
La Selva Beach Station (7): 312 Estrella Avenue, La Selva		
E3517	Type 1 Engine	1 Captain, 2 Firefighters

Determining apparatus staffing levels is a challenging task. Leaders must decide what risks their crews are likely to face and what level of risk the community is willing to accept. Several noteworthy publications help agencies determine adequate staffing, including NFPA 1710 *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. This NFPA standard recommends staffing and deployment of career organizations.

The National Institute of Standards and Technology field studies on fire-ground and EMS incidents may also provide direction. Occupational health standards typically consider crew entry into a hazardous environment unsafe without an equal number of equipped and capable personnel outside the hazard zone. No one person goes in alone. However, this rule may be suspended if an emergency rescue is required.

Staff Scheduling Methodology

CFD staffs seven stations 24 hours per day, every day of the year, with a minimum of one Battalion Chief, seven Captains or Acting Captains, one Truck Operator, and 14 Firefighters. Each shift has an additional two roving Firefighters, which may augment an engine with four Firefighters but are typically used to fill vacancies. Each apparatus is equipped and staffed to provide ALS care. In addition, between 10 and 20 paid call Firefighters can augment staffing as needed, and CFD has access to several surrounding agencies for additional incident staffing. CFD utilizes a three-shift system, A-Shift, B-Shift, and C-Shift, and the shifts work a 48/96-hour schedule on a 24-day FLSA cycle. The work shifts begin at 7:00 a.m. and end at 7:00 a.m. the following day.

Personnel Management Systems

The fire service relies heavily on its people to accomplish its mission. Effectively managing, supporting, and organizing human assets must be adequate for successful service delivery. It also depends heavily on an organization's commitment to the human resources function and documented policies and programs. CFD has undergone significant changes in recent years. The consolidation of the Aptos/La Selva Fire Protection District (A/LSFPD) and Central Fire Protection District of Santa Cruz County became official on February 4, 2021. Because of this, many policies, rules, regulations, guidelines, and other personnel management systems are works in progress.

Policies, Rules, Regulations & Guidelines

Complex organizations, such as a fire agency, work under several rules. These rules can be the result of both internal and external forces. Federal, state, and local laws are external factors. Internal factors include operations and resource management. If broken, documented internal requirements, such as written policies, contracts, orders, memos, and guidelines, might have minor or severe legally defensible consequences. Un-documented rules, practices, and behavior patterns that evolve in an agency or workforce have various outcomes if broken. Agencies must approach official enforcement of these unwritten rules with caution as labor laws favor employees rather than the organization. Analyzing these unwritten rules is outside the scope of this section.

Emergency services organizations must comply with government-mandated regulations. City, State, County, and Federal laws apply to the organization and its employees with specific Firefighters and medical personnel functions. Rules that apply directly to CFD are primarily dictated by state and federal law, although local ordinances and code adoption play a role. An analysis of these laws is outside the scope of this report, and CFD should rely on periodic legal reviews to ensure compliance.

Some agencies are subject to Civil Service rules. Civil Service rules are Local, State, or Federal laws that govern the employer and employee relationship. CFD is not subject to Civil Service commissions or rules. However, CFD utilizes the Lexipol documentation system that offers generic policies with content similar to Civil Service rules.

Labor Contracts

CFD does not work under a labor contract. Instead, the District has signed a memorandum of understanding (MOU) between the Union and the Board of Directors. The MOU is similar to a contract and is authorized under a California state law known as the Meyers-Milias Brown Act. The International Association of Fire Fighters Local 3535 represents the uniformed members of CFD. The MOU is primarily concerned with operational staffing and compensation for its members.

Policies

Another formal type of rule is a policy. Policies are written for specific situations and include words like "shall" and "will" to indicate the required actions of the members. CFD's policy manual is currently being updated into a Lexipol system to reflect the agency since the merger. Their policies are specific to the agency and are the Lexipol vetted generic legally required documents.

Standing Orders

Because CFD provides ALS services and has a regional surge ambulance, they work under medical supervision. While working in their medical capacity, CFD employees utilize standing orders approved by their medical director and the EMSIA Chief. Individual protocols may be either a guideline, a policy, or both.

Guidelines & Procedures

CFD maintains standard operating guidelines primarily applicable to specific operational processes. These guidelines and operational plans are being reworked after the merger in 2021. In addition, they are being updated and placed into the Lexipol policy management system.

Human Resources

The administrative and support function designed to balance the needs and requirements of the employer and the employee is considered human resources. This function requires agencies to maintain specific compliance documentation and meet their compensation, tax, and benefits obligations. In addition, successful agencies actively manage the employment lifecycle and provide and oversee employee health and safety programs. CFD maintains staff, systems, and procedures specifically designed to accomplish and enhance the human resource function. The Human Resources Division is managed by the Director of Human Resources, a senior management position.

Personnel Reports & Recordkeeping

CFD maintains hard copy documents of the employee's files and information in its records management systems. Electronic records can be found in various computer systems such as Emergency Reporting®, Vector Scheduling (formerly Crewsense), and the County of Santa Cruz finance systems. Hard copy files are kept physically secured and have limited unsupervised access. In addition, the various electronic records management systems keep other data such as attendance, payroll, training, and miscellaneous daily information. These systems are secured utilizing standard information technology processes.

Compensation Systems

CFD's compensation system is based primarily on position and seniority. Compensation includes hourly wages and annual salaries, various paid and unpaid leave programs, health and life insurance, retirement benefits, longevity pay, and recognized holidays. The MOU defines this compensation for members of the IAFF Local 3535, including Battalion Chiefs, Fire Captains, safety employees, Firefighter/Paramedics, and Firefighters. The Fire Chief's compensation is defined in the employment agreement for that position. Compensation is defined in policies for employees not included in the MOU or under a separate employment agreement.

Testing, Measuring, & Promotional Processes

CFD is developing a skills evaluation process for operational personnel. They also have a performance evaluation system in place. However, both are works in progress, like many policies and procedures after the merger. A promotional process is in place for specific positions. CFD provides promotional processes assessment center for the Captain, Battalion Chief, Division Chief, and Assistant Chief positions. Other promotions do not have a defined process. A probationary period for promotions is defined in the MOU as 12 months, not including time served in an acting or temporary position.

Disciplinary Process

CFD has documented disciplinary processes. However, the two legacy agencies each have their disciplinary process that must be combined. Work is progressing towards consolidating these processes into a single policy defined in the Lexipol system.

Counseling Services

CFD provides mental health counseling to its employees. Critical incident stress debriefings are available to responders for specific incidents. In addition, there is an employee assistance program. Both services are provided by the Central Coast Critical Incident Stress Management Team.

Application & Recruitment Processes

CFD's hiring process includes a qualification review, reference review, background check, and an interview. Additional physical and written testing is required for Firefighters.

The District's paid call Firefighter program provides an avenue for recruitment. These paid call Firefighters undergo training and respond to emergencies. By responding to emergencies, they get introduced to the profession, and the District gets to evaluate their abilities. Other recruiting efforts appear minimal. Job announcements are posted on their website, although the postings found required a specific search. Jobs are also posted on a subscription service called CalOpps, a website resource that announces public employment opportunities.

Health & Wellness Programs

CFD has a health and wellness program defined for its operational personnel. A safety committee is established and run by the training and safety division. Operations personnel complete a medical examination at specific intervals. New hires complete an exam after the conditional job offer but before starting work. Current operations personnel complete an exam every two years until they reach age 50. After age 50, the medical exams are conducted annually. The physical examinations meet NFPA 1582: *Standard on Comprehensive Occupational Medical Program for Fire Departments.*

Introduction to the Stakeholder Interviews

Triton interviewed a wide variety of the fire district's internal and external stakeholders. The purpose of these interviews was to gain a better understanding of issues, concerns, and options regarding the emergency services delivery system, opportunities for shared services, and expectations from community members.

It is important to note that the information solicited and provided during this process was in the form of "people inputs" (stakeholders individually responding to our questions), some of which are perceptions reported by stakeholders. All information was accepted at face value without an in-depth investigation of its origination or reliability. The project team reviewed the information for consistency and frequency of comment to identify specific patterns and/or trends. Based on the information reviewed, the team identified a series of observations and recommendations and felt they were significant enough to be included in this report.

Stakeholders were identified within the following groups: Elected Officials, Department Heads, Business Community Leaders, Citizens, Chief Officers, Labor Leaders, Volunteer/Reserve Firefighters. Rank & File, and Administrative Staff. Details of the interviews can be found in Appendix B.

Capital Facilities & Equipment

Trained personnel, apparatus and vehicles, firefighting and emergency medical equipment, and fire stations are the essential capital resources necessary for a fire department to carry out its mission. No matter how competent or numerous the Firefighters are, if appropriate capital equipment is not available for operations personnel, it would be impossible for CFD to perform its responsibilities effectively. The essential capital assets for emergency operations are facilities, apparatus, and other emergency response vehicles. Therefore, this section of the report assessed CFD's fire stations, vehicles, and apparatus.

Fire Station Features

Fire stations play an integral role in delivering emergency services for several reasons. To a large degree, a station's location will dictate response times to emergencies. A poorly located station can mean the difference between confining a fire to a single room and losing the structure or survival from sudden cardiac arrest. Fire stations also need to be designed to adequately house equipment and apparatus and meet the needs of the organization and its personnel.

Fire station activities should be closely examined to ensure that the structure is adequate in size and function. Examples of these functions can include the following:

- Kitchen facilities, appliances, and storage
- Residential living space and sleeping quarters for on-duty personnel (all genders)
- Bathrooms and showers (all genders)
- Training, classroom, and library areas
- Firefighter fitness area
- The housing and cleaning of apparatus and equipment, including decontamination and disposal of biohazards
- Administrative and management offices, computer stations, and office facilities
- Public meeting space

In gathering information from CFD, Triton asked the District to rate the condition of its fire stations using the criteria from the following figure. The results will be seen in the figures that follow.

Figure 19: Criteria Utilized to Determine Fire Station Condition

Excellent	Like new condition. No visible structural defects. The facility is clean and well maintained. Interior layout is conducive to function with no unnecessary impediments to the apparatus bays or offices. No significant defect history. Building design and construction match the building's purposes. Age is typically less than ten years.
Good	The exterior has a good appearance with minor or no defects. Clean lines, good workflow design, and only minor wear of the building interior. Roof and apparatus apron are in good working order, absent any significant full-thickness cracks or crumbling of apron surface or visible roof patches or leaks. Building design and construction match the building's purposes. Age is typically less than 20 years.
Fair	The building appears to be structurally sound with a weathered appearance and minor to moderate non-structural defects. The interior condition shows normal wear and tear but flows effectively to the apparatus bay or offices. Mechanical systems are in working order. Building design and construction may not match the building's purposes well. Showing increasing age-related maintenance, but with no critical defects. Age is typically 30 years or more.
Poor	The building appears to be cosmetically weathered and worn with potentially structural defects, although not imminently dangerous or unsafe. Large, multiple full-thickness cracks and concrete crumbling on the apron may exist. The roof has evidence of leaking and multiple repairs. The interior is poorly maintained or showing signs of advanced deterioration with moderate to significant non-structural defects. Problematic age-related maintenance and major defects are evident. It may not be well-suited to its intended purpose. Age is typically greater than 40 years.

CFD Fire Stations & Facilities

The following pages describe the details and features of CFD's fire stations and other facilities.

Figure 20: Live Oak Station (1)

Address/Physical Location:	930 17th Avenue, Santa Cruz, CA 95062						
	**General Description:** This station is on the same lot as the administration building. It was rebuilt after significant earthquake damage to the old station. It is sufficient for modern firefighting operations. However, the parking area has no exterior security, and building security is easily defeated.						
Structure							
Date of Original Construction	1997 (major remodel 1/4 original building remain)						
Seismic Protection	Yes						
Auxiliary Power	Yes						
General Condition	Fair to Good						
Number of Apparatus Bays	Drive-through Bays	0		Back-in Bays	4		
ADA Compliant	No						
Total Square Footage	11,182						
Facilities Available							
Sleeping Quarters	7	Bedrooms	15	Beds	0	Dorm Beds	
Maximum Staffing Capability	7						
Exercise/Workout Facilities	Yes						
Kitchen Facilities	Yes						
Individual Lockers Assigned	Yes						
Bathroom/Shower Facilities	Yes						
Training/Meeting Rooms	No						
Washer/Dryer/Extractor	Yes						
Safety & Security							
Station Sprinklered	Yes						
Smoke Detection	Yes						
Decon & Biological Disposal	Yes						
Security System	No						
Apparatus Exhaust System	Yes						

Figure 21: CFD Thurber Station (2)

Address/Physical Location:	3445 Thurber Lane, Santa Cruz, CA 95065

General Description:
The Thurber station is the newest purpose-built fire station in the District. The two-story station has adequate space, and its design is sufficient for modern firefighting operations. There is no exterior security for the building or parking area. This facility has a diesel fuel tank for the apparatus.

Structure						
Date of Original Construction	2000					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Good					
Number of Apparatus Bays	Drive-through Bays	3	Back-in Bays	0		
ADA Compliant	No					
Total Square Footage	7,516					
Facilities Available						
Sleeping Quarters	5	Bedrooms	10	Beds	0	Dorm Beds
Maximum Staffing Capability	5					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer/Extractor	Yes					
Safety & Security						
Station Sprinklered	Yes					
Smoke Detection	Yes					
Decon & Biological Disposal	Yes					
Security System	No					
Apparatus Exhaust System	Yes					

Figure 22: CFD Soquel Station (3)

Address/Physical Location:	4747 Soquel Drive, Soquel, CA 95073

General Description:
This single-story station sits in a flood plain with an older design and is a remodeled volunteer fire station. The location has difficult apparatus access directly to a busy street with no traffic control. There is no parking security, and the security entrance is easily defeated.

Structure						
Date of Original Construction	1956					
Seismic Protection	Partial					
Auxiliary Power	Yes					
General Condition	Poor					
Number of Apparatus Bays	Drive-through Bays	0	Back-in Bays	5		
ADA Compliant	No					
Total Square Footage	4,534					
Facilities Available						
Sleeping Quarters	3	Bedrooms	6	Beds	0	Dorm Beds
Maximum Staffing Capability	3					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer/Extractor	No					
Safety & Security						
Station Sprinklered	No					
Smoke Detection	Yes					
Decon & Biological Disposal	Yes					
Security System	No					
Apparatus Exhaust System	Yes					

Figure 23: CFD Capitola Station (4)

Address/Physical Location:	405 Capitola Avenue, Capitola, CA 95010

General Description:
This station sits near the Capitola village area. It is the only location with easy access to the area during heavy traffic. The building is small and does not have sufficient space or facilities for modern firefighting operations. The building was recently refurbished after it flooded during heavy rains.

Structure						
Date of Original Construction	1967 (2012 interior remodel after the flood)					
Seismic Protection	Yes					
Auxiliary Power	No					
General Condition	Fair to Good					
Number of Apparatus Bays	Drive-through Bays	0		Back-in Bays	2	
ADA Compliant	No					
Total Square Footage	3,488					
Facilities Available						
Sleeping Quarters	3	Bedrooms	6	Beds	0	Dorm Beds
Maximum Staffing Capability	3					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer/Extractor	No					
Safety & Security						
Station Sprinklered	Yes					
Smoke Detection	Yes					
Decon & Biological Disposal	Yes					
Security System	No					
Apparatus Exhaust System	Yes					

Figure 24: CFD Aptos Station (5)

Address/Physical Location:	6934 Soquel Drive, Aptos, CA 95003

General Description:
Before the merger, this station was the headquarters for the Aptos/La Selva Fire District. It currently serves as a fire station, including the community risk reduction division and training. It is adequate for modern fire operations, but the CRR and training areas are insufficient for their functions.

Structure						
Date of Original Construction	1967					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Good					
Number of Apparatus Bays	Drive-through Bays	2		Back-in Bays	1	
ADA Compliant	No					
Total Square Footage	7,748					
Facilities Available						
Sleeping Quarters	4	Bedrooms	6	Beds	0	Dorm Beds
Maximum Staffing Capability	3					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer/Extractor	Yes					
Safety & Security						
Station Sprinklered	Yes					
Smoke Detection	Yes					
Decon & Biological Disposal	Yes					
Security System	No					
Apparatus Exhaust System	Yes					

Figure 25: CFD Rio Del Mar Station (6)

Address/Physical Location:	300 Bonita Drive, Aptos, CA 95003

General Description:
This was built as a residential structure with an oversized garage until a newer station could be constructed. It is a more modern two-story fire station with adequate design and space for a single fire company. Access to the bay from the living area is not efficient. It is currently undergoing light remodeling to move the workout area.

Structure						
Date of Original Construction	1973					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Fair					
Number of Apparatus Bays	Drive-through Bays	0		Back-in Bays	3	
ADA Compliant	No					
Total Square Footage	5,390					
Facilities Available						
Sleeping Quarters	4	Bedrooms	6	Beds	0	Dorm Beds
Maximum Staffing Capability	4					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer/Extractor	Yes					
Safety & Security						
Station Sprinklered	Yes					
Smoke Detection	Yes					
Decon & Biological Disposal	Yes					
Security System	No					
Apparatus Exhaust System	Yes					

Figure 26: CFD La Selva Beach Station (7)

Address/Physical Location:	312 Estrella Ave., La Selva, CA 95076

General Description:
This station is a remodeled volunteer fire station sitting very close to the beach in the La Selva community. It is older with limited facilities and does not meet the needs of modern fire operations. Firefighter parking is on the street, and internal security is easily defeated.

Structure						
Date of Original Construction	1969					
Seismic Protection	Yes (Retrofit in 1985)					
Auxiliary Power	Yes					
General Condition	Fair					
Number of Apparatus Bays	Drive-through Bays	0	Back-in Bays	2		
ADA Compliant	No					
Total Square Footage	2,910					
Facilities Available						
Sleeping Quarters	3	Bedrooms	3	Beds	0	Dorm Beds
Maximum Staffing Capability	3					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer/Extractor	Yes					
Safety & Security						
Station Sprinklered	Yes					
Smoke Detection	Yes					
Decon & Biological Disposal	Yes					
Security System	No					
Apparatus Exhaust System	Yes					

Figure 27: Central Santa Cruz Administration Facility

Address/Physical Location:	930 17th Avenue, Santa Cruz, CA 95062

General Description:
The administration building is purpose-built and sits on the same lot with the same address as the Live Oak station. The office space is currently all occupied with little room for growth by remodeling a large storage area. The station has external camera security and good overall security.

Structure						
Date of Original Construction	2001					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Good					
Number of Apparatus Bays	Drive-through Bays	N	Back-in Bays	N		
ADA Compliant	No					
Total Square Footage	7,676					
Facilities Available						
Sleeping Quarters	0	Bedrooms	0	Beds	0	Dorm Beds
Maximum Staffing Capability	16 administrative staff only					
Exercise/Workout Facilities	No					
Kitchen Facilities	Yes					
Individual Lockers Assigned	No					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	Two (small upstairs and large downstairs)					
Washer/Dryer/Extractor	No					
Safety & Security						
Station Sprinklered	Yes					
Smoke Detection	Yes					
Decon & Biological Disposal	No					
Security System	No					
Apparatus Exhaust System	No					

Figure 28: Central Santa Cruz Fleet Services Facility

Address/Physical Location:	410 Kennedy Drive, Capitola, CA 95010

General Description:
The fleet services facility is a commercial structure with three large bay areas and room for lifting fire engines and working on vehicles. In addition, the facility has two designated maintenance bays and one bay for long-term storage.

Structure							
Date of Original Construction	1974						
Seismic Protection	No						
Auxiliary Power	No						
General Condition	Fair						
Number of Apparatus Bays	Drive-through Bays	0			Back-in Bays	0	
ADA Compliant	No						
Total Square Footage	15,972						
Facilities Available							
Sleeping Quarters	0	Bedrooms	0	Beds	0	Dorm Beds	
Maximum Staffing Capability	5 staff in offices						
Exercise/Workout Facilities	No						
Kitchen Facilities	Yes (breakroom)						
Individual Lockers Assigned	Yes						
Bathroom/Shower Facilities	Yes						
Training/Meeting Rooms	No						
Washer/Dryer/Extractor	No						
Safety & Security							
Station Sprinklered	Partial (shop floor)						
Smoke Detection	Yes						
Decon & Biological Disposal	No						
Security System	Yes						
Apparatus Exhaust System	Yes						

Combined Summary of the CFD Fire Stations

The following figure is a summary list of some of the primary features of the Central Fire District of Santa Cruz County fire stations.

Figure 29: Summary of the CFD Fire Station Features

Fire Station	Square Footage	Apparatus Bays	Maximum Staffing	General Condition	Station Age
Station 1	11,182	4	7	Fair-Good	25 years
Station 2	7,516	3	5	Good	22 years
Station 3	4,534	5	6	Poor	66 years
Station 4	3,488	2	6	Fair-Good	55 years
Station 5	7,748	3	4	Good	55 years
Station 6	5,390	3	4	Fair	49 years
Station 7	2,910	2	3	Fair	53 years
Totals:	**42,768**	**22**	**35**	**Average:**	**46 years**

As shown in the preceding figure, none of CFD's seven fire stations were found to be in an "Excellent" condition, as most were rated as "Fair." CFD's fire stations range in age from 22 to 66 years, averaging just over 46 years old. However, some of the older stations have been upgraded and remodeled. The combined stations have the capacity to staff well over 35 personnel, if necessary, along with at least 20–22 apparatus.

Detailed Description of the Fire Stations

The fire stations were evaluated utilizing a checklist based on the National Fire Protection Association's *Standard on Fire Department Occupational Safety, Health, and Wellness Program*. Each facility was visually inspected for this report on June 21, 2022.

Generally, the District's stations are older and do not meet the requirements of modern firefighting and safety. As the firefighting environment has changed, the technology, equipment, and safety systems have changed to meet new demands. Older buildings do not typically have the space or engineering systems to meet the new environment. In addition, remodeled volunteer stations usually do not have adequate space and design for full-time staff.

Personal and equipment decontamination is critical in the current firefighting environment. Older buildings do not typically meet current decontamination requirements without significant upgrades. Every crew member should have access to facilities to decontaminate immediately after a fire event, and showers should allow for gender separation. In addition, there needs to be enough partitioned space to allow for gear and equipment to be thoroughly washed and dried. It should be constructed to control contamination in the living and working space of the station. Most of the facilities in the District do not meet this need.

While all structures require routine maintenance, fire stations require even more maintenance due to the continuous occupancy by a minimum of three adults. Multiple departures and returns of heavy apparatus also affect these structures. While there is an active maintenance program, and updates were in progress during the visit, there was evidence of ongoing maintenance deferral. The deferred maintenance is beginning to accumulate and will become more urgent.

The stations were generally clean and uncluttered. The few crews that AP Triton encountered during the station tours demonstrated ownership of their facilities. While some shared concerns about the facilities' ages and ongoing maintenance needs, they were possessive and proud of their homes. Most stations were provided with adequate auxiliary power units reported to be periodically inspected. However, only one station had inspection documentation available, which had not been completed since the generator was taken out of service. In addition, all stations were supplied with an exhaust removal system that appeared to be in use and operable.

Live Oak Station (Station 1)

The Live Oak station underwent a substantial remodel after the original station was damaged in an earthquake. Only one-quarter of the building is original. This station meets most modern Firefighter needs. The station has space for turnout gear, three individual showers in the living area and one on the bay floor, seven sleeping quarters, office space, mechanical workspace, a decontamination area, a kitchen, and a day room that doubles as the training space.

The four bays are large and adequately spaced for modern fire apparatus. However, the large center overhead door was inoperative during the site visit and had a history of failure. The flow from the living space to the bay was fragmented, but there were two stairwell access points from the upper levels. Building security was easily defeated by leaving doors unlocked or propped open. The parking area did not have protection measures in place. Ventilation in the turnout gear room was operational but not very robust. It was also noted that the lights on the main floor at the front entrance were inoperable.

Thurber Station (Station 2)

The Thurber Station was purpose-built as a fire station in 2000. The two-story station is large with three drive-through bays and meets most modern firefighting requirements. The station has five bedrooms but only three showers, sufficient for the ordinary staff of four. However, the lack of a 4th shower is inadequate for personal decontamination if needed. In addition, the crew members will need to enter living spaces to shower, potentially spreading undesirable chemicals in these areas. Separate spaces exist for offices, kitchen, day room, and workout facility. The space for the workout area appears insufficient, and some exercise equipment was placed in the hallways for use.

The station living area appears to be settling, which would result in cracks in walls and floors. In addition, the bathroom drainage is insufficiently graded, and there are reports of frequent plumbing problems. During the site visit, it was noted that a wireless network extender was mounted on the ceiling upstairs with an extension cord permanently affixed to the wall as a power source. Building security is maintained with mechanical locks that can be easily defeated and left unlocked.

Soquel Station (Station 3)

The Soquel Station was initially built as a volunteer fire station in 1956. The 5-bay station sits in a flood zone and does not meet modern firefighting requirements. It has no decontamination area or separate turnout gear storage. The three bedrooms and two bathrooms do not allow for staff size growth.

The height of the bay doors creates a very tight clearance for modern apparatus. The bays are emptied directly into a busy street with no traffic control devices. Crew lockers are in a room that is only accessible from the bay. The workout area is in the bay, although there is a plan and funding to partition the workout area and create a separate turnout gear room.

Capitola Station (Station 4)

The Capitola Station is a small 1967 building that underwent a light interior remodel after being flooded in 2012. The single bathroom lacks privacy and is not sufficient for mixed-gender crews. There is no decontamination area provided, and laundry facilities are insufficient. Turnout gear is stored separately from the bay, but the door has no closer and was open during the site visit. Building parking is inadequate, and vehicles must be shuffled during shift changes. Building security is with manual locks that are easily defeated and can be left unlocked.

The two bays are emptied onto a busy street with no traffic control requiring a specialized backing policy. Even with this policy, there is abundant evidence of backing damage on the building due to the very tight turns necessary to enter. The bays are too small for modern apparatus with limited upper clearance, and side-to-side distance prohibits multiple apparatus doors from opening simultaneously. The gas generator in the bay was inoperative. The generator inspection documentation ended in November when it went out of service. The United States Geological Service has a seismometer in the building. However, the air compressor gives the seismometer false readings when it runs due to its proximity. In addition, a County repeater in the facility is not on emergency backup power. An emergency phone was still present outside the building but was inoperative and should be removed to limit citizen confusion during an emergency.

While the building is inadequate, the location is critical for providing services to the Capitola Village area. Due to heavy traffic, the crew from this station can respond to the village, while other apparatus find it challenging to gain access.

Aptos Station (Station 5, CRR, & Training Facility)

The Aptos Station was built in 1967, with an addition in 1992 and earthquake mitigation in the late '90s. This station used to serve as the Aptos/La Selva Fire District's offices and currently houses a response crew, the Community Risk Reduction (CRR) Division, and training. The station is partially adequate for the response crew's modern firefighting needs. It has sufficient bay space for engines, lower clearance trucks, and enough rooms to house the assigned staff. However, there is little room for staffing growth. The current truck company in service will not fit in the bays due to height limits. The workout area is in the bay. Laundry facilities are available for both uniforms, and extractors are available for turnout gear. There is a County-approved wash rack in the rear. This station has diesel and gasoline fuel tanks for district apparatus and vehicles.

For its age, the building is in good condition. However, some concrete in the rear and on the apron needs repair. One significant concern is the size of the sewer main. When the addition was added in 1992, the decision was made to drain the entire building into the existing 2.5-inch sewer main. Because of the small pipe size, the number of facilities that can be used simultaneously is limited. In addition, only one extractor can be used at a time. The emergency generator appeared in good condition, but weekly inspection checks could not be located.

The CRR area is on the lower floor of the administrative side. However, the size is insufficient for the current staff of 11 employees and allows for only 10 desks. Parking is also inadequate for the crews, CRR, and training. The building is secure, but there is no parking security.

The training area is likewise limited in space. The drill area is small. Because the facility is shared, it is strained if there is training during regular CRR operational hours.

Rio Del Mar Station (Station 6)

The Rio Del Mar station was built in 1973 with no significant improvements and evidence of needed maintenance. The two-story, three-bay station was constructed as a temporary station as a single-family residence with an oversized garage. With four bedrooms and three bathrooms with showers, the facility is of adequate size for the assigned staff of three. However, the building does not meet modern firefighting standards. For example, there is no decontamination area, and the workout facility is currently in the bay. There was evidence during the visit of the intent to move the workout facility into the living space and out of the bay, but the work was not complete.

The bay was large enough for engines but not deep enough for a truck company. Access to the bays is problematic and not conducive to the rapid response from the living area. Building security is accomplished with mechanical locks that are easily defeated and can be left unlocked. There was an emergency phone on the exterior of the building, which was inoperative and should be removed to reduce citizen confusion in the event of an emergency. The emergency generator appeared in good working order, but weekly inspection checks could not be located.

La Selva Beach Station (Station 7)

The La Selva Beach Station was built in 1969 as a volunteer fire station. It is located near the ocean and does not provide centralized coverage for its response capabilities. The last improvements to the building were accomplished in 1985, and the building needs updating and repair. The building does not meet modern firefighting needs. It does not meet the requirements for a mixed-gender crew. In addition, it has no area for decontamination, and the bays are small, crowding modern firefighting apparatus. There is no staff parking. Instead, they are required to park on the street.

The generator requires occasional fueling, and because the surrounding public buildings were updated, refueling is a challenge and requires special equipment. The workout area is in the bay, and it was questionable if the exhaust removal system was operational. Some emergency lighting was inoperative. There was an emergency phone on the exterior of the building, which was inoperative and should be removed to reduce citizen confusion in the event of an emergency.

Fleet Services

The fleet services facility is based in a 1974 warehouse structure. There are three overhead doors allowing access to a large maintenance floor. Currently, there are three bay stations, one for long-term apparatus storage based on need. Additional area is utilized by logistics to store and maintain district equipment and supplies. The facility has an external shed and a steel storage box for extra supplies and the historic fire engine. The size of the bays is adequate to operate apparatus lifts for ease of access, avoiding maintenance pits. There are plans to update the interior for improved office, storage, break space, and logistics areas. There are cracks on the exterior of the building from earlier earthquake activity. However, these are monitored to ensure they do not affect structural strength. Concrete failure is evident in the apparatus maintenance area, identified by staff, and plans are in place to repair it when funding becomes available. Building security is good with cameras, adequate locking mechanisms, and alarms. Other occupants of an adjacent building share access. This is of concern but is being managed by maintaining a good working relationship with the occupants of the other warehouse building on site.

Administration

The administration building is a 2001 purpose-built two-story office building on the same lot as the Live Oak Station. The building is modern, appropriately designed, in good repair, and has adequate space for current staffing levels.

Security is good with security cameras and good locks. Most offices are assigned and used, leaving little room for additional staffing if needed. A large storage area on the second floor can be remodeled for extra workspace, requiring the records storage to move.

CFD Capital Apparatus & Equipment

Fire apparatus and other emergency response vehicles must be sufficiently reliable to transport Firefighters and equipment rapidly and safely to an incident scene. In addition, such vehicles must be properly equipped and function appropriately to ensure that the delivery of emergency services is not compromised. Most apparatus maintenance is done by the District's internal fleet maintenance.

As a part of this study, Triton requested that CFD provide a complete inventory of its fleet (suppression apparatus, command and support vehicles, specialty units, etc.). For each vehicle listed, CFD was asked to rate its condition utilizing the criteria described in the following figure, which will be shown in the apparatus inventory figures.

Figure 30: Criteria Used to Determine Apparatus & Vehicle Condition

Components	Points Assignment Criteria	
Age:	One point for every year of chronological age, based on the date the unit was originally placed into service.	
Miles/Hours:	One point for every 10,000 miles or 1,000 hours	
Service:	1, 3, or 5 points are assigned based on service type received (e.g., a pumper would be given a 5 since it is classified as severe duty).	
Condition:	This category considers body condition, rust, interior condition, accident history, anticipated repairs, etc. The better the condition, the lower the assignment of points.	
Reliability:	Points are assigned as 1, 3, or 5, depending on the frequency a vehicle is in for repair (e.g., a 5 would be assigned to a vehicle in the shop 2 or more times per month on average; while a 1 would be assigned if in the shop on average once every 3 months or less.	
Point Ranges	**Condition Rating**	**Condition Description**
Under 18 points	Condition I	Excellent
18–22 points	Condition II	Good
23–27 points	Condition III	Fair (consider replacement)
28 points or higher	Condition IV	Poor (immediate replacement)

The following figure lists the inventory of CFD's primary frontline apparatus.

Figure 31: CFD Frontline Apparatus Inventory (2022)

Apparatus	Type	Manufacturer	Year	Condition	Features
Type 1 Engines					
Engine 3511	Type 1	Rosenbauer	2018	Excellent	1500 gpm/500 gal.
Engine 3512	Type 1	Pierce Dash	2007	Poor	1250 gpm/500 gal.
Engine 3513	Type 1	Pierce Dash	2013	Fair	1250 gpm/500 gal.
Engine 3514	Type 1	Rosenbauer	2018	Excellent	1500 gpm/500 gal.
Engine 3515	Type 1	Rosenbauer	2015	Fair	1500 gpm/750 gal.
Engine 3516	Type 1	Rosenbauer	2017	Excellent	1500 gpm/750 gal.
Engine 3517	Type 1	Pierce Arrow	2012	Poor	1500 gpm/500 gal.
Type 3 & Type 6 Engines					
Engine 3536	Type 3	Pierce	2007	Poor	500 gpm/500 gal.
Engine 3537	Type 3	Pierce	2007	Poor	500 gpm/500 gal.
Engine 3538	Type 3	Pierce	2007	Poor	500 gpm/500 gal.
Engine 3543	Type 6	Rosenbauer	2018	Excellent	500 gpm/300 gal.
Other Apparatus					
Truck 3572	Aerial	Rosenbauer	2018	Excellent	2000 gpm/300 gal., 100'
Medic 3566	Type III	Horton	2008	Good	Transport capable
W3552	Tender	Westmark	1990	Poor	500 gpm/2000 gal.
W3556	Tender	Rosenbauer	2018	Excellent	500 gpm/2000 gal.

As shown in the preceding figure, three of CFD's seven engines were rated as "Excellent," two as "Fair," and two as "Poor." All three of CFD's Type 3 brush units were rated as "Poor."

CFD also maintains a USAR rescue unit, a pickup truck for wilderness response, and a breathing support vehicle with a compressor. In addition, three Type 1 structural engines are kept in reserve, along with a flatbed utility trailer.

The following figure lists the current inventory of command and staff vehicles utilized by the Central Fire District of Santa Cruz County.

Figure 32: CFD Command & Staff Vehicles

Unit	Assigned To	Manufacturer	Year	Condition
C3500	Fire Chief	Chevy Tahoe	2016	Good
C3501	Assistant Chief	Chevy Tahoe	2015	Good
C3502	Operations Division	Ford F250	2019	Excellent
C3503	Support Division	Ford F250	2018	Excellent
B3504	Training/Safety BC	Ford F250	2019	Excellent
B3505	On-Duty BC	Ford F350	2015	Fair
B3506	BC Backup/STEN	Ford F250	2018	Excellent
B3507	Training Captain	Ford F150	2011	Fair
B3508	Training Captain	Ford F150	2013	Fair
B3509	EMSIA	Ford F150	2013	Good
Community Risk Reduction				
3580	Fire Marshal	Ford Escape	2019	Excellent
3581	Deputy Fire Marshal	Ford Escape	2018	Excellent
3582	Fire Inspector	Ford Escape	2019	Excellent
3583	Fire Inspector	Ford Escape	2018	Excellent
3584	Fire Inspector	Ford Escape	2019	Excellent
3596	DSI	Ford Focus	2015	Excellent

As evidenced by the preceding figure, most of the command units are in an "Excellent" or "Good" condition, while the staff vehicles assigned to Fire Prevention are relatively new and all in excellent condition. Additional vehicles are utilized for logistics and by Fleet Services. The Central Fire District of Santa Cruz County also maintains two rescue watercraft in "Good" and "Excellent" condition—a 2021 Yamaha and a 2018 Kawasaki.

Apparatus Discussion

Subsequent to the consolidation, CFD identified that some fire stations are physically incapable of housing specific apparatus. The following figure is a matrix based on a spreadsheet prepared by the Central Fire District of Santa Cruz County.

As shown, four of the frontline engines and one reserve engine cannot be housed in Stations 3 or 4. The District's sole aerial and one of its water tenders can only be placed at Station 2.

Figure 33: CFD Fire Station Capacity for Apparatus Housing[13]

Apparatus	St. 1	St. 2	St. 3	St. 4	St. 5	St. 6	St. 7
Engine 3511	Yes	Yes	**No**	**No**	Yes	Yes	Yes
Engine 3512	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3513	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3514	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3515	Yes	Yes	**No**	**No**	Yes	Yes	Yes
Engine 3516	Yes	Yes	**No**	**No**	Yes	Yes	Yes
Engine 3517	Yes	Yes	**No**	**No**	Yes	Yes	Yes
Engine 3536	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3537	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3538	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3543	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Truck 3572	**No**	Yes	**No**	**No**	**No**	**No**	**No**
Medic 3566	Yes	Yes	Yes	Yes	Yes	Yes	Yes
W3552	**No**	Yes	**No**	**No**	**No**	**No**	**No**
W3556	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3522 (R)	Yes	Yes	**No**	**No**	Yes	Yes	Yes
Engine 3523 (R)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Engine 3524 (R)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Although most of CFD's current apparatus can be housed at any or most of the stations, some cannot be deployed from the most strategic locations—this is particularly true of Truck 3572.

Capital Medical & Rescue Equipment

CFD keeps an inventory of 14 Physio-Control® Lifepak® 15 Monitor/Defibrillators manufactured in 2009. These models are fully equipped with capabilities that include 12-lead, SpO_2, $etCO^2$, and CO monitoring, and blood pressure and temperature measurement.

The District keeps two ambulance cots manufactured by Stryker Medical, only one of which is powered. In addition, CFD has multiple eDRAULIC™ hydraulic extrication tools with various cutters, spreaders, and rams.

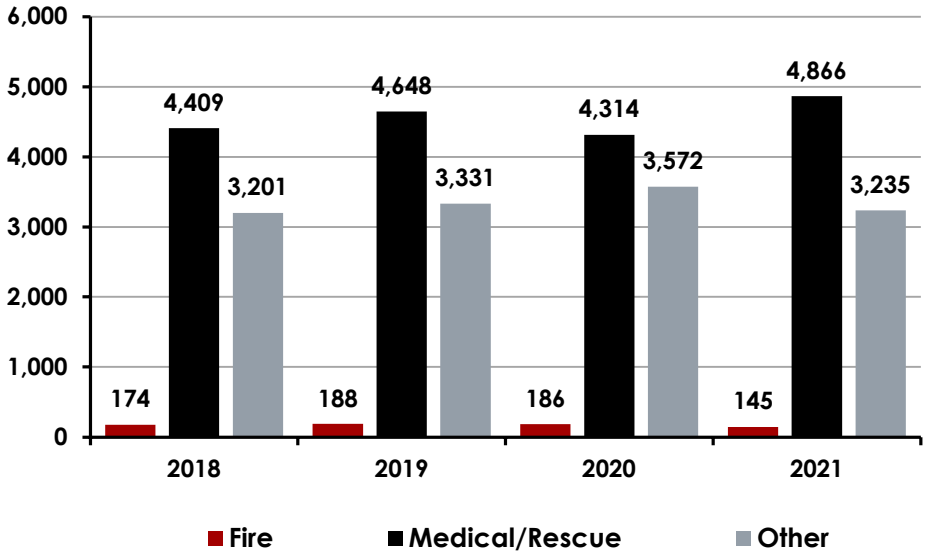
Service Delivery & Performance

In analyzing CFD's service delivery and performance, incident and unit response data were requested by the study team for the calendar years 2018–2021. The fire district provided data from its records management system (RMS).

Service Demand

The following figure shows the response workload by general type for the last four years. The total response workload has increased by 5.9% over the four full-year periods. Fire call types declined 16.6% (from a very small base) over the period, EMS still shared the vast majority of the total volume; it increased by 10.3% and was increasing before the pandemic effects of less traffic and less personal interaction. All other types of calls had decreased by 1%.

Figure 34: CFD Response Workload History (2018–2021)



CFD responded to over 32,000 incidents over the four-year period. The following figure shows incidents by type. Emergency medical responses were the most common incident types, comprising 57% of the total responses.

Figure 35: Responses by Incident Type

Incident Type Description	Percent of Total*
Medical/Rescue	57%
Good Intent	21%
Service Call	11%
False Alarm	6%
Hazmat	3%
Fire	2%
Special/Weather	< 1%
Hazard	< 1%

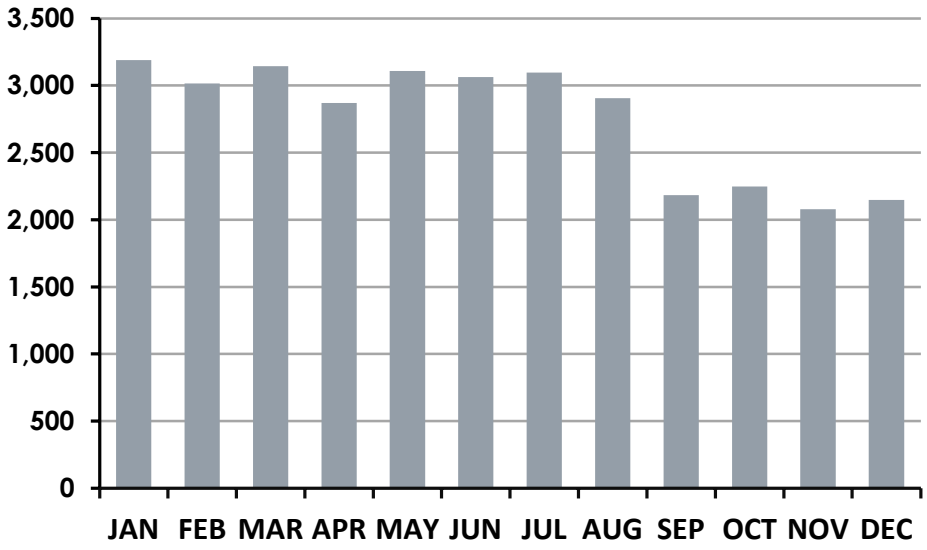
*Percentages rounded to the nearest integer.

Temporal Analysis

This analysis shows how responses change in volume over various measures of time. For example, the following figure shows the change in volume over the months during the study period, indicating seasonality in the response pattern.

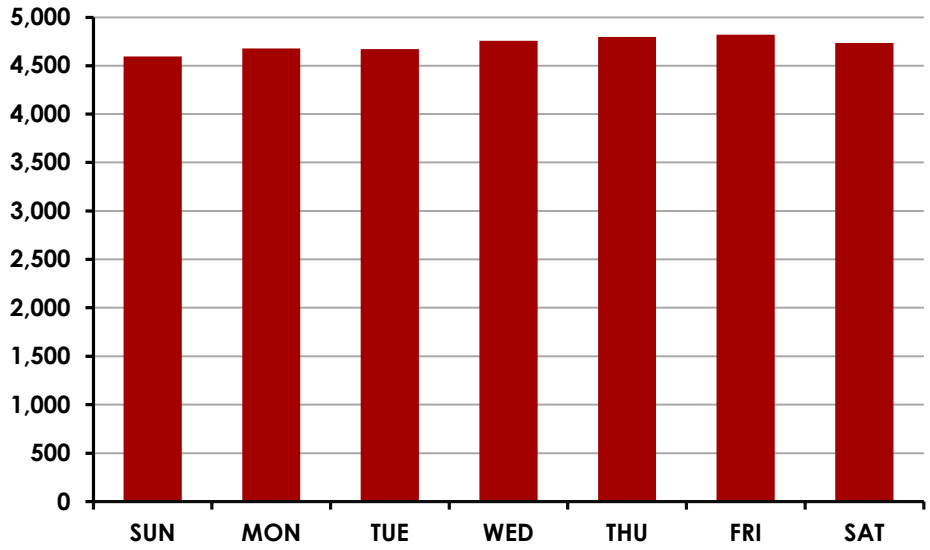
The busiest month for CFD has been January, after which total monthly volume generally declines until September, then declines by a great deal.

Figure 36: Monthly Response Workload (2018–2021)



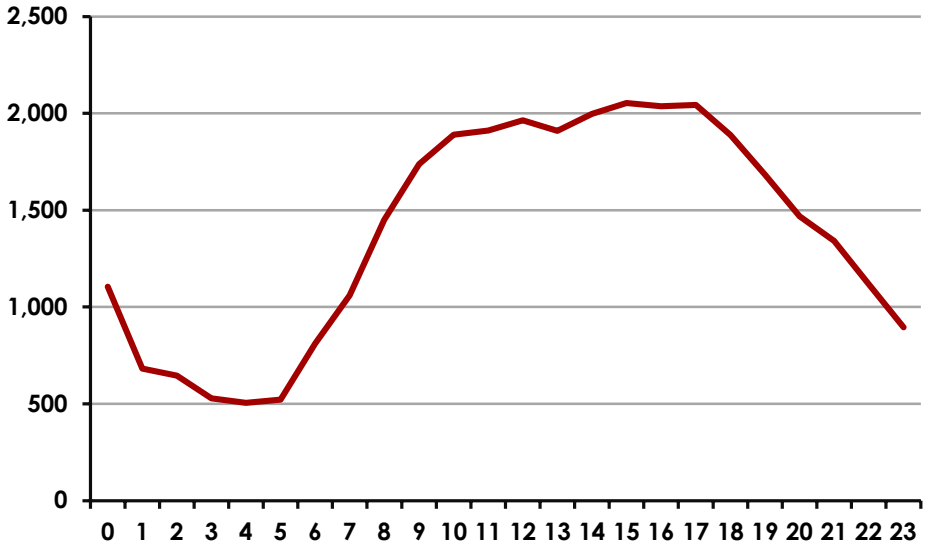
Next, the response workload is shown by the day of the week. Thursdays and Fridays tend to have slightly more responses.

Figure 37: Daily Response Workload (2018–2021)



Response workload by the hour typically shows fire department activity higher during daytime hours, as in the case of CFD. Response workload correlates with the time of day in which people are most active. In CFD's response area, the department's activity begins to increase from 6:00 a.m. to 7:00 a.m. until it reaches its peak at 5 p.m. This level is generally maintained until it gradually decreases at the 6:00 p.m. hour, when it begins to decrease more rapidly.

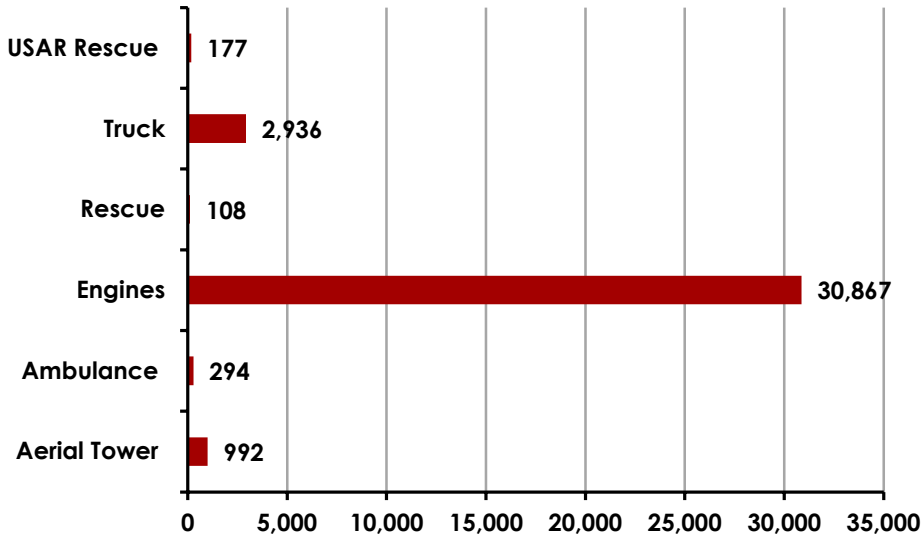
Figure 38: Hourly Workload



Response Unit Workload

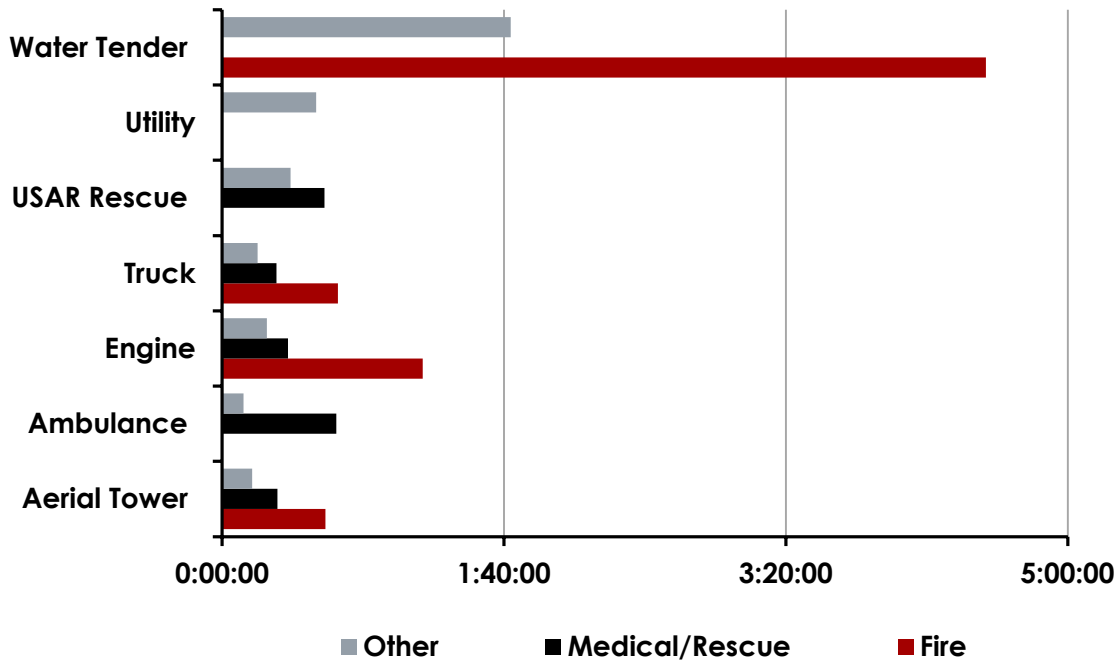
The response workload for each CFD apparatus type is shown in the following figure. Many incidents, like structure fires and severe motor vehicle collisions, require more than one unit to respond. Engines are the busiest units, followed by ladder trucks.

Figure 39: Unit Workload



The amount of time spent on the scene can affect Firefighters' workload and the availability of resources for the next, or concurrent, incident. The following figure details the average amount of time each unit was committed to a scene type. Understandably for fire incidents, the amount of time committed to the scene by a unit is longer than for the other call types.

Figure 40: Average Unit Time on Scene

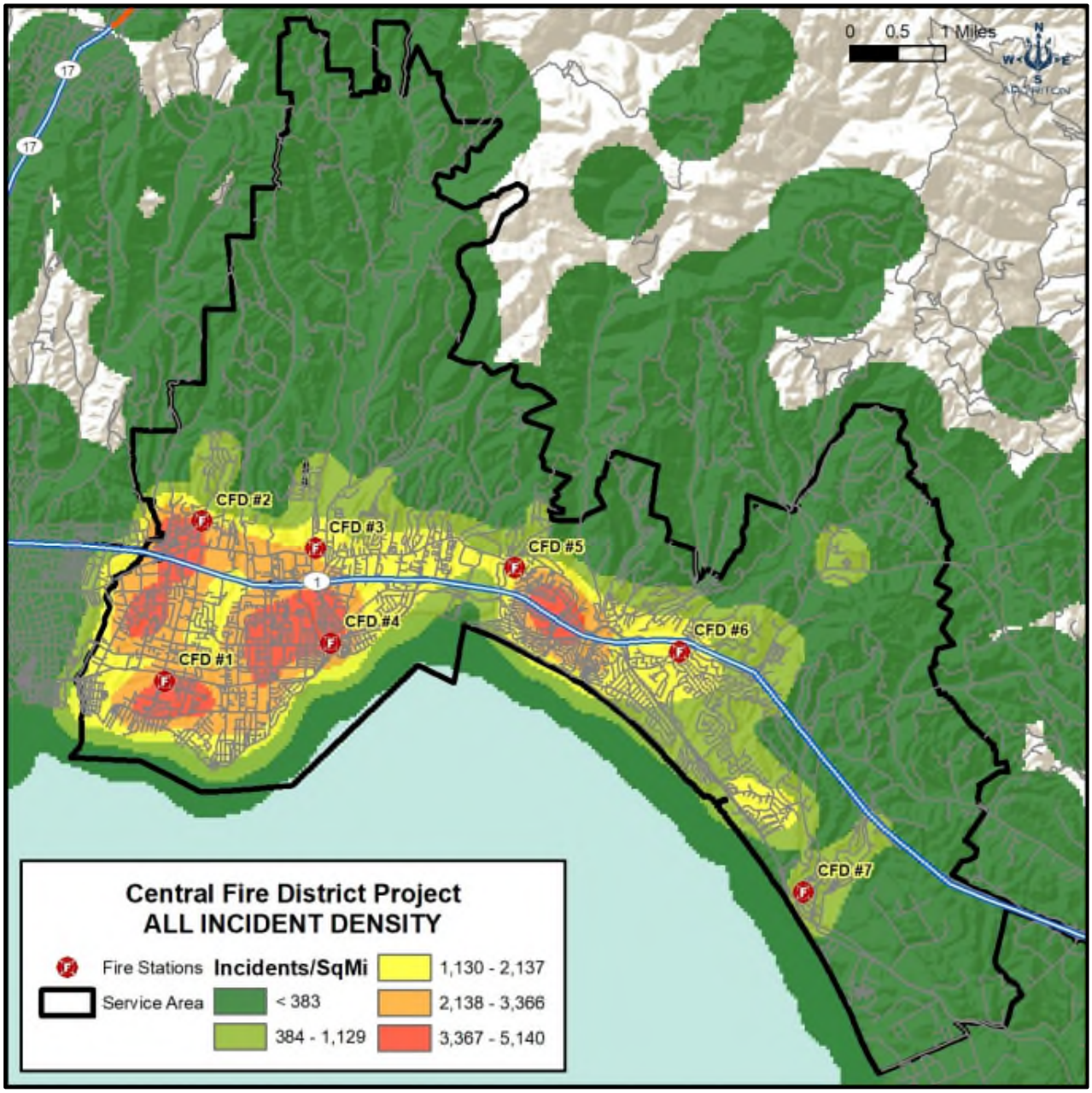


Water tenders and engines spend the most amount of time on the scene. The remaining frontline units spend a similar amount of time on the scene.

Spatial Analysis

AP Triton also examined response workload geographically. The distribution of heavier service demand can be evaluated against the location of the fire station. The following figure shows the density of response workload during the study period.

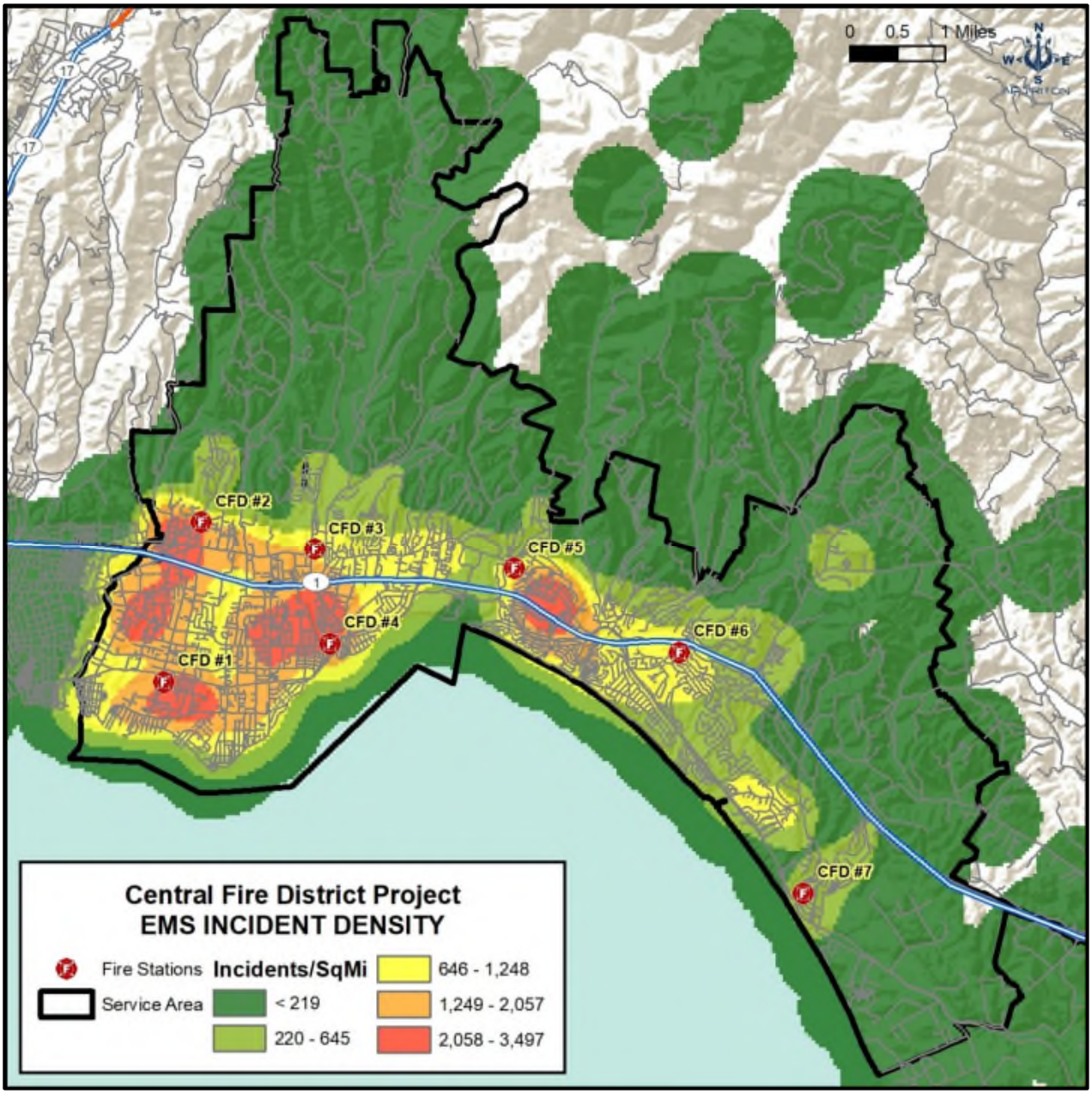
Figure 41: All Incident Demand Density



The previous figure reflected the predominance of emergency medical incidents within the dataset. Note that most demand is located near Stations 1–4. There is a high level of demand for services located near Station 5 as well.

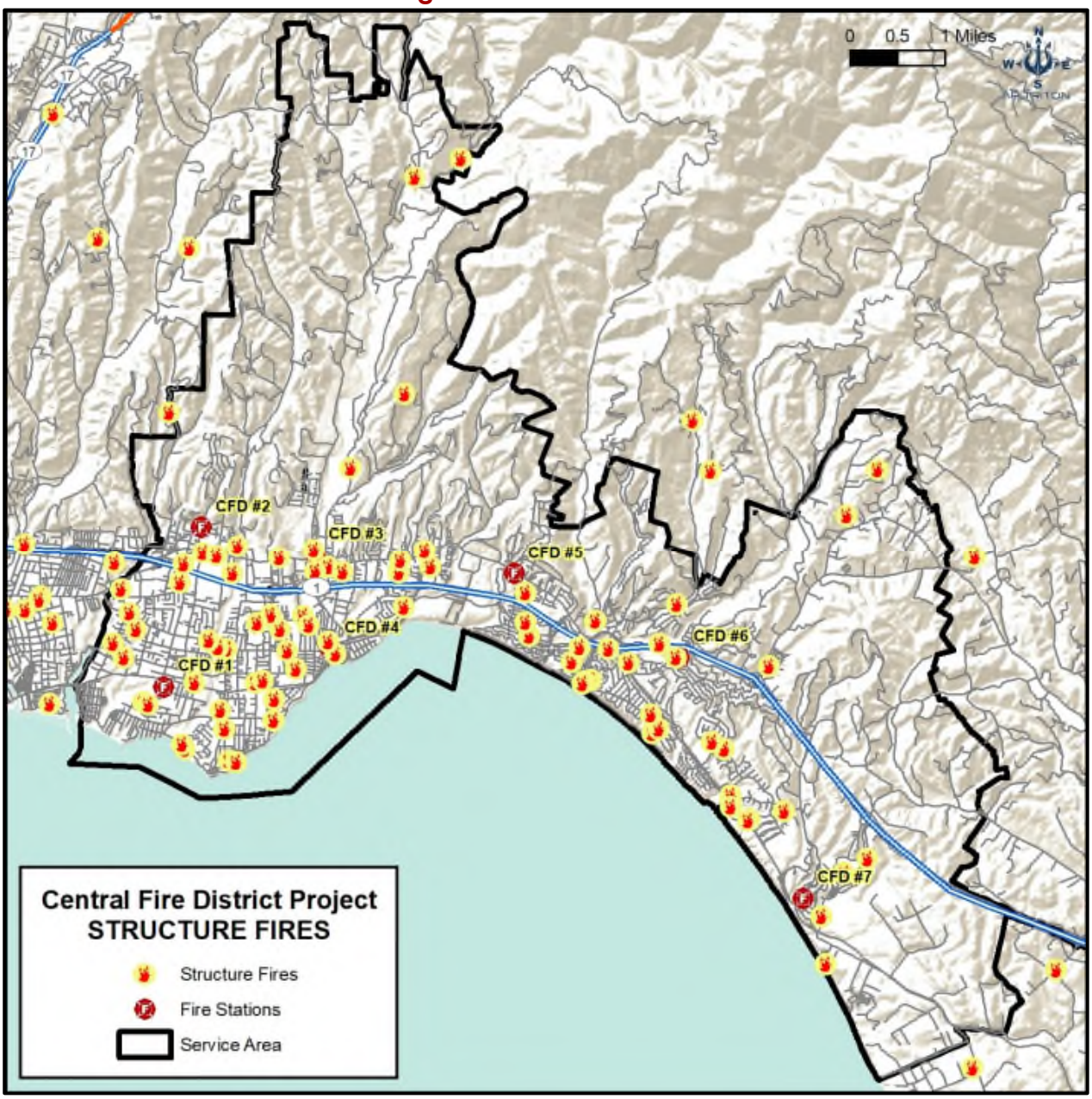
Because of the predominance of EMS-type incidents in the workload data, this map mimics the map of overall demand density.

Figure 42: EMS Incident Demand



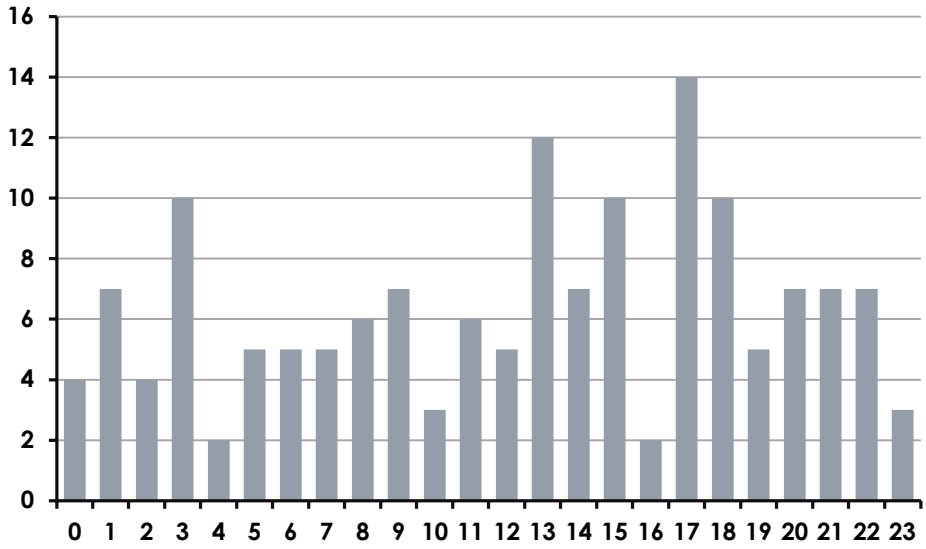
The following figure shows the level of structure fire events within the Central Fire District during the study period.

Figure 43: Structure Fires



The following figure reveals that most structure fires occur during the afternoon and early evening hours.

Figure 44: Structure Fires by Hour of Day



The following figure details the addresses to which CFD responded most frequently.

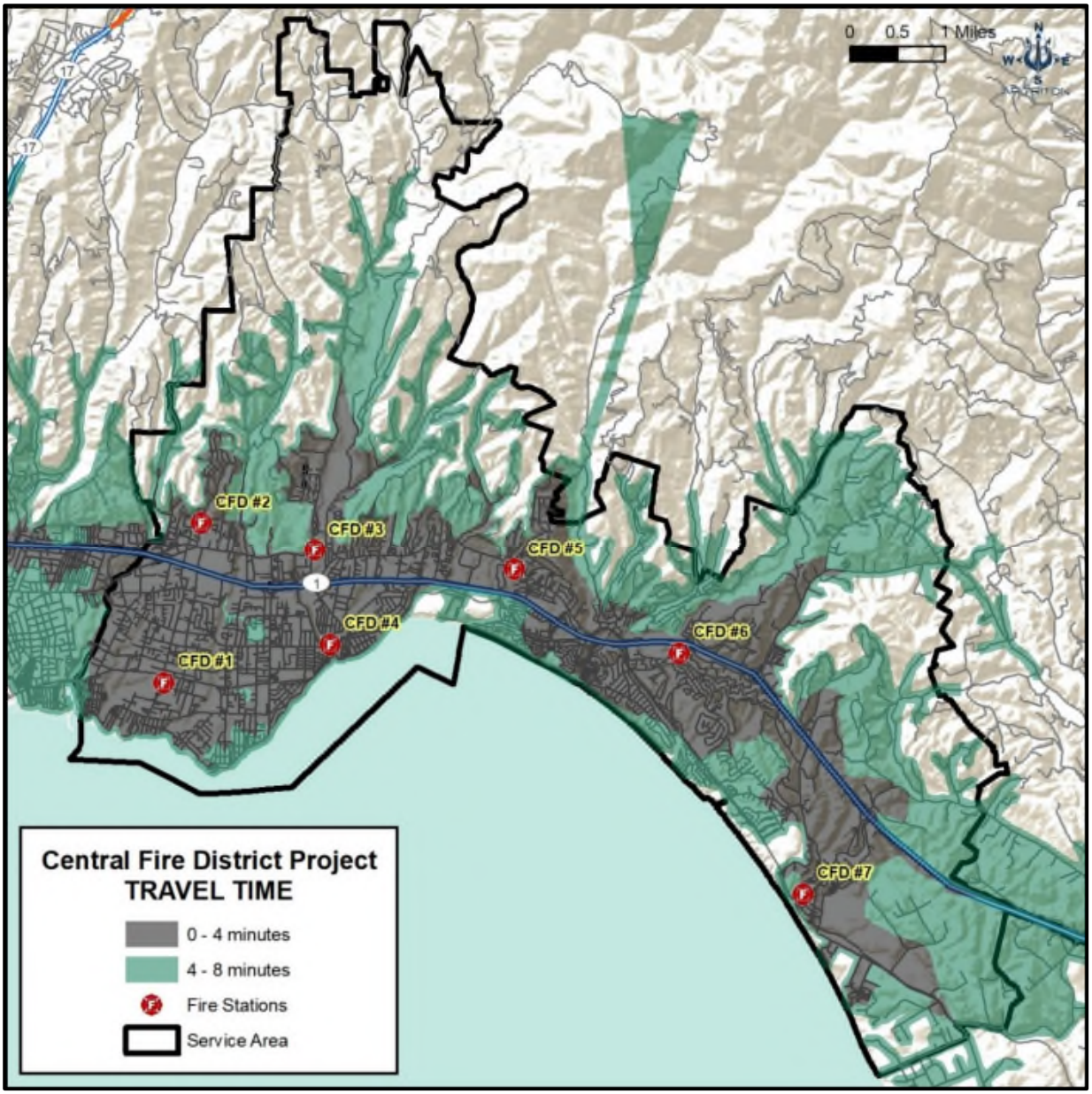
Figure 45: Frequent Response Addresses

Location	Facility	No. of Calls
2250 SOQUEL AVE Santa Cruz	Behavioral Health Center	166
3801 CLARES ST Capitola	Dialysis Center	159
125 HEATHER TER Aptos	Assisted Living	153
675 24TH AVE Santa Cruz	Assisted Living	123
1115 CAPITOLA RD Santa Cruz	Rehab Facility	109
2720 41ST AVE Soquel	Shopping Center	107
3400 PAUL SWEET RD Santa Cruz	Retirement Community	105
1935 WHARF RD Capitola	Rehab Facility	103
1555 SOQUEL DR Santa Cruz	Medical Facility	88

Resource Distribution

CFD operates out of seven fire stations. The following figure illustrates the street sections that can be reached from each station within 4 and 8 minutes or less of travel time. The data is based on posted road speeds, modified to account for turning, stops, and acceleration. They do not consider congestion, construction, weather, darkness, and other non-controllable factors.

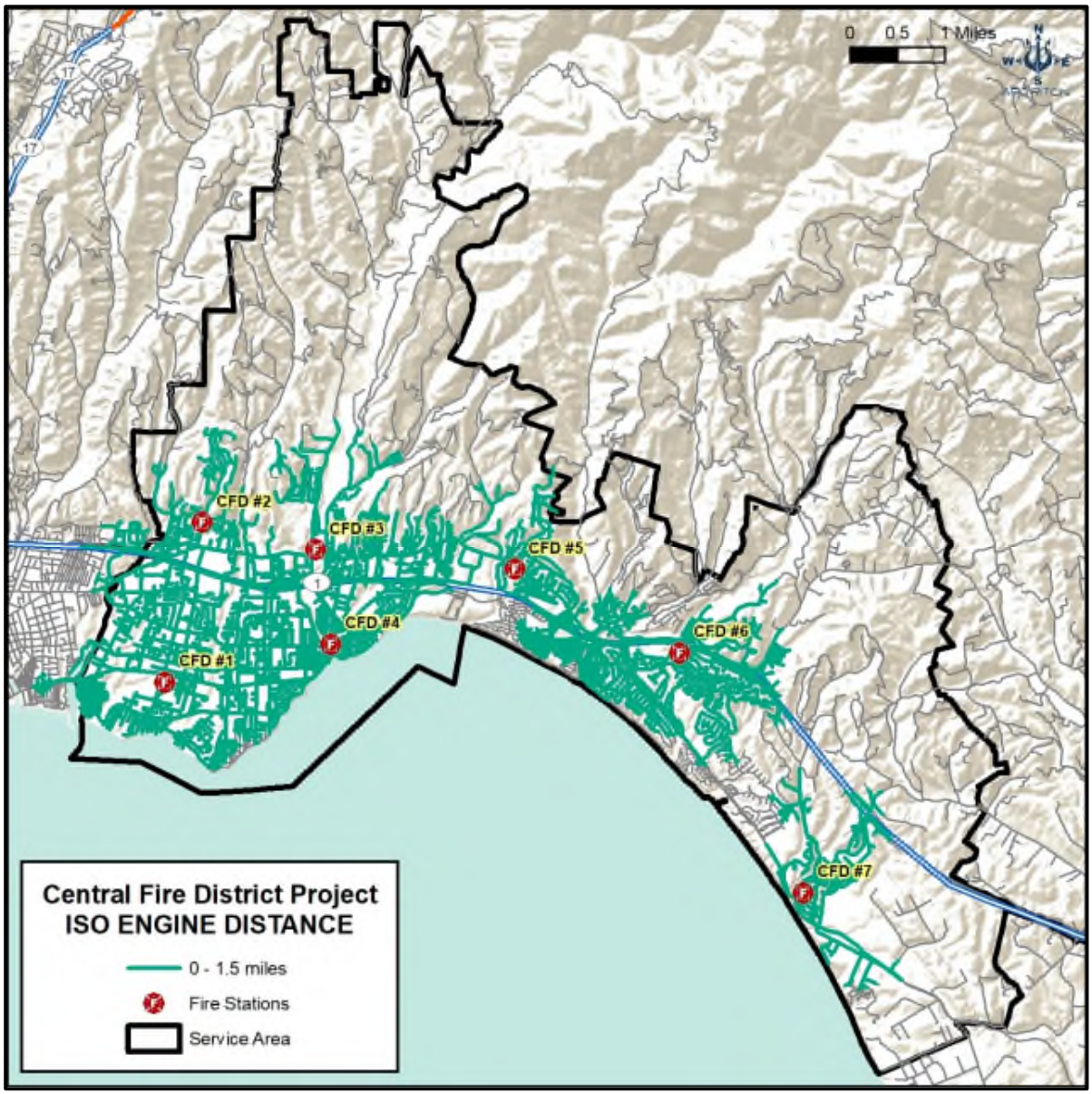
Figure 46: Travel Time Extent



The overall coverage of fire incident demand is 85% within 4 minutes of travel time and 98.5% within 8 minutes, presuming engines are available and responding from their assigned stations.

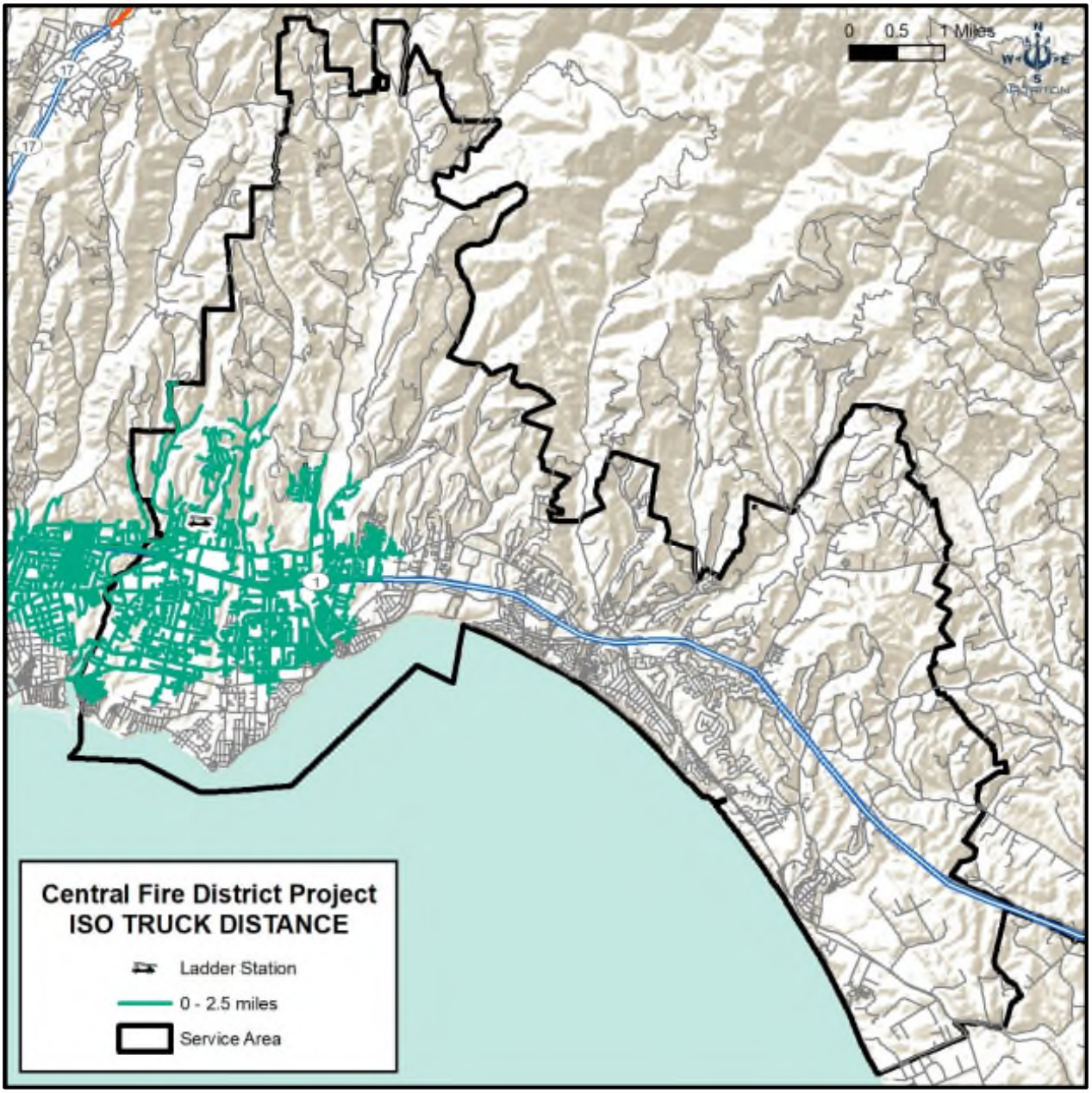
The Insurance Services Office (ISO), a leading insurance rating service for property insurers, recommends the best rates if a property is within 1.5 miles from a fire station in an area with hydrants. The following figure shows these distances from the stations with an engine assigned.

Figure 47: ISO Engine Distance



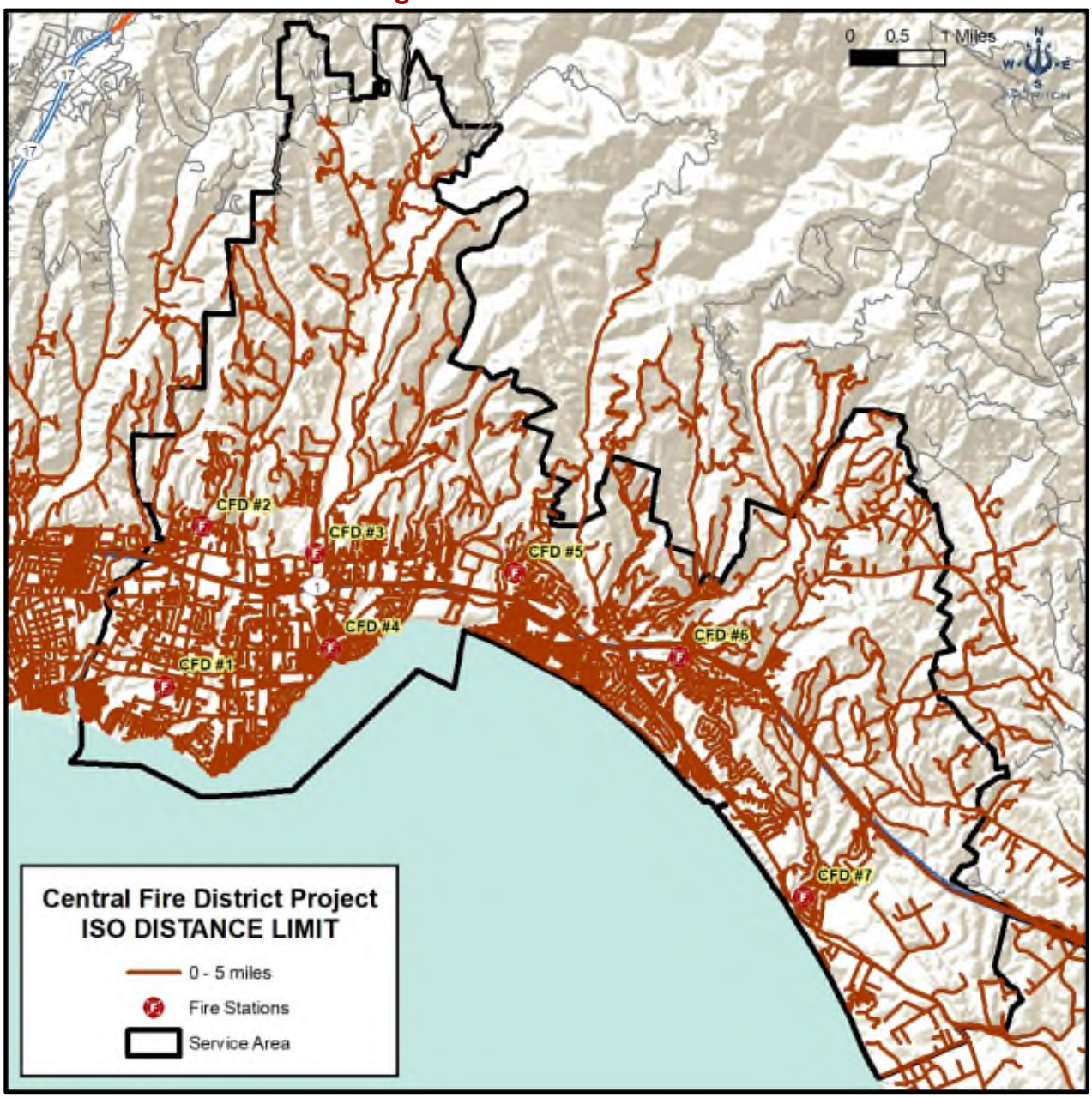
A ladder truck is a specialized apparatus. With its long reach of a ladder or platform, it can deliver water to multi-story buildings or buildings with large roofs, such as a "big box store." These Trucks are positioned where these types of buildings are more plentiful. The following figure shows the recommended 2.5-mile distance from the stations that have a ladder truck apparatus.

Figure 48: ISO Ladder Truck Distance



Finally, for a rating that is within the range of the ISO ratings, a property must be within five miles of a fire station. This is shown in the following figure.

Figure 49: ISO Distance Limit



Effective Response Force Capability Analysis

Effective Response Force (ERF) is the number of personnel and apparatus required to be present on the scene of an emergency incident to perform the critical tasks in such a manner to effectively mitigate the incident without unnecessary loss of life or property. The ERF is specific to each type of incident and is based on the critical tasks to be performed.

The response time goal for delivering the full ERF to a building fire is within 9 minutes, 20 seconds, 90% of the time. CFD has defined the minimum full effective response force for moderate-risk building fires as four (4) fire engines, one (1) ladder truck, and two (2) Battalion Chiefs, for a total of 19 Firefighters, including resources from neighboring fire agencies. While several units are dispatched when a fire is reported, once the first unit arrives and the scene is assessed, responding units may be canceled while en route.

Impact of Mutual Aid

CFD relies upon mutual aid from adjacent agencies during a structure fire and other incidents when needed. These are very important relationships that enable the department to ensure it has sufficient staff and apparatus to fight the fire. The following list catalogs the adjacent mutual aid agencies.

- Santa Cruz City
- Scotts Valley
- Branciforte
- Watsonville
- County Fire
- Felton
- Zayante
- Pajaro Valley
- Ben Lomond
- North County

CFD reciprocates by providing aid to its adjacent agencies when requested. According to CFD data, 3.6% of the incidents were recorded as providing mutual aid. The most mutual aid was given to a Santa Cruz postal address, with Aptos the second most.

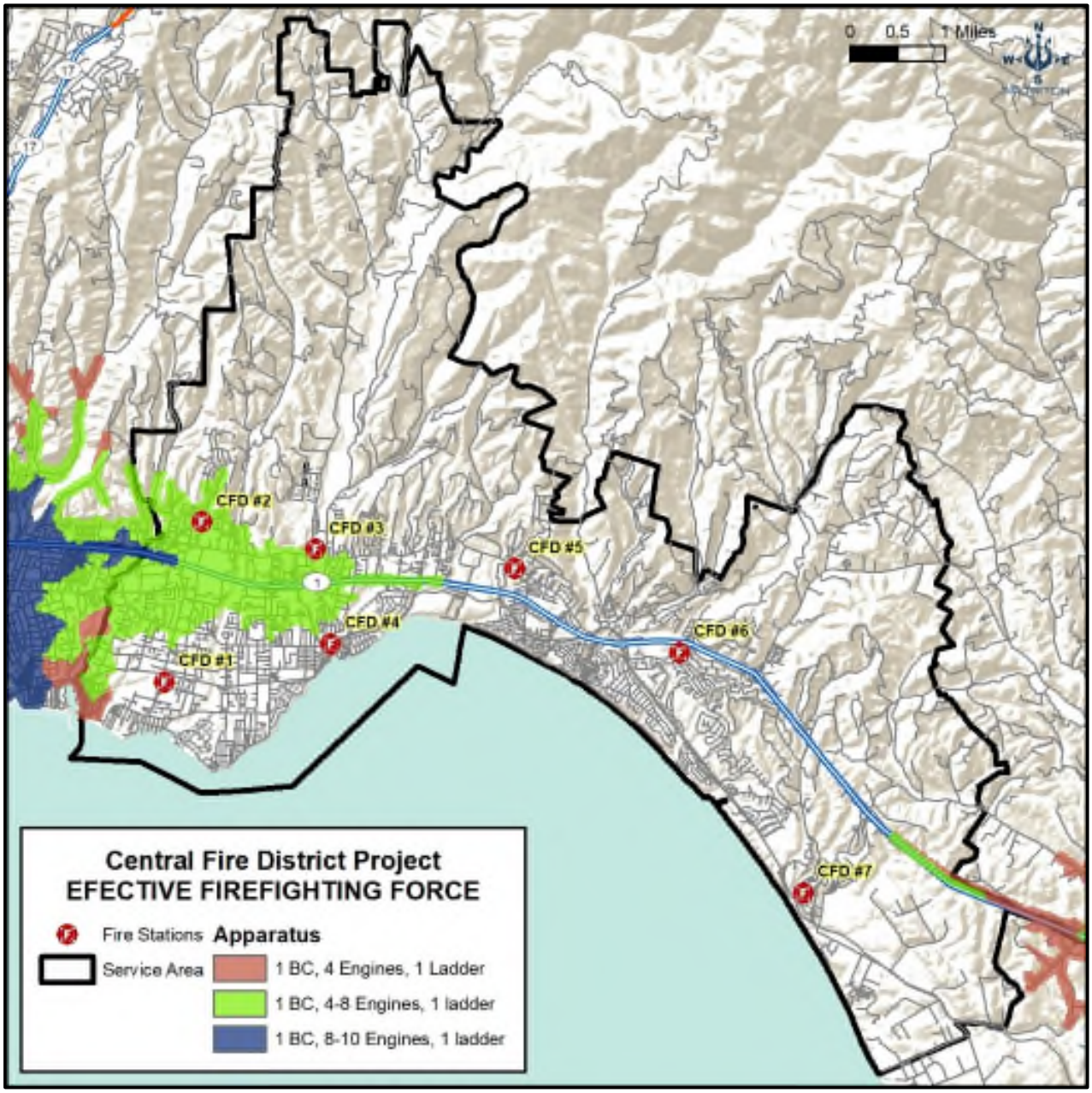
When a structure fire is reported, the reality may be something else, perhaps less threatening. As a result, an engine often arrives and handles the fire threat, canceling the other units dispatched. The following figure details the response performance for structure fires that achieved at least a moderate-risk fire in the data set. Note that no outside units were included in the data, and the department does have automatic dispatch with other agencies.

Figure 50: Effective Firefighting Force—Performance

Description	2018	2019	2020	2021
Count	1	0	1	2
ERF	10:30	—	09:37	14:59

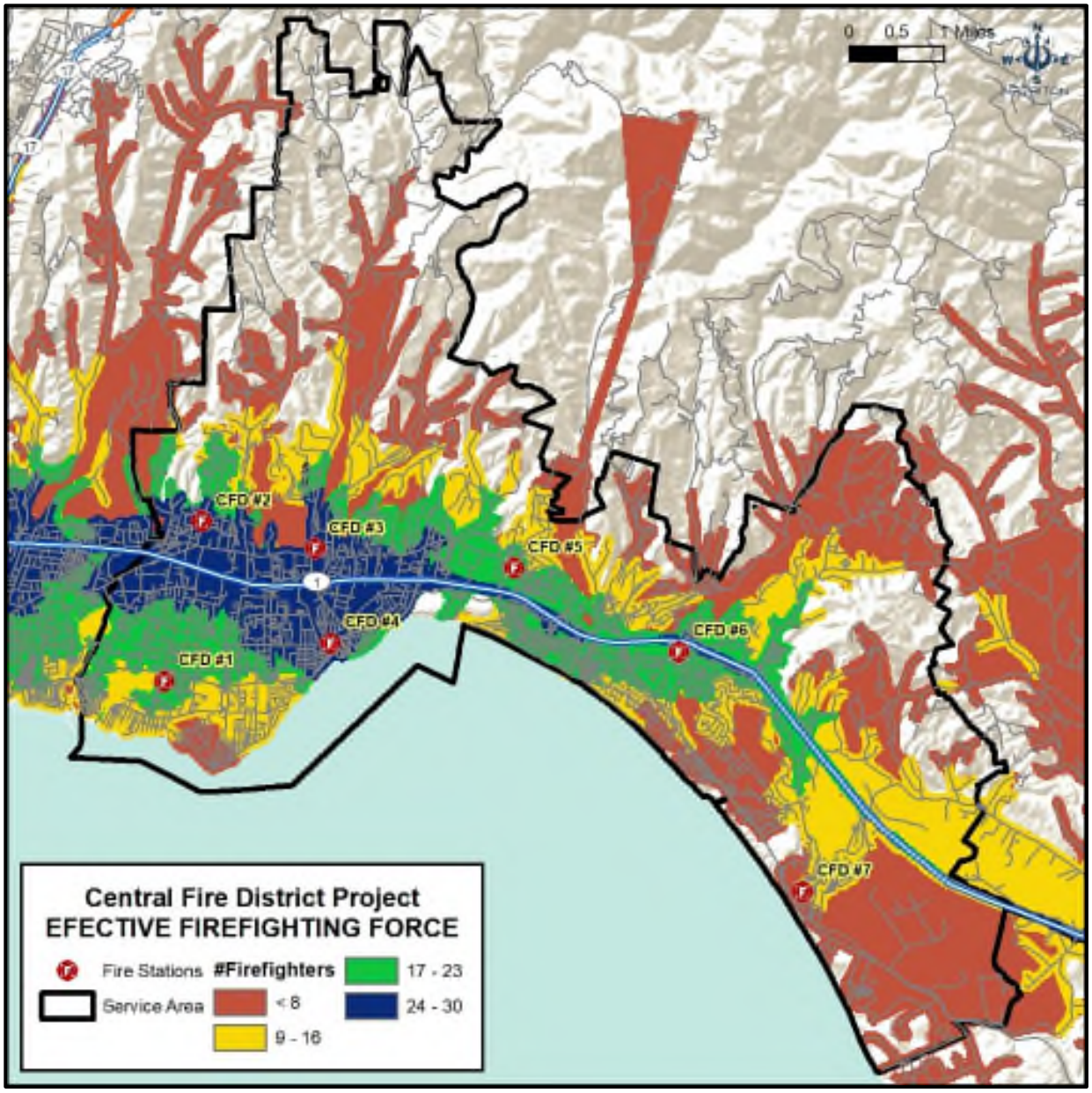
The concentration analysis reviews the physical capability of CFD's resources to achieve its target ERF travel time to its service area. The following figure depicts CFD's physical capability to assemble apparatus and Firefighters by area within an 8-minute travel time. The modeled analysis below assumes that all response units are available. The following figure represents the collective apparatus needed to achieve the EFF.

Figure 51: Effective Firefighting Force—Apparatus



The following figure shows where the number of Firefighters from CFD and automatic aid agencies can reach within an 8-minute travel time.

Figure 52: Effective Response Force—Firefighters



The staffing of the truck company and relocation of stations, as recommended in the recommendation section, will have a positive impact on effective response force deployment.

Resource Reliability

This section analyzes the workload at the unit level rather than at the department level, as previously shown. However, unit-level workload analysis can reveal further insights into the stress level Firefighters and apparatus are experiencing. For instance, units are only effective if available within their station. Therefore, if they are already handling an incident when another incident is reported, a unit from further away must respond, increasing the response times.

Unit Hour Utilization (UHU) calculates the percentage of time a unit is not available for a response because it is committed to an incident during a calendar year. This is important because the higher the percentage, the more time the unit is not available to respond to another incident. This is especially important for agencies like CFD, that measure their performance at the 90th percentile. For example, a unit with greater than 10% utilization cannot provide on-time performance to a 90% target within its response area. This analysis only measures response incidents and does not include other unmeasured activities in the dataset, such as training time and station duties. No units exceeded a 10% utilization rate.

Figure 53: Unit Hour Utilization

Unit	2018	2019	2020	2021	Use
E3511	0.05	0.05	0.06	0.06	Frontline
E3512	0.03	0.05	0.05	0.01	Frontline
E3513	0.03	0.03	0.03	0.05	Frontline
E3514	0.00	0.00	0.00	0.05	Frontline
E3515	0.00	0.01	0.00	0.05	Frontline
E3516	0.00	0.00	0.00	0.05	Frontline
E3517	0.00	0.00	0.00	0.03	Frontline
E3522	0.00	0.00	0.00	0.01	Reserve
E3523	0.00	0.00	0.00	0.02	Reserve
E3524	0.00	0.00	0.00	0.02	Reserve
E3536	0.00	0.00	0.00	0.00	Reserve
E3537	0.00	0.00	0.00	0.01	Frontline
E3538	0.00	0.00	0.00	0.01	Frontline
E3543	0.00	0.00	0.00	0.00	Frontline
M3566	0.00	0.01	0.00	0.01	Frontline
T3572	0.03	0.04	0.04	0.04	Frontline

Concurrency

One way to look at resource workload is to examine the number of times multiple incidents occur within the same time frame. Therefore, incidents during the study period were examined to determine the frequency of concurrent incidents.

This is important because concurrent incidents can stretch available resources and delay response to other emergencies. Therefore, this factor significantly impacts the jurisdiction's response times to emergencies. The following figure shows the number of times that one or more incidents occurred concurrently during the study period.

Figure 54: Concurrent Incident Percentage

Calls Concurrent	Percent
Single Incident	77%
2 Incidents	15%
3 Incidents	5%
4 Incidents	2%
5 or More Incidents	1%

It is also useful to review the number of times that one or more response units are committed to incidents simultaneously. The following figure shows the number of times one or more CFD response units were committed to incidents. It is more common for multiple response units to be simultaneously committed to incidents, with two to four concurrent responses occurring in significant numbers.

Figure 55: Unit Concurrency

Units/Incident	Percent
Single Incident	68%
2 Incidents	23%
3 Incidents	5%
4 Incidents	2%
5 or More Incidents	<1%

How reliably a station crew responds within its assigned area is important not only to its ability to handle the incident but also to its response time performance. When busier units are on assignment, other stations must handle incidents outside their response zones. This is especially true during fire events that require multiple units from several stations.

Figure 56: Reliability

Station Area	Reliability %
Station 1	78%
Station 2	72%
Station 3	74%
Station 4	70%
Station 5	74%
Station 6	81%
Station 7	82%

Historical System Performance

Operational Performance Standards

Incident data between January 1, 2018, and December 31, 2021, was evaluated in detail to determine CFD's current performance.

Only priority incidents occurring within the CFD service area are included in the analysis. Non-emergency public assistance requests were excluded. Performance is reported based on the type of incident as reported. Three categories are used to report performance:

- Fire—Responses to a report of a fire
- Emergency medical—All emergency medical incidents
- Other—Any other incident to which the department responded

Each phase of the incident response sequence was evaluated to determine current performance. This allows an analysis of each phase to determine where opportunities might exist for improvement.

The total incident response time continuum consists of several steps, beginning with the initiation of the incident and concluding with its appropriate mitigation. Therefore, the time required for each of the components varies. In addition, the policies and practices of the department directly influence some of the steps.

CFD's response performance was compared to the national consensus standard for response performance found in the National Fire Protection Association's Standard 1710. In addition, the dispatch center's performance was compared to standards found in the National Fire Protection Association's Standard 1221.

The following figure summarizes the performance standards used in this section to evaluate performance compared to NFPA 1710's standards.

Figure 57: Summary of Performance Goals

Incident Interval	Performance Goal
911 call answer time (time from the first ring to answer).	Within 15 seconds, 90% of the time
Call process time (time from acceptance at the dispatch center until notification of response units).	Within 60 seconds, 90% of the time
Turnout time (time from notification of response personnel until the initiation of movement towards the incident).	Within 60 seconds, 90% of the time (EMS) Within 80 Seconds, 90% of the time (Fire)
First unit travel time (time from initiation of response until the arrival of the first unit at the incident).	Within 4 minutes, 90% of the time
First unit response time (time from dispatch until the arrival of the first unit at the incident).	Within 5 minutes, 90% of the time (EMS) Within 5 minutes, 20 seconds, 90% of the time (NFPA Fire)
Full effective response force travel time (time from dispatch until all units initially dispatched arrive at the incident. Response resources needed for a moderate-risk building fire are used for the evaluation).	Within 8 minutes, 90% of the time

In keeping with NFPA Standards 1710 and 1221 and CFD's performance goals, all response time elements are reported at a given percentile. Percentile represents a methodology by which response times are sorted from least to greatest, and a "line" is drawn at a certain percentage of the calls to determine the percentile. The point at which the "line" crosses the 90th percentile, for example, is the percentile time performance. Thus, 90% of the time was at or less than the result. Only 10% were longer.

Percentile differs greatly from the average. Averaging calculates response times by adding all response times together and dividing the total number of minutes by the total number of responses (mean average). Measuring and reporting average response times is not recommended because it does not identify the number and extent of events with times beyond the stated performance goal.

A detailed description and review of each phase of the response time continuum follows. Finally, all phases will be compared to CFD's performance goals.

Detection

The detection of a fire or medical incident may occur immediately if someone happens to be present or if an automatic system is functioning. Otherwise, detection may be delayed, sometimes for a considerable period. This phase begins with the inception of the emergency and ends when the emergency is detected. It is largely outside the fire department's control and not a part of the event sequence that is reliably measurable.

Call Processing

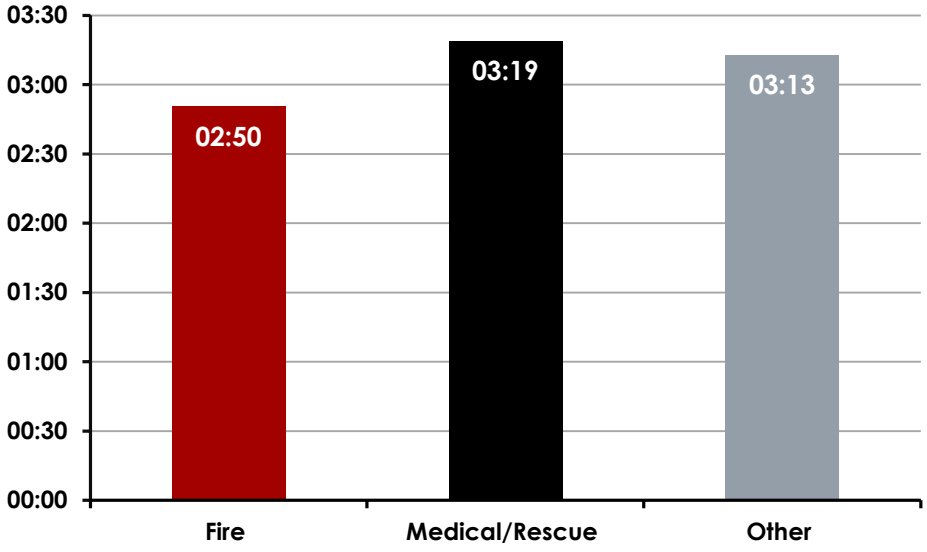
The call processing phase has two parts. First, most emergency incidents are reported by telephone to the 911 center. Call takers must quickly elicit accurate information about the incident's nature and location from persons who are apt to be excited. Lay people well-trained in emergencies can reduce the time required for this phase. The dispatcher must identify the correct units based on incident type and location, dispatch them to the emergency, and continue to update information about the emergency while the units respond. Step one of this phase, labeled "call processing time," begins when the 911 call is answered at the PSAP and ends when response personnel are notified of the emergency.

NFPA Standard 1221 recommends that 911 calls be answered within 15 seconds, 90% of the time (within 20 seconds, 95% of the time). This data was not supplied by the fire department.

The second part of the call processing phase, called "dispatch time," begins when the call is received at the dispatch center and ends when response units are notified of the incident. NFPA 1221 standards recommend that this phase occur within 60 seconds, 90% of the time.

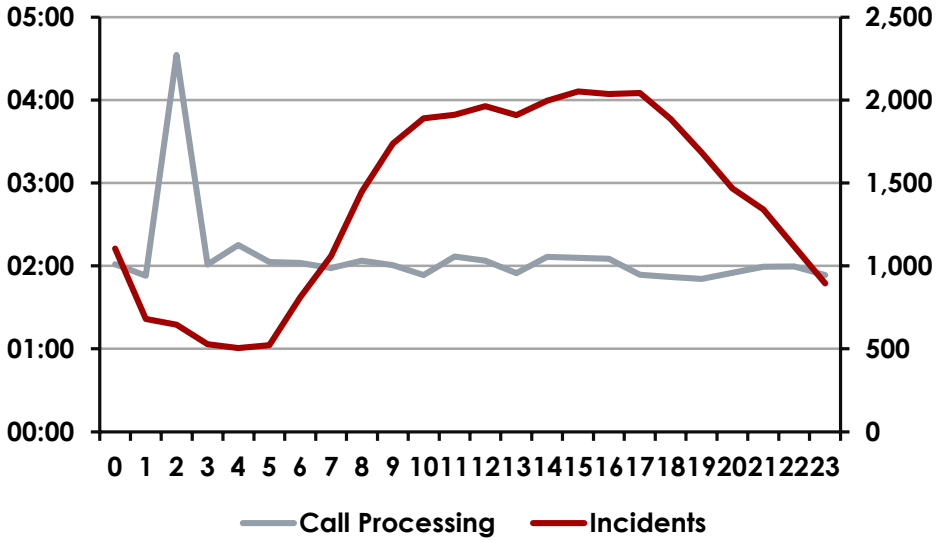
The following figure illustrates the dispatch center's performance from the time it receives the call until it notifies response units. Overall performance during the study period was longer than the NFPA guideline.

Figure 58: Call Processing by Type of Incident



The workload at the dispatch center can influence call processing performance. The following figure illustrates performance at different times of the day compared to CFD's response workload. Call processing time is longer than the NFPA recommendations but relatively stable except for a spike at 2 a.m.

Figure 59: Call Processing by Hour of Day

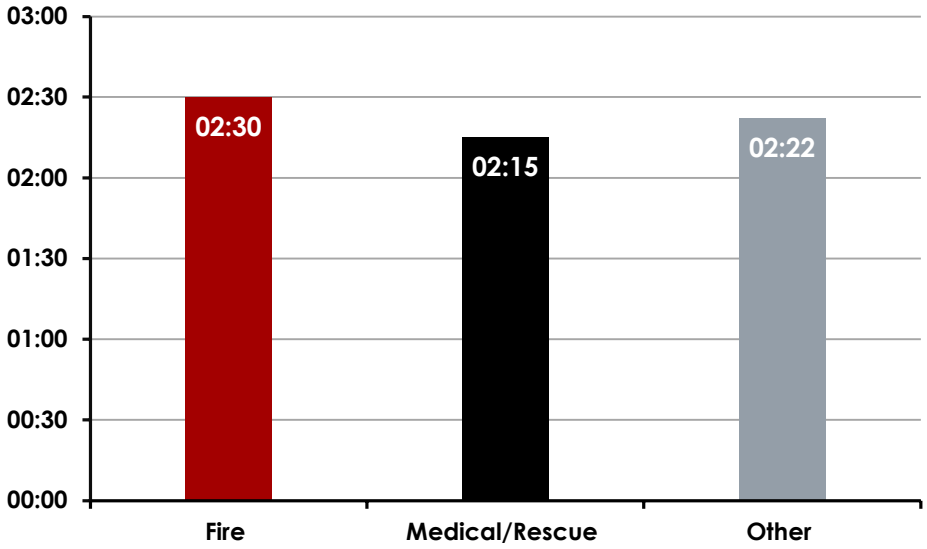


Turnout Time

The turnout time response phase is controllable by CFD. This phase begins with the dispatch center's notification of an emergency in progress and ends when personnel and apparatus begin to move toward the incident location. Personnel must don appropriate equipment, assemble on the response vehicle, and begin traveling to the incident. Good training and proper fire station design can minimize the time required for this phase.

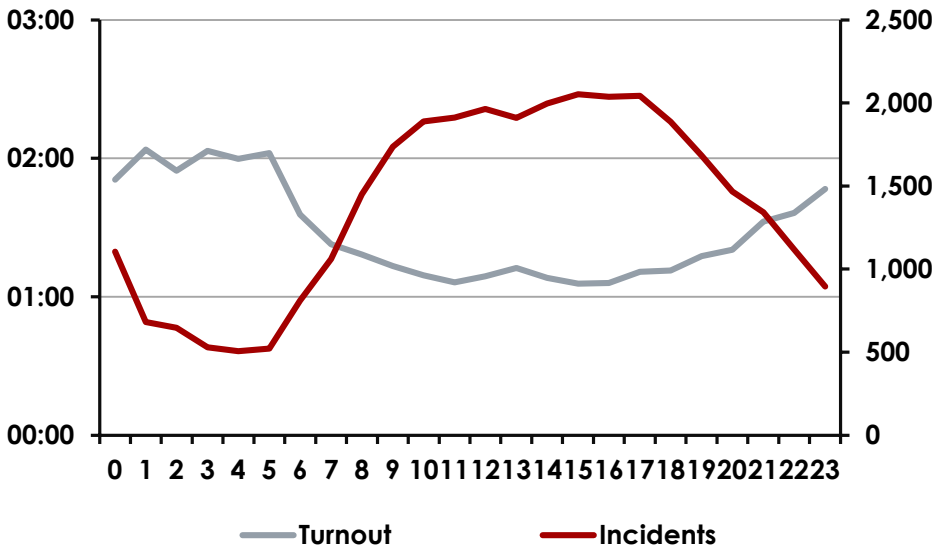
The performance goal for turnout time is within 90 seconds, 90% of the time for priority emergency incidents. The following figure lists turnout time by incident types. Turnout times for all incident types exceed standards. During the study period, turnout time for priority incidents was within 2 minutes, 25 seconds, 90% of the time.

Figure 60: Turnout Time Performance by Call Type



Turnout time can vary by the hour of the day. In this case, turnout time varied by 62 seconds between the early morning hours and daytime hours, as shown in the following figure.

Figure 61: Turnout Time Performance by Hour of Day

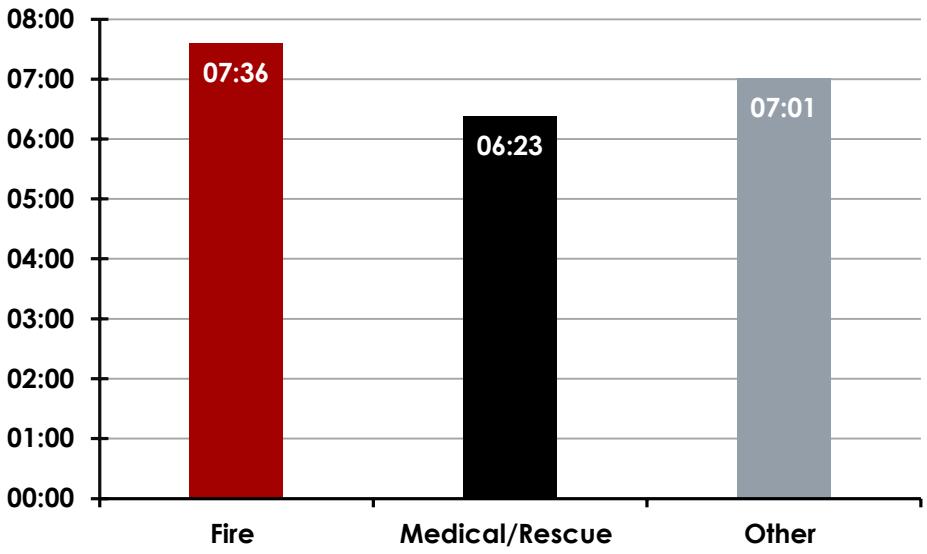


Distribution & Initial Arriving Unit Travel Time

Travel time is potentially the longest of the response phases. The distance between the fire station and the location of the emergency influences response time the most. The quality and connectivity of streets, traffic, driver training, geography, and environmental conditions are also factors. This phase begins with the initial apparatus movement toward the incident location and ends when response personnel and apparatus arrive at the emergency's location. According to NFPA 1710, the performance goal should be 4 minutes for the first response unit to arrive at an incident.

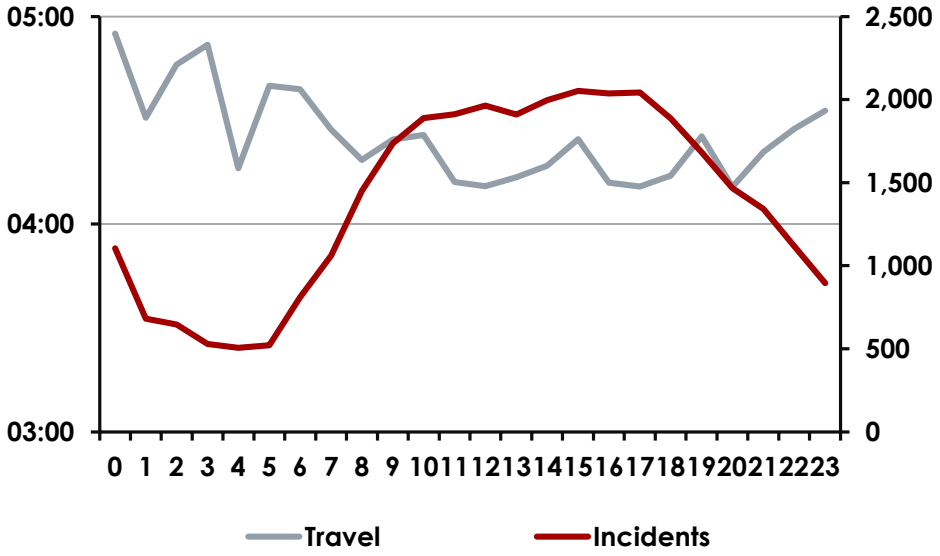
The following figure lists travel times for all priority incidents and incident types. CFD's travel times exceeded its goal in all incident types. Travel time for all incident types was within 7 minutes, 15 seconds, 90% of the time.

Figure 62: Travel Time Performance by Call Type



Travel time can vary considerably by the time of day. Heavy traffic during morning and evening rush hours can slow the department's response. Concurrent incidents also can increase travel time since units from more distant stations would need to respond. Darkness in the evening and early morning hours appears to affect travel time more than commuter traffic. The following figure shows the travel time performance by hour of the day.

Figure 63: Travel Time Performance by Hour of Day



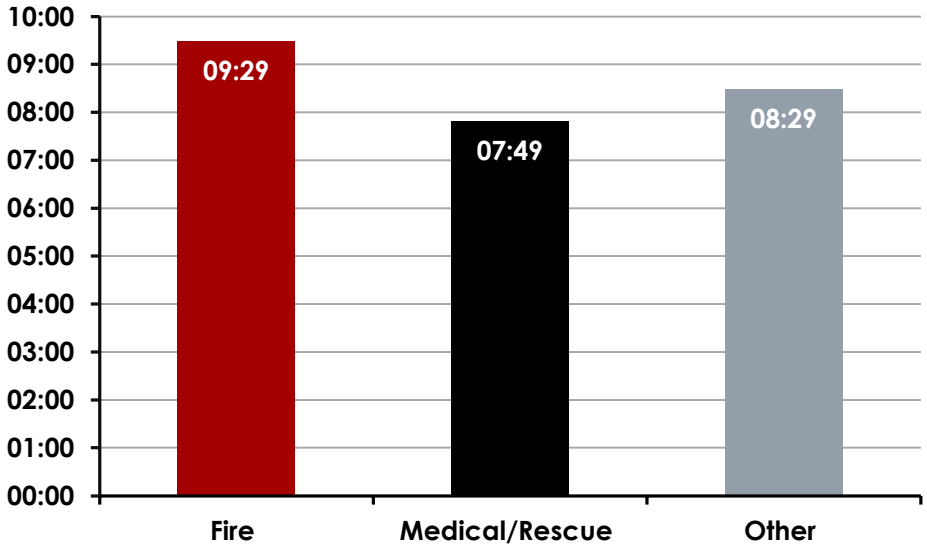
To provide an on-time response, a response unit must be available within 4 travel minutes of the incident. During the study period, 95% occurred within 4 travel minutes of a fire station.

First Arriving Unit Response Times

Response time is defined as the period between the notifications of response personnel by the dispatch center that an emergency is in progress until the arrival of the first Fire Department response unit at the emergency. When turnout time and travel time are combined, the performance goal for response time is within 6 minutes, 21 seconds, 90% of the time for fire and special operations incidents, and within 7 minutes, 57 seconds, 90% of the time for all other priority incidents.

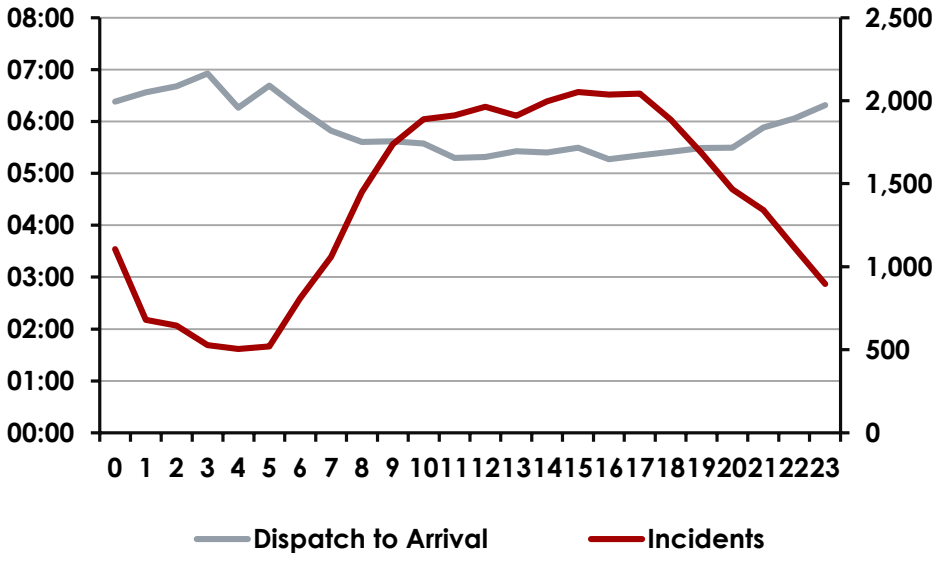
The following figure illustrates the response time for priority incident types. Overall, response time for all priority incidents was within 8 minutes, 27 seconds, 90% of the time.

Figure 64: First Unit Arrival Performance



The following figure shows response times and the number of incidents by the hour of the day for all incidents. Response time is slowest during the nighttime hours and slightly faster during the day.

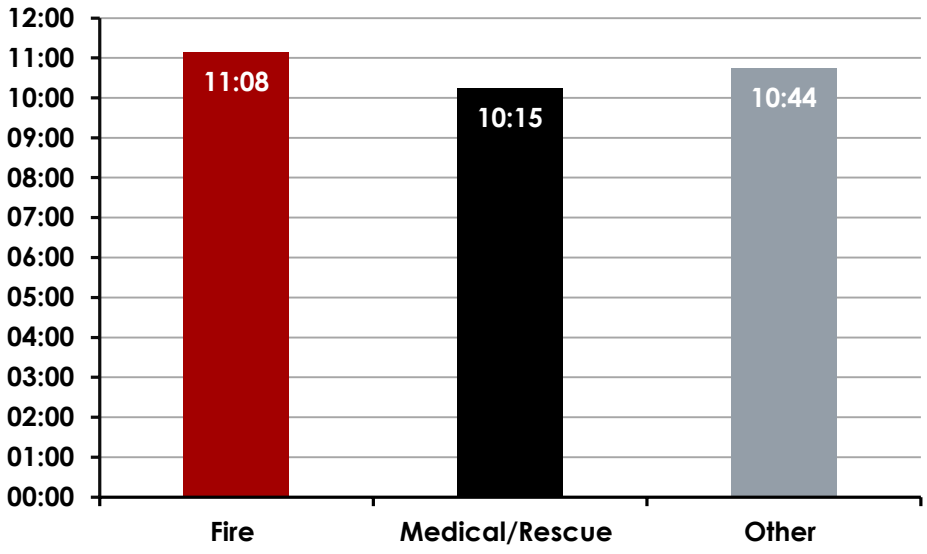
Figure 65: First Unit Arrival Performance by Hour of Day



First Arriving Unit Received to Arrival Time

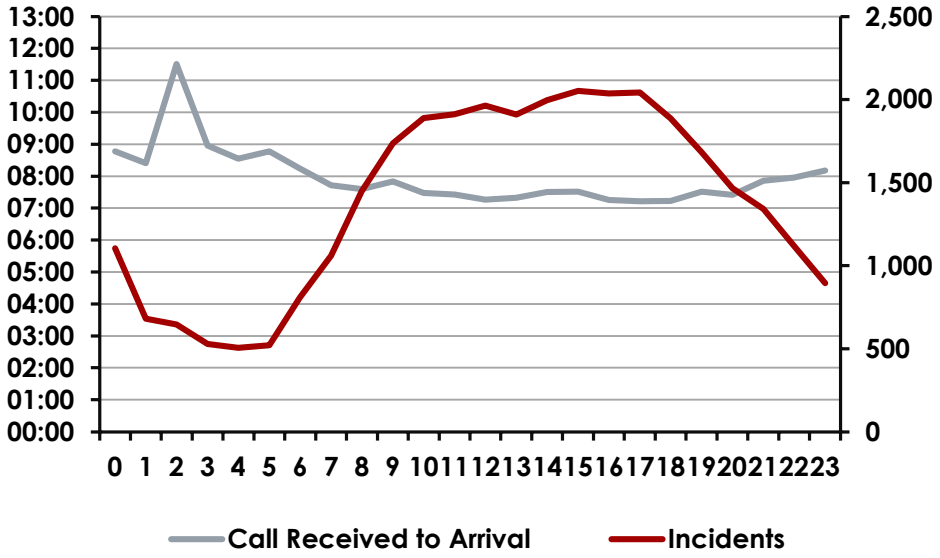
From the customers' standpoint, response time begins when an emergency occurs. Their first contact with emergency services is when they call for help, usually by dialing 911. The received-to-arrival time phase combines the answer/transfer, call processing, turnout, and travel time phases. When the performance goals are combined, received-to-arrival time should be within 7 minutes, 90% of the time for all priority incidents. The following figure shows received-to-arrival performance for priority incidents within the CFD service area. Overall, the received-to-arrival time was within 10 minutes, 27 seconds, 90% of the time.

Figure 66: Call Received to Arrival by Call Type



The following figure shows received-to-arrival performance by hour of the day compared to incident activity by time of day. From the customers' standpoint, received-to-arrival is consistent during the day.

Figure 67: Call Received to Arrival by Hour of Day

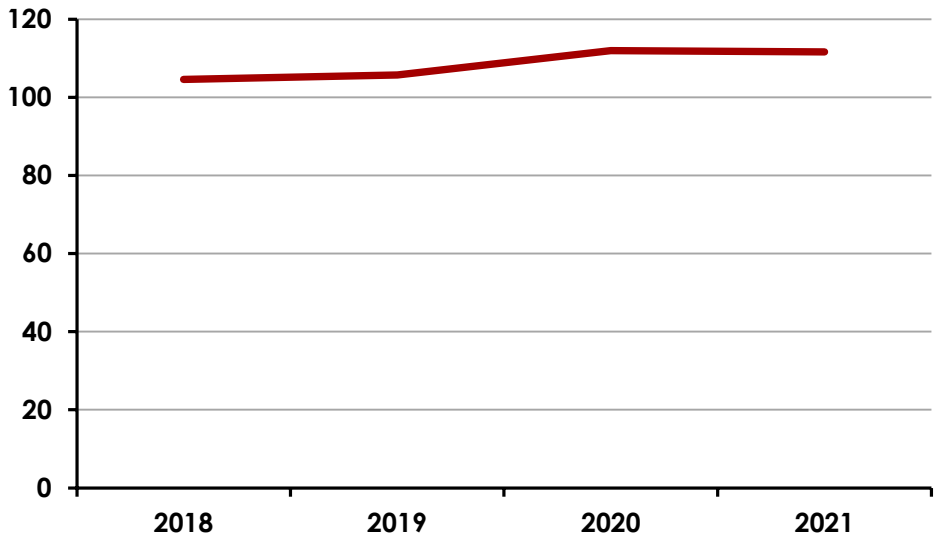


Performance Objectives & Measures

Population & Incident Workload Projections

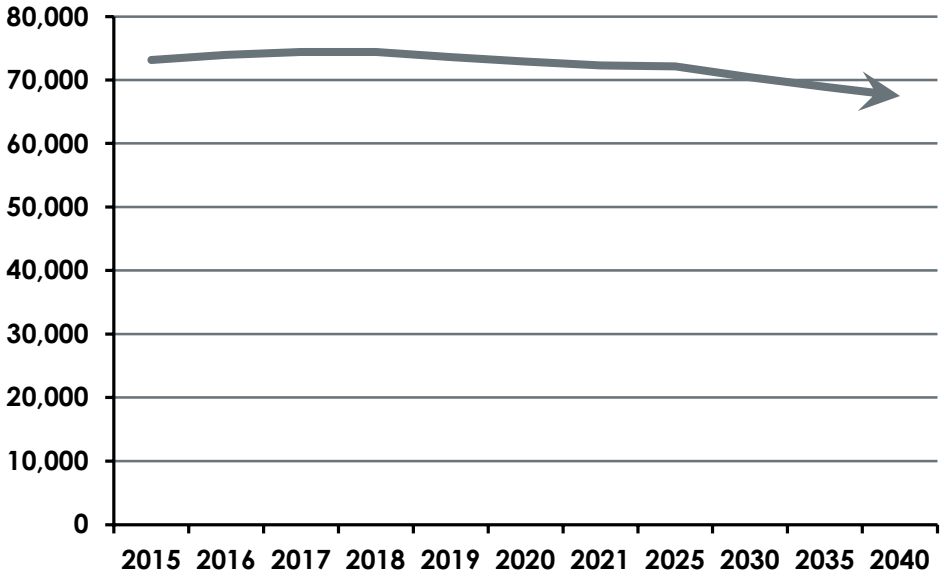
Over the last three years, the utilization rate of the fire department per 1,000 population generally had increased, as shown in the following figure. The rate during 2020 increased, despite pandemic concerns, traffic reduction, and fears of healthcare settings. It is projected that utilization will stabilize at 111.5 per 1,000 population through 2040.

Figure 68: Utilization Rate



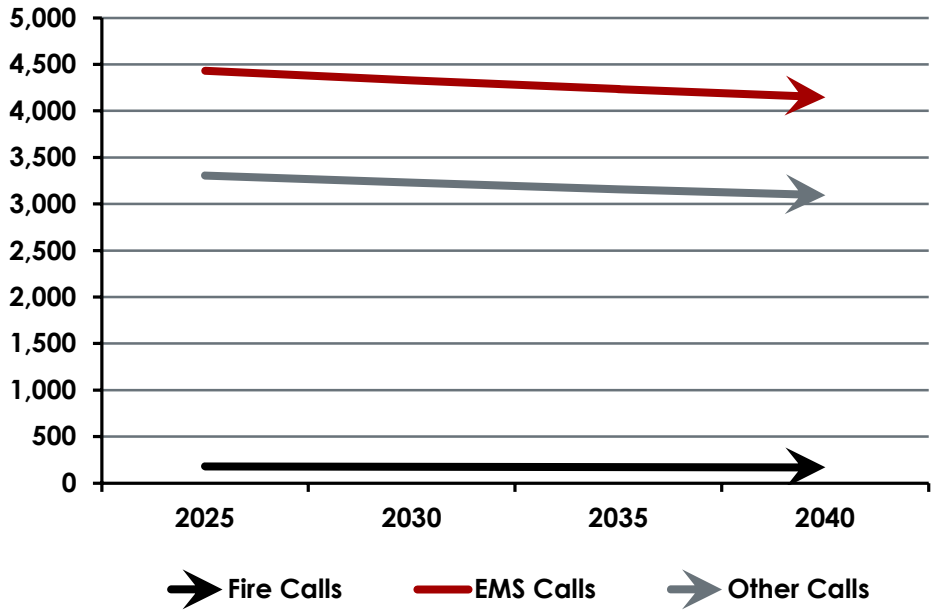
Based on the census population, a forecast for future population can be calculated using the lasted growth rate data. Population for the District has been decreasing over the last four years. Census-based forecast calculated a population of 67,528 in 2040, a decline from 71,863 in 2010.

Figure 69: Population Projections



The following figure shows that using the Census-based forecasted population growth will potentially *decrease* CFD's workload.

Figure 70: Workload Projections



Development of Response Standards & Targets

CFD does not provide medical transport, but it does provide most other fire, rescue, and emergency medical services (EMS). Programs include fire suppression, wildland/urban interface fire suppression (WUI), EMS, hazardous materials response (HazMat), and several technical rescue disciplines. Each service requires training, equipment, and personnel during an incident response. Therefore, managing the level of response and resources is essential in maintaining readiness.

The first step in determining response resources is to evaluate the critical tasks needed to mitigate the type and severity of the incident. These tasks can be classified into mitigation efforts and command. Mitigation is the tasks and tactics required to bring the incident to a successful conclusion. Command functions provide oversight, safety, direction, control, and coordination. The number and types of tasks needing simultaneous action will dictate the minimum number of Firefighters required to mitigate different incidents. In the absence of adequate personnel to perform concurrent action, the commanding officer must prioritize the tasks and complete some in chronological order rather than concurrently.

Before any response, leadership should understand what resources are needed and available. While evaluating the number of personnel necessary to complete concurrent and overall tasks, managers must also ensure they are adequately equipped and trained. Since the equipment and tactics are consistently changing, this process is less strategic and more operational, requiring constant attention.

The next step is to look at each critical task and determine how many individuals it takes to complete. From the number of responders, the available number of individuals per apparatus, and the number of units available, managers can then determine the types and total resources required. Using this information, the administration can define dispatch and notification procedures and better understand agency capability. While the information is examined here, the numbers will be used in this report's community risk assessment portion to help determine risk and resiliency. A detailed examination of each program and the level of risk within each program is accomplished here.

Fire Suppression

Fire departments are the only organization equipped to suppress fires. The public has come to expect many other services from their local fire response agency. Still, they would be deeply concerned if their agency could not cope with a fire situation. For this section, fire suppression is those incidents within the urban and suburban environments. Wildland will be evaluated separately due to its unique operational requirements. The following figure summarizes CFD's resources needed based on critical tasking, the number of resources assigned, and the difference between the two by risk level in the fire suppression category.

Figure 71: CFD Fire Suppression Task/Alarm Summary

Risk Level	Tasking	Assigned	Difference
Low	3	3	0
Moderate	17	19	+2
High	23	32	+9
Maximum	40	9	+9

Low-Risk Fire Suppression

Low-risk fire suppression incidents are considered minor in scope and intensity. It usually will only require a single apparatus and crew to manage. This might include incidents such as passenger vehicles, fences, trash, confined outside fires, and situations such as alarm, smoke, or odor investigations. The following figure shows CFD's critical tasking for low-risk fire suppression incidents.

Figure 72: Low-Risk Fire Suppression Critical Tasks

Task	Personnel Needed
Command	1
Safety	*
Size up (360^0)	*
Driver/Engine or Pump Operator	1
Fire Attack	1
Effective Response Force:	**3**

*Temporary or concurrent assignment with other task

For CFD, a low-risk fire suppression assignment should bring at least three responders with the appropriate equipment to mitigate the incident. In this case, a fire engine or a pump-equipped aerial/ ladder truck would suffice. The following figure lists CFD's alarm assignment for low risks.

Figure 73: Low-Risk Suppression Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	3	1	3				
Ladder/Aerial[3]							
Rescue							
Chief Officer							
Ambulance/EMS							
Totals:	**3**	**1**	**3**				
Staff Required:	**3**						
Difference:	**0**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Moderate-Risk Fire Suppression

Moderate-risk fire suppression incidents require more than one company to mitigate the incident. This increased complexity will require more Command Officers to focus specifically on command and safety functions. This might include smoke inside a building, outbuilding, single-family residential fires, or fire alarms at a high-life hazard occupancy. The following figure shows CFD's critical tasking for moderate-risk fire suppression incidents.

Figure 74: Moderate-Risk Fire Suppression Critical Tasks

Task	Personnel Needed
Command	1
Safety	1
Size up (360⁰)	*
Driver/Engine or Pump Operator	2
Fire Attack	2
Fire Attack & Search/Rescue	3
Ventilation and Utility Control	2
Backup Line	2
Rapid Intervention Team	2
ALS EMS	2
Effective Response Force:	**17**

*Temporary or concurrent assignment with other task

For CFD, a moderate-risk fire suppression assignment should bring at least 17 responders with the appropriate equipment to mitigate the incident. Many types of apparatus will be needed. However, at a minimum, at least one engine, one ladder or aerial, and ALS-equipped ambulances to provide for responder and victim medical care are required. The following figure lists CFD's alarm assignment for moderate risks.

Figure 75: Moderate-Risk Suppression Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	12	4	12				
Ladder/Aerial[3]	4	1	4				
Rescue							
Chief Officer	2	1	1	1	1		
Ambulance/EMS	2			1	1		
Totals:	**19**	**6**	**17**	**2**	**2**		
Staff Required:	**17**						
Difference:	**+2**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

High-Risk Fire Suppression

High-risk fire suppression incidents require additional response units to mitigate the incident. This might be due to structure size, complexity, occupancy load, additional fire flow, or water supply issues. This increased complexity will require more Command Officers who focus specifically on command and safety functions and may be assigned supervision of areas or specific operations. This might include smoke inside a high-life hazard property, single-family residential fires with persons trapped, fires in multi-family buildings, or fires in moderately sized commercial structures. The following figure shows CFD's critical tasking for high-risk fire suppression incidents.

Figure 76: High-Risk Fire Suppression Critical Tasks

Task	Personnel Needed
Command	2
Safety	1
Size up (360^0)	*
Driver/Engine or Pump Operator	2
Water Supply	2
Standpipe/Sprinkler Control	2
Fire Attack	2
Fire Attack & Search/Rescue	3
Ventilation and Utility Control	2
Backup Line	2
Rapid Intervention Team	3
ALS EMS	2
Effective Response Force:	**23**

*Temporary or concurrent assignment with other task

For CFD, a high-risk fire suppression assignment should bring at least 23 responders with the appropriate equipment to mitigate the incident. Many types of apparatus will be needed, including multiple engines, ladder/aerial apparatus, and potentially additional specialty equipment. This also requires an ALS ambulance on standby to provide medical care to the responders and potential victims. The following figure lists CFD's alarm assignment for high risks.

Figure 77: High-Risk Suppression Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	21	6	18	1	3		
Ladder/Aerial[3]	7	1	4	1	3		
Rescue							
Chief Officer	2	1	1	2	2		
Ambulance/EMS	2			1	1		
Totals:	**32**	**8**	**23**	**5**	**9**		
Staff Required:	**23**						
Difference:	**+9**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Maximum-Risk Fire Suppression

Maximum-risk fire suppression incidents require multiple alarms, many companies, and multiple Command Officers to mitigate the incident. These are typically immense structures, those with a high life hazard, a high societal value structure, or a group of buildings. For example, incidents like a fire inside a high-life hazard property, high-rise fires, large commercial or industrial occupancies, large hazardous materials fires, or storage occupancy fires. The following figure shows CFD's critical tasking for maximum-risk fire suppression incidents.

Figure 78: Maximum-Risk Fire Suppression Critical Tasks

Task	Personnel Needed
Command	2
Safety	1
Size up (360^0)	*
Driver/Engine or Pump Operator	2
Water Supply	2
Standpipe/Sprinkler Control	2
Fire Attack	6
Fire Attack & Search/Rescue	3
Ventilation and Utility Control	6
Backup Line	2
Rapid Intervention Teams	6
ALS EMS	4
Breathing Support and PCF Staff	4
Effective Response Force	**40**

*Temporary or concurrent assignment with other task

For CFD, a maximum-risk fire suppression assignment should bring at least 40 responders with the appropriate equipment to mitigate the incident. Many types of apparatus will be needed, including multiple engines, ladder/aerial apparatus, and potentially additional specialty equipment. This also requires an ALS ambulance on standby to provide medical care for the responders and victims. The following figure lists CFD's alarm assignment for maximum risks.

Figure 79: Maximum-Risk Suppression Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	21	6	18	4	12		
Ladder/Aerial[3]	7	1	4	2	6		
Rescue							
Chief Officer	4	1	1	3	3		
Ambulance/EMS	5			3	5		
Totals:	**49**	**8**	**23**	**5**	**26**		
Staff Required:	**40**						
Difference:	**+9**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Emergency Medical Services (EMS)

EMS has become a mainstay and the highest volume of service demand for CFD. For this section, EMS are those incidents that require medical aid from first responders whether they are transported to a receiving facility or not. The following figure summarizes CFD's resources needed based on critical tasking, the number of resources assigned, and the difference between the two by risk level in the EMS category.

Figure 80: CFD EMS Task/Alarm Summary

Risk Level	Tasking	Assigned	Difference
Low	2	3	+1
Moderate	6	11	+5
High	12	15	+3
Maximum	36	24	+12

Low-Risk EMS

Low-risk EMS incidents typically require very few responders to address a patient's medical needs. These incidents usually are one patient without a life-threatening condition and can typically be managed by one responding unit. The incident may require advanced life support (ALS) or basic life support (BLS) interventions but will typically not require medical transport. The following figure shows CFD's critical tasking for low-risk EMS incidents.

Figure 81: Low-Risk EMS Critical Tasks

Task	Personnel Needed
Command	*
Safety	*
Size up (360^0)	*
Family/Bystander Liaison	*
Basic Life Support Treatment	1
Advanced Life Support Treatment	1
Effective Response Force:	**2**

*Temporary or concurrent assignment with other task

For CFD, a low-risk assignment should bring at least two responders with the appropriate equipment to address the victim's needs. CFD provides ambulance services rarely, but they often respond as the first unit. Therefore, at times they may be able to handle the situation if the transport is not required completely. The following figure lists CFD's alarm assignment for low risks.

Figure 82: Low-Risk EMS Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	3	1	3				
Ladder/Aerial[3]							
Rescue							
Chief Officer							
Ambulance/EMS							
Totals:	**3**	**1**	**3**				
Staff Required:	**2**						
Difference:	**+1**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Moderate-Risk EMS

Moderate-risk EMS incidents typically require only a few responders to address a patient's medical needs. These incidents usually have one or two patients. However, a severe or life-threatening condition may exist, and the expectation is for the patient(s) to be transported to a receiving medical facility. The incident may require ALS or BLS interventions. Incidents may include motor vehicle crashes without extensive extrication needed. The following figure shows CFD's critical tasking for moderate-risk EMS incidents.

Figure 83: Moderate-Risk EMS Critical Tasks

Task	Personnel Needed
Command	1
Safety	*
Size up (360^0)	*
Family/Bystander Liaison	*
Basic Life Support Treatment	1
Advanced Life Support Treatment	1
Extraction/Hazard Mitigation	3
Effective Response Force:	**6**

*Temporary or concurrent assignment with other task

For CFD, a moderate-risk assignment should bring at least six responders with the appropriate equipment to address the victim's needs. An ambulance for transport is also needed for these incidents. The following figure lists CFD's alarm assignment for moderate risks.

Figure 84: Moderate-Risk EMS Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	9	3	9				
Ladder/Aerial[3]							
Rescue							
Chief Officer							
Ambulance/EMS				1	2		
Totals:	**11**	**3**	**9**	**1**	**2**		
Staff Required:	**6**						
Difference:	**+5**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if they are ALS equipped.

High-Risk EMS

High-risk EMS incidents begin to tax the EMS systems. These incidents typically have three to eight patients with multiple injuries, from minor to critical. Patient care will involve triage, BLS and ALS treatment, and coordination to transport numerous patients. For example, these incidents may require ALS or BLS interventions, including motor vehicle crashes, civil unrest, or fighting. The following figure shows CFD's critical tasking for high-risk EMS incidents.

Figure 85: High-Risk EMS Critical Tasks

Task	Personnel Needed
Command	1
Safety	1
Size up (360^0)	*
Triage Group	2
Basic Life Support Treatment	5
Advanced Life Support Treatment	2
Transport Group	1
Effective Response Force	**12**

*Temporary or Concurrent Assignment with Other Task

For CFD, a high-risk assignment should bring at least 12 responders with the appropriate equipment to address the victim's needs. Multiple ambulances and additional command/coordination staff are also needed for these incidents. The following figure lists CFD's alarm assignment for high risks.

Figure 86: High-Risk EMS Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	3	1	3				
Ladder/Aerial[3]	4	1	4				
Rescue							
Chief Officer	1	1	1				
Ambulance/EMS	7			4	7		
Totals:	**15**	**3**	**8**	**4**	**7**		
Staff Required:	**12**						
Difference:	**+3**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.
[2]Mutual aid companies must be requested by the responsible agency.
[3]Ladders/Aerials may be substituted for an engine if they are ALS equipped.

Maximum-Risk EMS

Maximum-risk EMS incidents tax the entire EMS system, including response agencies and receiving agencies. These incidents usually have more than nine patients with multiple injuries, from minor to critical. Patient care will involve triage, BLS and ALS treatment, and coordination to transport numerous patients. The following figure shows CFD's critical tasking for maximum-risk EMS incidents.

Figure 87: Maximum-Risk EMS Critical Tasks

Task	Personnel Needed
Command	2
Safety	1
Operations	2
Triage Group	1
Basic Life Support Treatment	5
Advanced Life Support Treatment	5
Evacuation Group	4
Transport Group	2
Staging	2
Effective Response Force:	**24**

For CFD, a maximum-risk assignment should bring at least 24 responders with the appropriate equipment to address the victim's needs. In addition, multiple ambulances and more command/coordination staff are also needed for these incidents. The following figure lists CFD's alarm assignment for maximum risks.

Figure 88: Maximum-Risk EMS Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	18	6	18				
Ladder/Aerial[3]							
Rescue							
Chief Officer	1	1	1	2	2		
Ambulance/EMS	7			8	15		
Totals:	**36**	**7**	**19**	**10**	**17**		
Staff Required:	**24**						
Difference:	**+12**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if they are ALS equipped.

Wildland Urban Interface (WUI) Fire

California has recorded the most deaths from wildfires since 1910[14] , and CFD has a significant risk for WUI fires. The WUI fire risk is studied in more detail in this report's community risk assessment section. WUI fires require specific training and equipment and are analyzed separately from other fire suppression activities. The following figure summarizes CFD's resources needed based on critical tasking, the number of resources assigned, and the difference between the two by risk level in the WUI category.

Figure 89: CFD WUI Task/Alarm Summary

Risk Level	Tasking	Assigned	Difference
Low	4	3	**-1**
Moderate	15	17	**+2**
High	35	31	**0**

Low-Risk WUI

Low-risk WUI incidents can typically be mitigated by one unit. This is because these fires are usually small, slow, and not threatened by extreme fire weather conditions. These fires include outside smoke investigations, illegal or controlled burns, and small vegetation fires. The following figure shows CFD's critical tasking for low-risk WUI incidents.

Figure 90: Low-Risk WUI Critical Tasks

Task	Personnel Needed
Command	1
Safety	*
Size up (360⁰)	*
Driver/Engine or Pump Operator	1
Fire Attack	2
Effective Response Force:	**4**

*Temporary or Concurrent Assignment with Other Task

For CFD, a low-risk assignment should bring at least four responders with the appropriate equipment to address the incident. In addition, at least one attack unit, specially equipped for WUI fires, should respond. The following figure lists CFD's alarm assignment for low risks.

Figure 91: Low-Risk WUI Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine[3]	3	1	3				
Ladder/Aerial							
Tender							
Chief Officer							
Ambulance/EMS							
Totals:	**3**						
Staff Required:	**4**						
Difference:	**-1**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Engines may be a type 1, type 3, or type 6.

Moderate-Risk WUI

Moderate-risk WUI incidents will require more flexibility and a more robust response. These incidents are larger area fires that are slow-moving and not threatened by high fire weather conditions. Examples of this type of fire include significant fire in the brush, brush piles at a chipping site, grass, or cultivated vegetation. The following figure is the critical tasking determined by CFD for moderate-risk WUI incidents.

Figure 92: Moderate-Risk WUI Critical Tasks

Task	Personnel Needed
Command	1
Safety	1
Recon Group	1
Driver/Engine or Pump Operator	2
Flank Divisions	4
Water Supply	1
Structure Protection	4
Staging	1
Effective Response Force:	**15**

For CFD, a moderate-risk assignment should bring at least 15 responders with the appropriate equipment to address the fire type and severity. The alarm assignment should include enough command structure to manage the more complex incident. Multiple structure fire apparatus, water tenders, and specially WUI equipment with specially trained Firefighters should respond as well. The following figure lists CFD's alarm assignment for moderate risks.

Figure 93: Moderate-Risk WUI Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine[3]	5	4	12	1	2		
Ladder/Aerial							
Tender	1	1	1				
Chief Officer	2	1	1	1	1		
Ambulance/EMS							
Totals:	**17**	**6**	**14**	**2**	**3**		
Staff Required:	**15**						
Difference:	**+2**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Engines may be a type 1, type 3, or type 6.

High-Risk WUI

High-risk WUI incidents will require a significant response from CFD and other agencies. These incidents are larger area fires, possibly threatening structures, and potentially elevated fire weather conditions, such as a red flag warning. Examples of this type of fire include significant fire in the brush, grasses, woodland, or cultivated vegetation. The following figure shows CFD's critical tasking for high-risk WUI incidents.

Figure 94: High-Risk WUI Critical Tasks

Task	Personnel Needed
Command	2
Safety	1
Recon Group	2
Lookout	1
Driver/Engine or Pump Operator	3
Flank Divisions	9
Water Supply	2
Holding	4
Structure Protection	10
Staging	1
Effective Response Force:	**35**

For CFD, a high-risk assignment should bring at least 35 responders with the appropriate equipment to address the incident. The alarm assignment should include enough command structure to manage the more complex incident. Multiple structure fire apparatus, water tenders, and specially WUI equipment with specially trained Firefighters should respond as well. The following figure lists CFD's alarm assignment for high risks.

Figure 95: High-Risk WUI Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Fire Apparatus[3]	20	8	20	5	15		
Ladder/Aerial							
Tender							
Chief Officer							
Ambulance/EMS							
Totals:	**35**	**8**	**20**	**5**	**15**		
Staff Required:	**35**						
Difference:	**0**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Specific unit types were not identified by CFD.

Technical Rescue

Technical rescue is another typical service provided by many fire agencies. Their rescue training for structure fires was a natural step toward the more technical aspects of specialty rescues. Rescues from entrapment in equipment or vehicles, water, below grade, high-angle, or confined space all require specialized training and equipment. The following figure summarizes CFD's resources needed based on critical tasking, the number of resources assigned, and the difference between the two by risk level.

Figure 96: CFD Rescue Task/Alarm Summary

Risk Level	Tasking	Assigned	Difference
Low	3	3	0
Moderate	6	10	+4
High	21	26	+5
Maximum	29	43	+14

Low-Risk Technical Rescue

Low-risk rescue incidents are typically rescuing from a distressing but not hazardous condition. These incidents can typically be addressed with a small crew with standard equipment found on structural fire engines. Examples of this type of rescue include lock-in, elevator entrapment, or minor mechanical entrapment. The following figure shows CFD's critical tasking for low-risk rescue incidents.

Figure 97: Low-Risk Rescue Critical Tasks

Task	Personnel Needed
Command	1
Safety	*
Basic Life Support Treatment	1
Extrication/Hazard Mitigation	1
Effective Response Force:	**3**

*Temporary or concurrent assignment with other task

For CFD, a low-risk assignment should bring at least three responders with the appropriate equipment to address the incident. The following figure lists CFD's alarm assignment for low risks.

Figure 98: Low-Risk Rescue Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	3	1	3				
Ladder/Aerial[3]							
Rescue							
Chief Officer							
Ambulance/EMS							
Totals:	**3**	**1**	**3**				
Staff Required:	**3**						
Difference:	**0**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine.

Moderate-Risk Technical Rescue

Moderate-risk rescue incidents are typically rescuing from a more hazardous condition. Still, they can be accomplished without needing a specialty technical rescue team. These incidents can typically be addressed with standard equipment found on structural fire engines. However, they require more medical personnel due to the potential injury severity. Incident examples include vehicle and machinery extrication, or victims trapped by powerlines. The following figure shows CFD's critical tasking for moderate-risk incidents.

Figure 99: Moderate-Risk Rescue Critical Tasks

Task	Personnel Needed
Command	1
Safety	*
Size up (360^0)	*
Basic Life Support Treatment	1
Advanced Life Support Treatment	1
Extrication/Hazard Mitigation	3
Effective Response Force:	**6**

*Temporary or concurrent assignment with other task

For CFD, a moderate-risk assignment should bring at least six responders with the appropriate equipment to address the incident. The following figure lists CFD's alarm assignment for moderate risks.

Figure 100: Moderate-Risk Rescue Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	3	1	3				
Ladder/Aerial[3]	4	1	4				
Rescue							
Chief Officer	1	1	1				
Ambulance/EMS	2			1	2		
Totals:	**10**	**3**	**8**	**1**	**2**		
Staff Required:	**6**						
Difference:	**+4**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

High-Risk Technical Rescue

High-risk rescue incidents are typically rescuing from a more hazardous condition that may require the services of a specialty technical rescue team. These incidents need specialized equipment, more staffing, and enough command to manage the more complex incident. In addition, there may be multiple injuries, some of which may be severe. Examples of this type of rescue include numerous motor vehicle crashes or commercial passenger carriers requiring extrication or water rescues. The following figure shows CFD's critical tasking for high-risk rescue incidents.

Figure 101: High-Risk Rescue Critical Tasks

Task	Personnel Needed
Command/Support	2
Safety	1
Size up (360^0)	*
Operations	1
Rescue Teams	6
Rescue Support Group	8
Basic Life Support Treatment	2
Advanced Life Support Treatment	1
Effective Response Force:	**21**

*Temporary or concurrent assignment with other task

For CFD, a high-risk assignment should bring at least 21 responders with the specialized equipment and training needed to address the incident. The following figure lists CFD's alarm assignment for high risks.

Figure 102: High-Risk Rescue Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	15	4	12	1	3		
Ladder/Aerial[3]	4	1	4				
Rescue							
Chief Officer	2	1	1	1	1		
Ambulance/EMS	5			3	5		
Totals:	**26**	**6**	**17**	**5**	**9**		
Staff Required:	**21**						
Difference:	**+4**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Maximum-Risk Technical Rescue

Maximum-risk rescue incidents are typically rescuing from a more hazardous condition requiring the services of a specialty technical rescue team and may be spread out geographically. These incidents will need more specialized equipment, sufficient staffing, and enough command to manage these complex incidents. In addition, there may be multiple injuries, and the entrapment poses significant hazards to the responders. Examples of this type of rescue include structural collapse, swift water, trench, or earth collapse rescues. The following figure shows CFD's critical tasking for maximum-risk rescue incidents.

Figure 103: Maximum-Risk Rescue Critical Tasks

Task	Personnel Needed
Command/Support	2
Safety	1
Size up (360^0)	*
Operations	1
Entry Team Leader & Teams	9
Rescue Support Group	12
Basic Life Support Treatment	2
Advanced Life Support Treatment	1
Staging	1
Effective Response Force:	**29**

*Temporary or concurrent assignment with other task

For CFD, a maximum-risk assignment should bring at least 21 responders with the specialized equipment and training needed to address the incident. The following figure lists CFD's alarm assignment for maximum risk.

Figure 104: Maximum-Risk Rescue Alarm Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	15	5	15				
Ladder/Aerial[3]	4	1	4				
Other Fire Units[4]				7	14		
Chief Officer	2	1	1				
Ambulance/EMS	5			5	9		
Totals:	**43**	**7**	**20**	**12**	**23**		
Staff Required:	**29**						
Difference:	**+14**						

[1] Automatic aid is dispatched simultaneously with the responsible agency.

[2] Mutual aid companies must be requested by the responsible agency.

[3] Ladders/Aerials may be substituted for an engine. An engine may respond if a ladder/aerial is unavailable, provided the appropriate equipment is on hand.

[4] CFD did not specify types of units from the auto aid category.

Hazardous Materials Response (HazMat)

HazMat is another service often provided by fire agencies. Their hazardous atmosphere training for structure fires was a natural step toward meeting the need to mitigate HazMat incidents. The following figure summarizes CFD's resources needed based on critical tasking, the number of resources assigned, and the difference between the two by risk level in the HazMat category.

Figure 105: CFD HazMat Task/Alarm Summary

Risk Level	Tasking	Assigned	Difference
Low	3	3	0
Moderate	8	6	+2
High	21	23	+2
Maximum	30	34	+4

Low-Risk HazMat

Low-risk HazMat responses do not require responders to enter a high hazard, or hot zone, with anything more than structural fire protection. Therefore, these incidents can typically be addressed by one unit. Examples of a low-risk HazMat incident include investigations without sick parties, fuel spills of less than 20 gallons, small natural gas leaks, and downed power lines. The following figure shows CFD's critical tasking for low-risk HazMat incidents.

Figure 106: Low-Risk HazMat Critical Tasks

Task	Personnel Needed
Command	1
Safety	*
Size up (360^0)	*
Hazard Mitigation	2
Effective Response Force	**3**

*Temporary or concurrent assignment with other task

A low-risk HazMat assignment should bring at least three responders with the appropriate equipment to mitigate the incident. In addition, specialized equipment, such as air monitoring, may be required to ensure responder safety. The following figure lists CFD's alarm assignment for low risks.

Figure 107: Low-Risk HazMat Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	3	1	3				
Ladder/Aerial[3]							
Rescue							
Chief Officer							
Ambulance/EMS							
Totals:	**3**	**1**	**3**				
Staff Required:	**3**						
Difference:	**0**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Moderate-Risk HazMat

Moderate-risk HazMat responses do not require responders to enter a high hazard, or hot zone, with anything more than structural fire protection. Examples of a moderate-risk HazMat incident include carbon monoxide alarms with symptomatic victims, fuel spills between 20 and 55 gallons, and pipeline breaches not threatening any exposures. The following figure shows CFD's critical tasking for moderate-risk HazMat incidents.

Figure 108: Moderate-Risk HazMat Critical Tasks

Task	Personnel Needed
Command	1
Safety	*
Size up (360^0)	*
Pump Operations/Decontamination	2
HazMat Group Supervisor	1
Hazard Mitigation	2
Effective Response Force:	**6**

*Temporary or concurrent assignment with other task

For CFD, a moderate-risk HazMat assignment should bring at least six responders with the appropriate equipment to mitigate the incident. In addition, specialized equipment, such as air monitoring and defensive dams or dykes may be required to ensure responder and environmental safety. The following figure lists CFD's alarm assignment for moderate risks.

Figure 109: Moderate-Risk HazMat Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	6	2	6				
Ladder/Aerial[3]							
Rescue							
Chief Officer	1	1	1				
Ambulance/EMS							
Totals:	**7**	**3**	**7**				
Staff Required:	**6**						
Difference:	**+1**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

High-Risk HazMat

High-risk HazMat responses may require responders to enter an unknown hazard hot zone. This will require specialized equipment and support from a specially trained and equipped hazardous materials team. In addition, these incidents require establishing specific exclusion zones and a more complex decontamination corridor. Examples of a high-risk HazMat incident include a release with 3 to 8 victims, gas leaks inside a structure, flammable gas or liquid pipeline break with exposures, fuel spills larger than 55 gallons, transportation or industrial chemical release, or a radiological event. The following figure shows CFD's critical tasking for high-risk HazMat incidents.

Figure 110: High-Risk HazMat Critical Tasks

Task	Personnel Needed
Command	2
Safety	1
Size up (360^0)	*
Operations	1
Entry Team Officer & Team	3
Backup Entry Team	2
HazMat Support Group	6
Decontamination Group	4
Medical Group	2
Effective Response Force	**21**

*Temporary or concurrent assignment with other task

For CFD, a high-risk HazMat assignment should bring at least 21 responders with the appropriate equipment to mitigate the incident. In addition, specialized equipment, such as air monitoring, technical entry suits, decontamination solutions and containment, and special tools may be required to ensure responder and environmental safety. The following figure lists CFD's alarm assignment for high- risks.

Figure 111: High-Risk HazMat Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	9	3	9			2	6
Ladder/Aerial[3]	4	1	4				
Rescue						1	3
Chief Officer	1	1	1				
Ambulance/EMS							
Totals:	**23**	**5**	**14**			**3**	**9**
Staff Required:	**21**						
Difference:	**+2**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Maximum-Risk HazMat

Maximum-risk HazMat responses may require responders to enter an unknown hazard hot zone, may affect a large geographic area, and requires special teams with monitoring and detecting devices. This will require specialized equipment and support from a specially trained and equipped hazardous materials team. In addition, the incident will require the establishment of specific exclusion zones, multiple support divisions, and a detailed decontamination corridor. Examples of a maximum-risk HazMat incident include nine or more contaminated victims, a significant storage tank failure, a hazardous materials railcar failure, or weapons of mass destruction event. The following figure shows CFD's critical tasking for maximum-risk HazMat incidents.

Figure 112: Maximum-Risk HazMat Critical Tasks

Task	Personnel Needed
Command	2
Safety	1
Size up (360^0)	*
Operations	1
Entry Team Officer & Team	5
Backup Entry Team	4
HazMat Support Group	8
Decontamination Group	4
Medical Group	4
Staging	1
Effective Response Force:	**30**

*Temporary or concurrent assignment with other task

For CFD, a maximum-risk HazMat assignment should bring at least 21 responders with the appropriate equipment to mitigate the incident. In addition, specialized equipment, such as air monitoring, technical entry suits, decontamination solutions and containment, and special tools may be required to ensure responder and environmental safety. The following figure lists CFD's alarm assignment for maximum- risks.

Figure 113: Maximum-Risk HazMat Assignment

Unit Description	Total Staff	CFD Units		Auto Aid[1]		Mutual Aid[2]	
		Units	Staff	Units	Staff	Units	Staff
Engine	9	6	18			2	6
Ladder/Aerial[3]	4	1	4				
Rescue						1	3
Chief Officer	1	1	1			2	2
Ambulance/EMS							
Totals:	**34**	**8**	**23**			**5**	**11**
Staff Required:	**30**						
Difference:	**+4**						

[1]Automatic aid is dispatched simultaneously with the responsible agency.

[2]Mutual aid companies must be requested by the responsible agency.

[3]Ladders/Aerials may be substituted for an engine if a pump and water are equipped.

Performance Objectives

CFD has not officially adopted performance objectives. However, this information is essential as it gives management and the community a context to judge the ongoing services provided. CFD can create key performance indicators (KPI) to monitor and evaluate performance from these performance objectives. The most common KPI used in emergency response is time. Studies conducted by the National Institute of Standards and Technology (NIST) have indicated rapid intervention during a fire situation will have the most significant impact.[15] Additional studies by the American Heart Association (AHA) suggest that cardiac arrest intervention within the first few minutes after the event doubles or triples a person's chance for survival.[16]

The October 2017 *Emergency Services Master Plan* for the Aptos/Le Selva Fire Protection District (A/LSFPD) indicated that in 2005 the district adopted performance statements. The first-due statement, an indicator of resource distribution, was written as:

> *"For 90 percent of all incidents, the first-due unit shall arrive within six minutes in the suburban demand zone or eight minutes in the rural demand zone. The first-due unit shall be capable of advancing the first line for fire control or starting rescue when life hazard is present, or providing Advanced Life Support with defibrillation for medical incidents." (sic).*

An additional effective response force (ERF) statement, indicating resource concentration, was also included. This ERF statement was written as:

> *"For 90 percent of all risk areas and for all risk types, an effective response force shall arrive within twelve minutes' total response time, provide 1,500 gallons per minute for firefighting and maintain compliance with all applicable safety mandates. An effective response force for confirmed structure fires will be 16/17 personnel (five 3-person engines or trucks and 1 Division Chief)." (Sic).*

Both statements are a good starting point for CFD, with some specifics needed for an effective performance statement. For example, it identifies the time requirement, first-due unit capabilities, and total ERF for a structure fire. However, this information is based on A/LSFPD requirements and may not reflect current CFD operations.

When creating and adopting performance standards, it is crucial to determine what performance will be measured and what the expectations are for any given incident. The easiest way is to create a benchmark or desired level of service and then develop monitoring systems for measuring the baseline as CFD attempts to meet its goals.

The Commission on Fire Accreditation International (CFAI) defines a benchmark as a target or standard from which the program may be judged.[17] In the incident response context, it is a set of KPIs and filters for measuring them. Unfortunately, very few standards are available for a performance review in fire departments. Therefore, the CFAI leaves the policy up to the agency. The one standard creating resource is the National Fire Protection Association. For CFD, a career fire response agency, the appropriate standard is NFPA 1710, *Standard for the Organization & Development of Fire Suppression Operations, Emergency Medical Operations, & Special Operations to the Public by Career Fire Departments.* This standard lists several programs' resources, capabilities, staffing levels, and response time standards. The historical system performance section of this master plan provides an overview chart of response NFPA standards.

It should be noted that these standards are very aggressive and many fire agencies struggle to meet them. Because the standards are difficult to meet, CFAI allows agencies to create their own performance standards. These benchmarks are developed depending on the risk levels and needs of the community and should consider stakeholder input.[18] The CFAI requires an agency seeking accreditation to define performance by program, risk levels within each program, and geographic planning zones.[19] It should also be noted that the CFAI allows for evaluating urban and rural areas with different travel time standards.

CFD would benefit by creating performance statements. These statements should be based on their historical performance, found in this plan's Historical System Performance section. In addition, they will need to evaluate the equipment requirements based on the critical task analysis in this section. From these two components, they should be able to update their performance statements, develop KPI definitions, define data requirements, and create report standards. This will then allow for a more thorough service gap analysis. The elements of a good performance statement include:

- The program and risk level. For example: "For a WUI fire of moderate-risk intensity…."
- The type and capabilities of the first arriving unit. This type of apparatus will be used to stop the clock. Agencies seeking accreditation should indicate units capable of physically addressing the hazard. For example: "the first arriving engine, carrying at least 500 gallons of water and capable of pumping at least 150 gallons per minute with a minimum crew of 3 capable of size up, command, and initial attack…."
- The time and measure of the first unit. For agencies seeking accreditation, the CFAI stresses the need to identify the method it utilized to determine the time standard.[20] It is a common practice to indicate the response mode and any demographic modifiers at some point. For example, "will arrive in emergent situations within 10 minutes in the rural areas and within 15 minutes in wilderness areas 90 percent of the time."
- The number and types of individuals, teams, and apparatus define the expected complete alarm assignment or effective response force. The amount of equipment and people should be based on the critical task analysis rather than the dispatch policy. This is especially true for CFD, who dispatches more than what was identified as needed in the tasking. This will have the effect of increasing the ERF response times. For example: "A complete effective response force of 15 people, arriving in at least two type-III engines, and one water tender…."
- The capabilities of the ERF. This should be based on the agency's critical tasking and tactics. For example: "capable of sustained command, safety, staging, recon, flank attacks, and structural protection…."
- And finally, the time and measure of the ERF. This may include modifiers such as response mode or demographics. For example, "in an emergency situation will arrive within 20 minutes in rural areas and within 30 minutes in wilderness areas 90 percent of the time."

Section II:
SUPPORT PROGRAMS

Communications & Dispatch

Emergency communications and dispatch services are provided to Central Fire District by Santa Cruz Regional 911 (NetCom), which has been in operation for 25 years, as of 2021. NetCom is a regional center operating as the Primary Public Safety Answering Point (PSAP) for Santa Cruz and San Benito Counties and encompasses more than 330,000 residents and visitors. The center serves multiple fire, law enforcement, and EMS agencies.

NetCom processes nearly 600,000 calls annually.[21] Although the center follows national standards for call answering, it focuses on achieving the State of California's standard (which is higher), of 95% of incoming 911 calls being answered within 15 seconds—equivalent to three rings at NetCom.[22]

Figure 114: Santa Cruz Regional 911 Center Calls[23]

Call Type	2019	2020	2021
Wired 911	19,981	17,130	13,880
Wireless 911	111,483	110,906	117,171
VOIP 911	8,222	7,455	10,773
Text to 911	192	300	294
Total 911 Calls:	**139,878**	**135,791**	**142,118**
10-Digit Emergency	35,835	33,841	33,496
10-Digit Non-Emergency (Law)	166,151	154,098	148,261
10-Digit Other	217,821	201,405	197,827
Total 10-Digit Calls:	**419,807**	**389,344**	**379,584**

Depending on the type of incident, once a connection has been established with a caller, the Public Safety Dispatcher (PSD) is expected to create a call for service within 60–90 seconds (call processing time). In more critical incidents, maximum allowable time to generate a call for service is 75 seconds. The PSD may extend their time with the caller in order to give pre-arrival instructions (CPR, etc.) in medical emergencies.

Life Safety Services & Public Education

A fire agency must commit to community risk reduction to excel in its mission. After the landmark 1973 report, *America Burning,* the American fire service started a concerted effort to reduce fires and fire loss. A focus on education, code development, and life safety code enforcement helped reduce the number of commercial structure fires by nearly 60% since 1980.[24] Arguably, this initial downward trend directly results from new, stricter life safety codes and focused public education. Enforcement and education came at a fraction of the cost of emergency response.

Unfortunately, the reduction in fire loss slowed significantly throughout the 1990s and has remained relatively steady since 2000. The total number of civilian fire deaths followed this trend. Deaths per million population decreased substantially from 1980 through 2000. Then the rate of decrease slowed through 2010, which has since remained constant. In addition, fire deaths in homes and residential structures, which make up only one-quarter of all fires, make up approximately three-quarters of all fire deaths and injuries.[25] The National Fire Protection Association (NFPA), *Fire Loss in the United States During 2020,* reports, "There is still more work to do, particularly around home fires."

Fire agencies need to focus at least some of their resources on prevention. These life safety endeavors must be focused, consistent, strategic, and monitored for success.

Community Risk Reduction

Community risk reduction is the generic term used by the United States Fire Administration (USFA), among others, to define an agency's approach to addressing hazards in their community. These hazards are defined and documented in the community risk assessment.[26] In addition, USFA advocates the five "E's" approaches to focus on risk reduction activities: education, enforcement, engineering, economic incentives, and emergency response.[27] The emergency response component is evaluated elsewhere in this master plan. This section is a discussion of the remaining four.

Education

There are many ways to accomplish public education on fire and life safety topics. The key to success lies in an agency's ability to correctly identify hazards and deliver a message or program that diminishes that risk. Any targeted educational curriculum, presentation, lecture topic, brochure, or mass media delivery can have the desired outcome.

The 2019 NFPA Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations identifies public education programs. Each program is based on the agency's community risk assessment, targets specific ages, and includes directions to provide information to each program's caregivers or adult supervisors.

Figure 115: NFPA Recommended Programs[28]

Program	CFD Delivers
Daycare, Preschool, & Pre-K–12 School Education	Yes
Higher Education	No
Independent Senior Adult Education	No
Adult and Community-Wide Education	Yes
Workplace Education	Yes
Youth Fire Setter Education	No
Home Safety Education	Yes
Wildfire Safety Education	Yes

*Limited Firewise education materials available

CFD has a robust fire and life safety education program managed by its community risk reduction division. The Junior Fire Marshal® Program from The Hartford is presented by station personnel. This program is a four-day educational series for kindergarten through grade 3 with age-appropriate materials and activities. The agency provides in-home fire safety education and fire extinguisher use. In addition, they provide cardiopulmonary resuscitation (CPR) training and blood pressure checks. Programs and instruction are available in both Spanish and English. However, their most robust training goes along with their wildland interface inspection program, educating homeowners in this environment.

CFD does not currently have a juvenile fire setter or injury prevention program. In addition, even though there are indications of assisting and educating the senior population, they do not have a specific program to meet this need.

Enforcement

Developing the robust and applicable fire and life safety codes was at the heart of early successes in risk reduction. However, maintaining these gains requires a continuous effort in code enforcement. Although not explicitly mentioned in the *Community Risk Reduction Planning, A Guide for Developing a Community Risk Reduction Plan,* fire cause determination and prosecution are integral in this enforcement.

Code Enforcement Inspections

A trained, capable staff who applies specific codes is critical to the ongoing success of loss prevention. The 2019 NFPA 1730 *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations* defines inspection frequency based on hazard classification. How buildings and occupancies are classified is left to the authority having jurisdiction (AHJ). The NFPA and USFA offer guidance in risk classification. Still, the agency should develop its risk classification to meet its needs. Once the hazard classification is determined, the agency should create a consistent process and timeline to complete these enforcement programs.

Figure 116: NFPA Inspection Frequency[29]

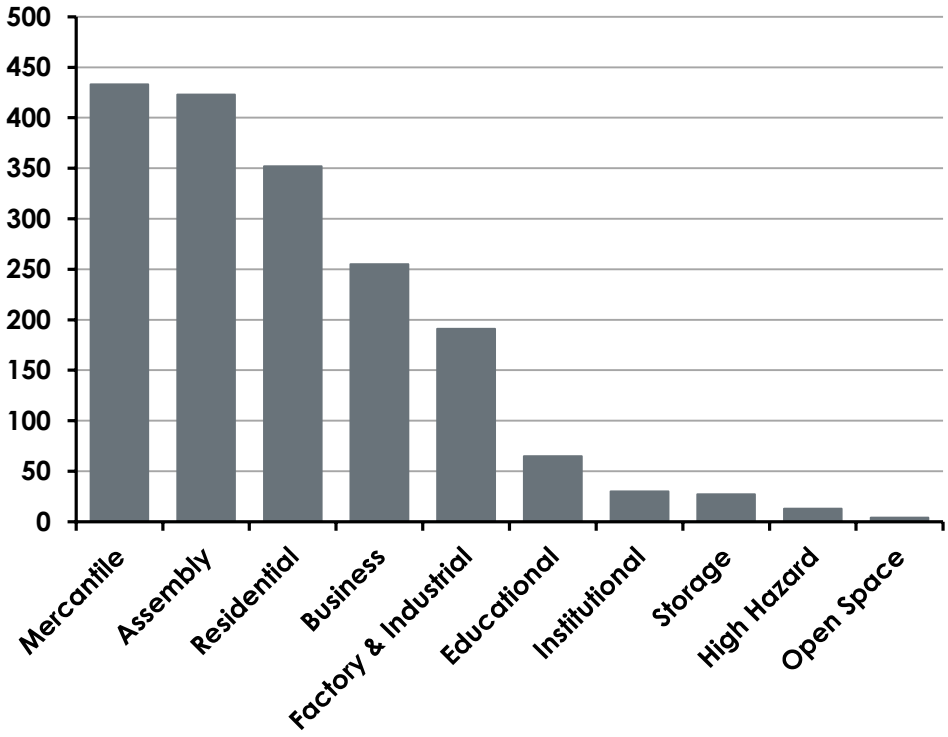
Risk Classification	Inspection Frequency
High	Annual
Moderate	Every Other Year
Low	Every Three Years
Critical Infrastructure	To Be Determined by AHJ

Since 2019 all California fire agencies have been required to inspect buildings and public spaces within their jurisdiction based on the adopted codes. They are required to report to the State Fire Marshal for compliance with these inspections. In addition, they are required to annually inspect hotels, motels, lodging houses, apartment houses and dwellings, buildings, and structures, except stand-alone homes.

CFD has adopted, by local ordinance, the 2019 edition of the International Fire Code (IFC) with California amendments. In addition, it has adopted local regulations relating to fire prevention and community risk reduction.

The District has an inspection program for all business occupancy types within these ordinances. Most businesses classified as a B occupancy are completed with a self-inspection. In contrast, trained fire and life safety inspectors conduct those B occupancies, not on self-inspections and all others. This inspection program is captured in a computer-based software system. The Fire Marshal, Deputy Fire Marshal, and three Inspectors perform these occupancy reviews. The following figure shows the occupancy type inspections listed in the records management system.

Figure 117: 2021 Inspections by Occupancy Type



CFD, by board resolution, charges some occupancies inspection fees but has not adopted a citation process for code enforcement. The above inspections account for approximately 2,000 hours of staff time. However, most inspections were suspended in 2020 and 2021 due to the COVID-19 pandemic. Therefore, the 2021 inspections only accounted for 415 or about 415 hours. It also appears that an additional 1,354 B occupancies are eligible to perform self-inspections.

In addition to the occupancy inspections required by the IFC, CFD performs home wildland fire inspections. These inspections are governed by the California Fire Code, Chapter 49, and the California Public Resources Code 4291. To accomplish these inspections, the District utilizes four seasonal full-time defensible space inspectors. In 2021 these inspectors focused their assessments on high-hazard areas and completed 1,218 evaluations.

Fire Cause Investigation

Establishing fire causes is crucial for agencies and the fire service. Understanding how fires start and progress is essential to help develop new codes, report problematic equipment, and develop fire prevention programs. In addition, catching and prosecuting those who intentionally set fires can reduce future fire loads, saving life and property. Therefore, appropriately trained, and equipped personnel in investigative methods, evidence collection, and chain of custody are necessary. The 2019 NFPA 1730 *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*, Chapter 8, outlines NFPA's recommended investigation program. In addition, the 2022 NFPA 1033 *Standard for Professional Qualifications for Fire Investigators* defines the specific job competencies required to investigate fires.

CFD staff completes fire origin and cause determinations. These investigations are conducted by the Fire Marshal and several Captains. Investigators are certified at a minimum as California Office of the State Fire Marshal or the California Conference of Arson Investigators as Fire Investigator 1. Arson investigations are completed and prosecuted with the assistance of local law enforcement. CFD also participates in the Santa Cruz County Fire Investigation Team and can pull resources from that organization for help. Fire investigation records are captured in the District's records management system.

Engineering

The creation and application of newer life safety and fire prevention systems have one of the highest success rates in loss prevention. For example, building fire suppression and smoke detection have helped reduce life and property damage. These and other systems directly result from technological advances and mandating improvements and advocating for these systems can prevent loss.[30]

CFD advocates and mandates newer technical systems through its plan review process and current code adoptions. In addition, it consults builders for new construction, occupancy changes, and tenant improvements during this process. The plan approval process further reinforces this. Fire code adoption has mandated sprinkler systems in specific occupancies and has been in place since 1989.

Economic Incentives

Motivating individuals and companies to invest in safety can be difficult. Many of the engineering advancements that are not mandated rarely get instituted. Economic incentives, such as government programs that reward life safety systems investment, can help change behavior. Conversely, adverse incentives, such as inspection infraction fines or other monetary penalties for non-compliance, can also help change behavior.[31] The agency can advocate implementing positive economic rewards or creating fine schedules with additional government organization participation.

CFD, by board resolution, utilizes some fee structures to help mitigate certain behaviors. For example, a fee for nuisance alarms puts economic pressure on occupants to ensure their required systems work. Nuisance alarms are defined as false alarms occurring three or more times a month. In addition, it has a policy to charge for traffic accidents caused by negligence or substance abuse. There is also a fee for hazardous materials responses. These fees amount to the actual costs incurred by the District and applicable administrative fees. Finally, while there is no citation mechanism, CFD charges business occupants for excessive reinspection or failure to comply with fire code requirements. This is intended to encourage compliance with fire and life safety codes. Fees for specific permits and civil litigations are also in place.

The fees for safety concerns and abuse of the response system are in place. Still, there does not appear to be positive economic incentives. For example, incentives such as waiving fees for violation-free inspections or adding protection systems above and beyond the code requirements could be adopted.

Program Review

For a community risk reduction plan to remain effective, including education, enforcement, engineering, economic incentives, and emergency response, it must have specific goals and objectives. Periodic reviews describe the performance and how programs address a community's risk. The review process includes the three key aspects of data collection, outcome definitions, and program analysis. A lack of current and effective reviews turns a well-meaning plan into a document with little relevance.

Data Collection

Incident data is a good starting place to understand operational needs and the risks faced by the community. More data sets can help further define and monitor risk reduction program effectiveness. A sound records management system for inspection and plan review processes will consist of scheduled or completed inspections and reviews, the number of violations, and their correction. Additional information, such as public contacts and educational topics, can help formulate a solid understanding of the overall risk reduction program.[32]

CFD captures incident information, including fire investigations, in a computer-based system. In addition, it collects inspection information, including violations, in the same system. CFD does not appear to collect statistics on public contacts or public education and community outreach programs. These programs were severely curtailed during the COVID-19 pandemic in 2021, and these programs' current rebound is unclear.

Outcomes

Understanding outcomes of risk prevention tasks such as education and enforcement can be complex. In most cases, it requires inferring how a program affects the total number and severity of incidents by assessing those that did not occur. However, defining expected outcomes is essential to judge the program's effectiveness fairly. Identifying at-risk populations and analyzing the number of incidents an agency responds to within that population before and after meeting specific benchmarks may help guide the program analysis. The *Community Risk Reduction Planning Guide* provides examples of identified risks and describes strategies to cope with those risks.[33]

CFD does not appear to have a stated outcome goal for its community risk reduction efforts. However, their efforts in life safety inspections and aggressive WUI inspection programs are attempts to reduce life and property loss. Therefore, creating outcome goals will assist CFD in focusing its community risk reduction resources for the best-desired effect.

Analysis

After the outcome identification and the data collection, the final step is to analyze the information periodically to determine program effectiveness. Typically, this analysis will evaluate historical loss or injury types against current loss trends across each program. For example, a loss reduction may indicate the program is having an effect. At the same time, no changes or increases may require more research to understand the root cause of the apparent lack of progress.

For example, an agency has reviewed incident information. It has determined a potential problem with smoker-initiated fires. Then the agency introduces a program to reduce these fires. For analysis, the first step would be to generate a list of fires caused by smokers. Then it would generate a new list after program completion to compare pre-and post-program statistics to evaluate the strategy's impact. There are several examples of programs and potential outcomes in the *Community Risk Reduction Planning Guide* for references. In addition, the 2019 NFPA 1730 *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*, also has an example of a program with outcome evaluations, including a yearly summary of stated efforts.

CFD does complete some analysis for the community risk reduction division. This is evident in the annual reports completed by the District. A division section within the annual report discusses specific programs and totals the number of inspections by type. However, a more detailed cause and effect or prevention program analysis is not apparent.

Special Operations Programs

Through the years, the fire service has added specific operational responses. These responses include hazardous materials (HazMat) and technical rescue responses. Absorbing these emergency response capabilities developed from an increasing need and associated risks to responders and limited similarities to the fire incident mitigation. This section describes CFD's technical rescue and limited HazMat capabilities.

Hazardous Materials Response

Hazardous materials are common in most, if not all, communities across the United States. Since the 1970s, it has become standard for fire departments and districts to respond to and mitigate hazardous materials events. However, each agency must try to match the level of service to the risk associated in their areas of responsibility, utilizing sound fiscal and risk management policies. Although no agency should ignore this risk, they can choose several approaches for a response. First, agencies may take a non-active role, just being aware of the hazard and contacting agencies to deal with the incident by training their responders to the awareness level. They may take a response and defense stance, whereby responders are moderately equipped and trained at the operational level to defend people and property without entering the hazardous zones. Finally, some agencies may choose to equip and train their responders to directly enter the dangerous zones, utilizing specialized equipment and technician-level training. Agencies also have the option to take any combination of these three approaches.

General Risk

CFD communities have a moderate level of hazardous materials risk. This is like most communities across the nation. The small quantities of hazardous materials they face are generally located in small manufacturing processes, private dwellings, and mercantile businesses. They face more significant amounts of HazMat, primarily through the highways and potentially rail traffic. A complete list of these risks is in the community risk section of this master plan.

HazMat Response

CFD trains and equips its responders with defensive tactics in mind. All responders receive HazMat training, most certified at the HazMat operations level. At the same time, some who participate in the County team are HazMat Technicians or Specialists.

The equipment on the apparatus includes limited absorbent materials and gas monitoring. Extended or specialized response requires outside assistance from the Santa Cruz Hazardous Materials Interagency Team. The team response is dictated based on a memorandum of understanding signed between four cities, the County, state parks, and the University of California, Santa Cruz.[34]

Technical Rescue

Another area of specialized response typically part of the fire service responsibility is the ability to rescue people from dangerous situations. The fire service had historically been responsible for getting people out of harm's way during fires. These rescues eventually transformed into the need to remove victims from any number of hazardous situations, some of which required specialized equipment and training. Collectively, this specialty became known as a technical rescue.

The Office of the State Fire Marshal of California does not list technical rescue among the standardized and recognized certifications.[35] This leaves the level of hazard and certification up to the responding agency. The National Fire Protection Association (NFPA) Standard 1006: *Technical Rescue Personnel Professional Qualifications* does specify 20 rescue specialties. Each rescue specialty is broken into the awareness, operations, and technician levels. The following figure lists the various hazards and technical rescue certification levels from NFPA.

Figure 118: NFPA Technical Rescue Certifications[36]

Rescue Type	Certifications
High & Low Angle	• NFPA Tower Rescue • NFPA Rope Rescue • NFPA Helicopter Rescue
Collapse, Confined Space, Trench, & Below Grade	• NFPA Structural Collapse Rescue • NFPA Confined Space Rescue • NFPA Trench Rescue • NFPA Cave Rescue • NFPA Mine and Tunnel Rescue
Vehicle & Machinery	• NFPA Common Passenger Vehicle Rescue • NFPA Heavy Vehicle Rescue • NFPA Machinery Rescue
Wilderness & Animal	• NFPA Animal Technical Rescue • NFPA Wilderness Search and Rescue
Moving & Standing Water	• NFPA Surface Water Rescue • NFPA Swiftwater Rescue • NFPA Dive Rescue • NFPA Ice Rescue • NFPA Surf Rescue • NFPA Watercraft Rescue • NFPA Floodwater Rescue

General Risk

CFD's general risk is like other urban coastal areas along the west coast of California. Roadways, including highways, pose a vehicle extrication risk. Areas inland from the ocean and hills may require a high- or low-angle approach. Any built-up area may be subject to building collapse, confined space, or below-grade rescues. The response area does not include a significant wilderness hazard. However, some more sparsely populated areas outside the urban corridor may resemble a wilderness rescue approach. The most considerable rescue hazard for CFD appears to be the ocean and surf activities. A complete description of these hazards is found in the community risk section of this master plan.

High- & Low-Angle Rescue Services

Removing a victim from an elevated or below-grade situation may require a high- or low-angle rescue approach. The high-angle rescue typically has the entire weight of the rescuer and/or victim suspended perpendicular to the ground. When rescuers use a low-angle rescue technique, the victim and responders are hoisted out of a situation with the assistance of ropes. In a low-angle case, the weight bearing is accomplished by direct or indirect ground contact.

CFD personnel is minimally trained to the operations, or incident support, level for high- and low-angle rescues. Some personnel receive additional training and can assemble and descend or ascend on a high-angle rope system. CFD cross-staffs an apparatus with an engine crew that provides rescue-rated ropes, tripod, and associated hardware for this type of rescue. In addition, each engine and truck is equipped with a complement of basic ropes and related hardware.

Collapse, Confined Space, Trench, & Below Grade Response

Building collapses, extrication from limited mobility and potentially hazardous atmosphere, dealing with trench collapses, and rescues below grade all require additional equipment and training. Understanding the physics and balance of rubble or earth during the collapse of buildings or trenches requires special training. The collapse scenario hazards, equipment, and human limitations of confined and below-grade responses also need additional equipment.

CFD personnel are minimally trained in incident support or operations level for building and trench collapse and confined space rescues. Some personnel receive additional training in confined space and trench rescue. CFD cross-staffs an apparatus with an engine crew with specialized equipment, including confined space equipment, stabilization lumber including plywood and shoring lumber, a high-velocity ventilation fan, cutting equipment, nail guns, air monitoring equipment, and a confined space litter.

Machine & Vehicle Response

Vehicle extrication and removal of trapped persons from machinery require specialized equipment. The equipment removes what is entrapping a victim and typically includes hydraulic, electric, or manual pushing, pulling, or cutting tools. CFD trains and equips its personnel for vehicle extrication. Some of the vehicle extrication skills transfer to other incidents. They provide one response apparatus, cross-staffed with an engine crew equipped with hydraulic rescue tools, hand tools, airbags, stabilizations cribbing, jacks, a winch, and specialty stabilization struts.

Moving & Standing Water Response

Moving and standing water presents an exceptional hazard and unique rescue situation to responders. Shallow, rapid-moving water can and has been known to wash potential rescuers away, resulting in injury or death. The same can be said of surf water, rip tides, and hidden hazards, and in some areas, large crowds add complexity and risk to these responses. As discussed in the community risk assessment, surf and water rescue are a higher priority for CFD, and they have more specialized equipment and training for this type of response.

CFD's ocean water response is the most robust of the technical rescue programs. More than a third of Firefighters are trained in ocean rescue, with several trained in water rescue craft operations. The Aquatic Rescue Response Team certifications are received through the United States Lifesaving Association and require additional annual training. Each engine and truck has ocean rescue tubes, personal flotation devices, marker buoys, and snorkels. They also are equipped with water rescue throw bags, although none of the responders are trained in swift water rescue. CFD also maintains two water rescue crafts.

One area of concern for the water rescue program is the inconsistent availability of lifeguard services on public beaches. While lifeguard services are not provided by CFD, their presence or vacancy directly affects the agency's ability to intervene quickly in an ocean rescue situation. With multiple communities and state beaches within the District, it would be beneficial for CFD to advocate for this service from each jurisdiction, regionalize, or evaluate whether CFD can provide the service.

Emergency Medical Services & Transport

Emergency Medical Services (EMS) is an integrated emergency care system that has evolved steadily over the past several decades. When an individual needs medical help, most services start with the dispatch center. Next, this is handed off to the first responders who use prehospital medical techniques to stabilize and start treatment. Finally, the patient is delivered to the emergency room doctors to continue the stabilization and treatments that began in the field and then transfer them to definitive care. This sophisticated system started with the concept of first responders rendering limited medical aid to those in need.

Unlike prehospital medicine, there is no specific start date when fire departments began rendering first aid in the United States. Conventional history suggests that ambulance drivers and aid personnel returning from World War I started helping civilians, many as volunteer Firefighters and Police Officers. However, formalized prehospital care began officially in California on July 15, 1970, when Governor Ronald Reagan signed the Wedworth-Townsend Paramedic Act.[37]

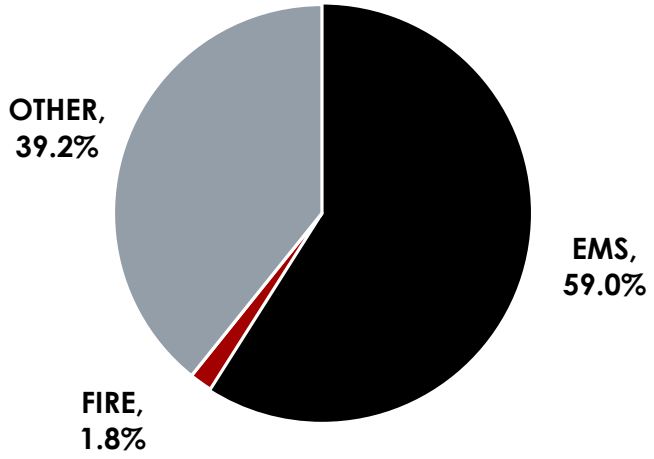
EMS Overview

From its humble beginnings, EMS has become the most prevalent response type in the United States fire service. Nationally, EMS calls represented 65.7% of the total responses in 2019. Additionally, 61.6% of fire departments in the United States provide advanced life support (ALS) or basic life support services (BLS). However, those that provide ALS or BLS services are equal to 93.0% of fire service agencies with a population size similar to CFD.[38]

EMS Incident Demand Distribution

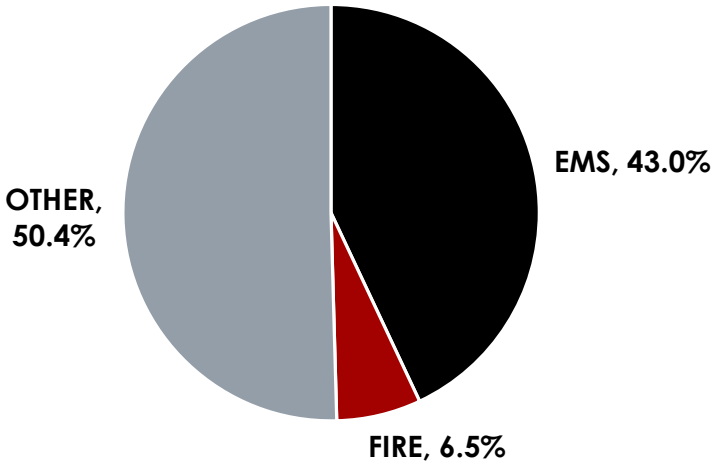
CFD provides EMS response at the ALS level, like 55% of the fire agencies with similar populations.[39] The service is primarily delivered from the frontline fire apparatus. However, CFD has a transport ambulance it places in service during high-demand times or when requested by the County. Because CFD underwent an extensive restructuring in 2021, the analysis in this section will focus on 2021 to account for new rules and apparatus designations. The following figure represents the total incident percentages for incidents in the 100 NFIRs category (fire), the 300 NFIRs category (EMS), and all other categories reported by CFD.

Figure 119: CFD Percent of Fire, EMS, & Other Incidents (2021)



CFD's 59.0% EMS responses roughly equates to the 2019 national 65.7%.[40] However, EMS calls, especially for a non-transport agency like CFD, typically take less staff time. To fully understand the impact of EMS on the agency, total staff time should be evaluated. The following figure studies the total staff hours committed to incidents, categorized by fire, EMS, and other call types.

Figure 120: Percent Incident Staff Time Committed (2021)



It becomes evident that while EMS is more significant in volume, it utilizes less of the available incident staff time.

Medical Care Necessity

Effective and immediate prehospital care in a medical emergency can make a difference in a patient's ability to continue a productive life. Lifesaving interventions, such as resuscitation, defibrillation, and medications, must be applied rapidly to be successful. In addition, understanding the most common incident types can help an agency determine where to place its limited resources. The following figure lists the top five causes of death for California (CA) and the County of Santa Cruz County (SCC).

Figure 121: Leading Causes of Death in California (2019)[41]

Condition	CA Deaths	SCC Deaths	CA Rate*	SCC Rate*
1. Heart Disease	399,891	1,919	10.05	7.08
2. Cancer	359,502	2,320	9.04	8.57
3. Alzheimer's Disease	112,701	435	2.83	1.61
4. Accidents	111,165	850	2.80	3.14
5. Stroke	107,553	653	2.70	2.41

*Crude death rate calculation, not adjusted for age.

California ranks well in many categories against the rest of the United States. In 2017 California ranked 40th for heart disease, 45th for cancer, and 50th for accidents. The state does worse for stroke, and Alzheimer's nationally ranked 24th and 14th, respectively.[42]

Central Fire District's EMS System

SCC mandates medical response by zones. Three zones are identified with associated time requirements. However, the compliance zones were not easily defined concerning CFD. While three performance zones were identified, only two were on the provided map. The following figure is a list of the zones and their requirement as stated by the County.

Figure 122: County Response Zone Time Requirements[43]

Zone	ALS Response	Ambulance Response
Zone 1	8 minutes	12 minutes
Zone 2	12 minutes	18 minutes
Zone 3	20 minutes	30 minutes

The associated zone map listed two response zones, rural/wilderness and suburban/urban. CFD falls primarily in suburban/urban response zones.[44] Therefore the assumption is CFD falls primarily into zone 1 in populated areas and some in unpopulated zone 3 sections.

Medical Transportation

Medical transportation is negotiated through SCC and is provided by a private ambulance service. The current contract, in place since 2019, is monitored for compliance by the County of Santa Cruz Health Services Agency (CSCHSA). According to the CSCHSA Emergency Medical Care Commission meeting minutes, April 18, 2022, the EMS Administrator reported that "response compliance looks good" to them.

As previously stated, CFD provides a medic unit, M3566, for transportation based on needs within the County EMS system. In 2021 this unit responded to 103 incidents; 90 were listed as no aid given or received and 13 as various aid given responses. Of these, 44 were listed as canceled responses and one as police assistance. The remaining 55 responses were labeled as medical. Except for one call on December 13, 2021, this unit staff engaged 0.9% of the total CFD hours on incidents, or approximately four staff hours in 2021. Most of the hours spent were on EMS-related calls. The December 13th call was a police assistance call that lasted almost 9 hours. All patient contact reports are captured electronically in a County-provided system.

In addition to ground transportation CFD has access to helicopter transport as needed. There are two helicopter transport providers available. Calstar is a private air transport service operating out of several air bases. The closest to CFD is in Watsonville. Life Flight is another flight and critical care transport program provided by Stanford Medicine in Stanford.

Patients are transported predominantly to Dominican Hospital in Santa Cruz, and Watsonville Community Hospital in Watsonville. Additional California hospitals are available to receive patients. These include the Santa Clara Valley Medical Center in San Jose and Stanford Hospital at Stanford, both level 1 trauma centers. Level 2 centers are available at Regional Medical Center in San Jose and the Natividad Medical Center in Salinas.

Medical Control & Oversight

Because field medicine is typically completed by Paramedics and emergency medical technicians (EMT) without a medical doctor on-site, responders follow a protocol-based system. Protocols are a formalized set of diagnosis and treatments that require very little direct supervision from the Medical Program Director. Specific protocols allow a Paramedic or EMT to act without medical control, and others require contacting a base station for further direction.

CFD operates its Paramedics with both State and County governance. California's Emergency Medical Services Authority (CEMSA) regulates prehospital medical certifications and scope of practices.[45] The County of Santa Cruz Emergency Medical Services Agency (CSCEMSA) defines policy and procedures and is the primary operational governing body. Additionally, CFD is a member of the Santa Cruz County Emergency Medical Services Integration Authority (EMSIA). This joint powers authority acts as a liaison between the CSCEMSA and provides training and quality oversite. The EMSIA also serves as the local jurisdiction regarding EMS provision for several fire agencies within the County. CFD's EMS Chief is a shared position within the EMSIA and coordinates CFD EMS operations.

In addition to the State, County, and local regulations, CFD operates under a medical director. This medical director is responsible for approving the protocols, including adopting the optional services allowed by the state. Additionally, the medical director gets medical advice from CSCEMSA medical director. Online medical control is provided by the base station medical direction services at Dominican and Watsonville hospitals.

EMS Staffing & Certification Levels

Having the correct number and level of certified responders on scene at a critical patient has been shown to directly impact survival. Agencies have struggled with determining the right size and placement of EMS response apparatus and staffing. Models vary significantly between agencies. Some systems may only provide BLS responders. While others use multiple ALS providers on a single resource, and some might use one ALS provider responding separately along with BLS resources. Other models also exist. Many individual doctors and organizations, such as the National Institute for Standards and Technology (NIST), have conducted research into the best model.

NIST completed a series of studies in 2010. The intent was to determine the most effective crew size and skill distribution for trauma and cardiac arrest patients. The tests were a series of controlled scenarios developed to analyze time-to-task performance. After conducting their experiments, they concluded the most efficient crew make-up for task completion was an engine company with a crew of three or four, one being a Paramedic and an EMT and Paramedic ambulance. Any similarly sized and equipped fire apparatus was implied in the research.[46]

Recent research indicates that multiple Paramedics on a single patient incident do not translate to a better survival rate. In 2018, the Journal of Emergency Medical Services (JEMS) published an article summarizing some of the research associated with multiple Paramedics on a single patient incident. The report concluded that fewer Paramedics per capita resulted in higher survival rates in cardiac arrest patients. The reasoning was more Paramedics in a system have less opportunity to practice their skills. In addition, it reported that having single versus multiple Paramedics on a cardiac arrest did not impact survival, return of spontaneous circulation, or survival after discharge.[47]

A paper by Dr. D. Ghilarducci, an EMS Medical Director, supported a similar conclusion. His report, titled *Dual Paramedic vs. Single Paramedic Ambulances in Santa Cruz County,* was completed in February 2017. Dr. Ghilarducci concluded that moving the ambulance contract to allow one Paramedic and one EMT on each ambulance was beneficial. He stated it would save money, improve skill retention, avoid Paramedic layoffs, and simplify training.

CFD currently operates ALS-equipped front-line apparatus with at least three staff, one of which is a Paramedic-qualified Firefighter or Officer. Other responders are certified at the EMT level. The private ambulance company is contractually required to provide at least one Paramedic and one EMT on the ambulance but may respond with two Paramedics. This system is compatible with the available current research.

Quality Management

Quality management and improvement should be the goal of any agency providing emergency services. EMS response requires special attention and has more parameters to evaluate. For example, crew capability, treatment efficacy, patient outcomes, and legal compliance need evaluation.

CFD operates under the Santa Cruz County EMS agency system policies and procedures. Policy 101, revised on May 22, 2020, defines the quality improvement program, and directs each response agency to develop its own quality improvement plan. In addition, it identifies the elements that must be included. Reference 813, revised May 22, 2018, defines the performance data dictionary and gives an example of transport and responder report cards. Information from each agency is submitted to the quality improvement committee (QIC) for review and discussion. The QIC was scheduled to meet 10 times in 2022, although the March and June meetings were canceled. CFD was identified as the host of 3 of the 2022 meetings. The EMS Chief is CFD's representative.[48]

It is unclear how effective the County quality management program is for CFD. There are indications that the medical director and crews interact infrequently, and the entire clinical review is in the hands of the QIC and County. No publicly available performance reports on the CSCEMSA website were newer than 2009. A review of the QIC minutes from the meetings in 2022 did not indicate any quality improvement initiatives or needs.

Logistical Support

Understanding the equipment and supply needs of the EMS responder is crucial to an effective program. EMS equipment can be expensive, and they have an effective life expectancy. Supplies need constant replacement due to use and expiration. Managing these replacements ensures EMS responders have the necessary supplies and can reduce operational costs.

CFD has inventory control measures in place. Crews perform daily equipment and supply checks on all apparatus, and controlled medications are secured. CFD budgeted $93,886 for EMS-related costs and supplies in the 2021/2022 budget. However, it does not recover costs associated with EMS responses. CFD can replace some medical supplies at the hospital, and the transport provider will also replace supplies used on the scene.

There does not appear to be EMS equipment other than the ambulance included in the capital replacement plan. The Lifepak-15 heart monitors/defibrillators were purchased in 2009. Replacing commercial-grade heart monitors/defibrillators can amount to a significant financial investment. Additional durable equipment should also be included in a capital replacement plan.

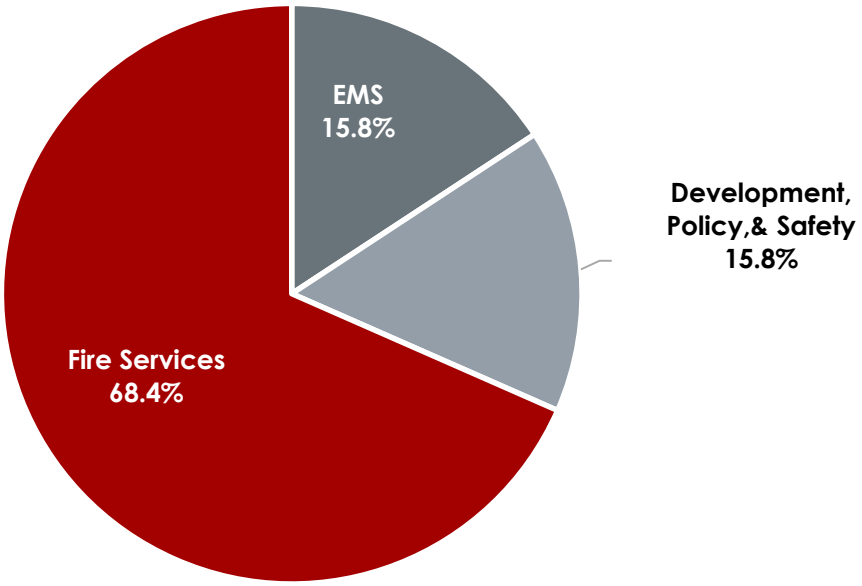
Training & Continuing Medical Education

Training is a core concept of emergency service delivery. Responders must have knowledge, skills, and abilities consummate with their level of service provision. Training programs should address initial, improvement, and ongoing needs that align with the agency's mission and responsibilities.

Training Requirements & Performance

CFD is a full-service fire agency providing fire, emergency medical service (EMS), limited hazardous materials (HazMat), wildland interface (WUI), and technical rescue responses. Training requirements vary based on certification levels. Therefore, the training needed to maintain service proficiency is diverse but can be grouped into three primary categories, development, policy, and safety, fire-based, and emergency medical services. The following figure indicates the total time spent on these three programs organization-wide.

Figure 123: Percent Hours by Category



Fire Service Training Overview

Fire-based training encompasses those skills required to maintain proficiency and certification in firefighting and rescue operations. CFD follows California's Office of the State Fire Marshal's professional certification requirements. These requirements do not require continuing education for maintenance or recertification.[49] However, CFD states they follow the Insurances Service Organization's training hour recommendations. The following figure is the continuing education annual hours required by a Firefighter for a maximum ISO score.

Figure 124: ISO Recommended Annual Hours

Training Requirement	Annual Hours per Firefighter[1]
Company Training	192
Officer Training[2] —OR— Driver Training[3]	12
HazMat	6
Total:	**210[50]**

[1] 18 training hours should be at the training facility

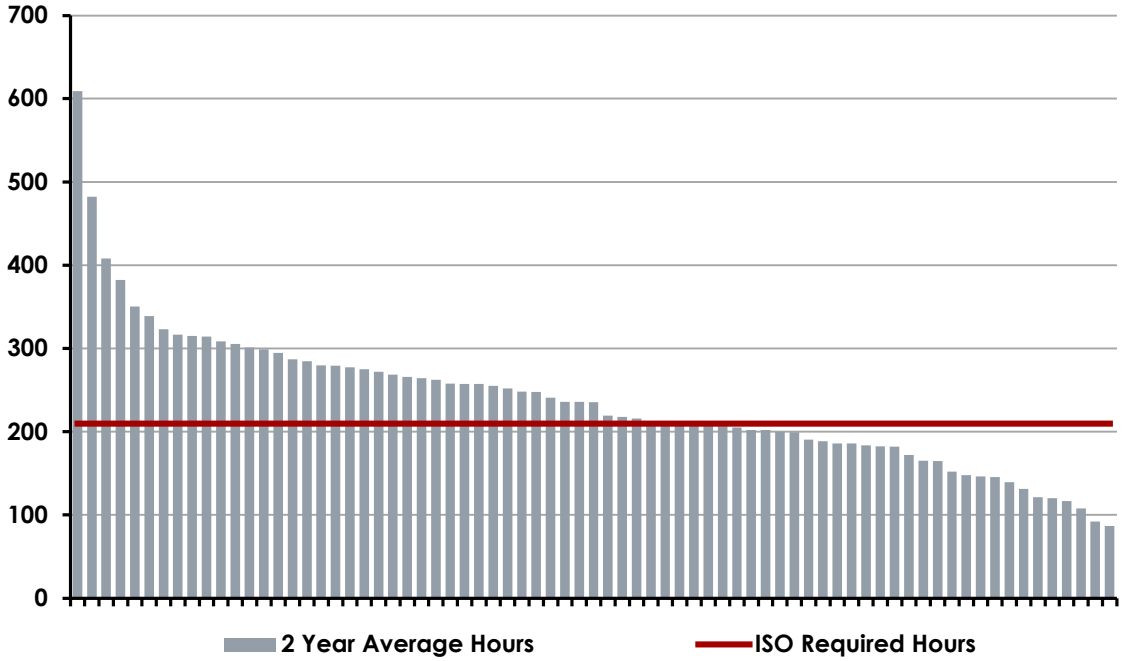
[2] Each officer or acting officer

[3] Members who are expected to drive the apparatus

To maintain this training volume, each member should be training for an average of 17.5 hours a month. Therefore, the annual average training hours for all Firefighters and Officers, not including the Chief and Division Chief, totals 237 per responder.[51] This is the number ISO would calculate and falls within the maximum recommended hours. However, individually evaluating each responder reveals that only 59% of the Firefighters and Officers meet the annual ISO recommendation.

The following figure shows the average annual training hours, averaged over 2020 and 2021. Employee information was removed, and employees without multiple years of data were not averaged.

Figure 125: Two-Year Annual Training Hour Average

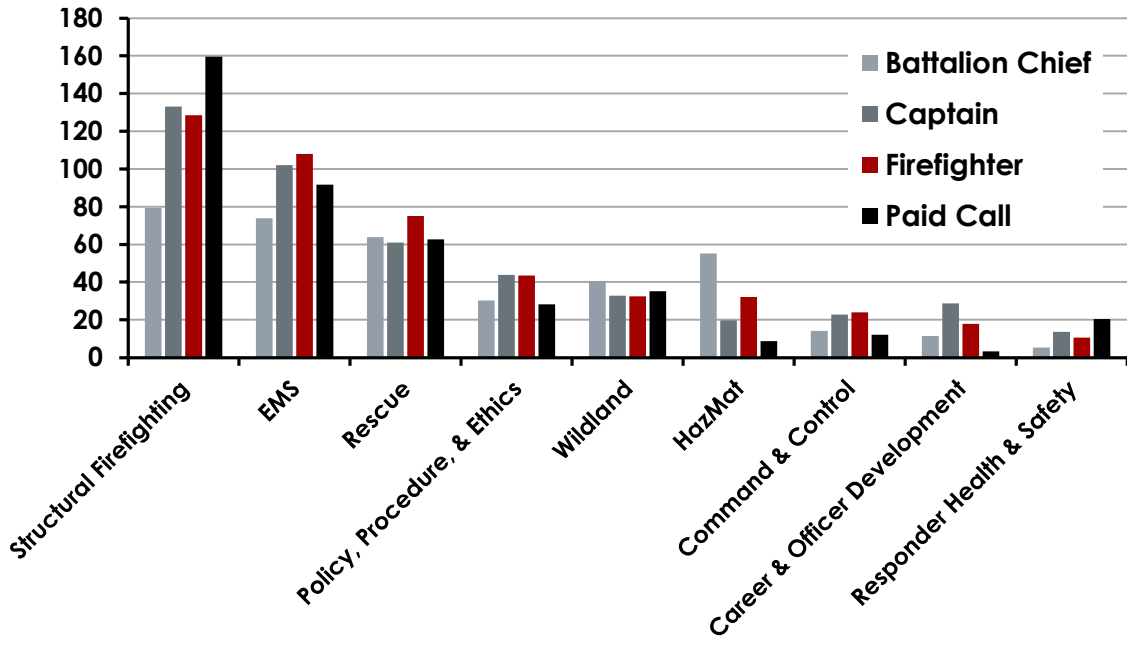


This figure indicates that training is not accomplished with the same frequency across all responders. While the total still meets the ISO recommendations, it relies heavily on those that choose to do more than the minimum training. This type of training hours distribution is not uncommon. Still, it does indicate there may not be a mandated and managed minimum training requirement.

Fire-Rescue Training Summary

Several categories greatly enhance Firefighter safety and effectiveness within the fire service program. Therefore, this evaluation breaks responders' hours into categories: structural firefighting, EMS, rescue, policies, wildland, hazardous materials (HazMat), command, development, and safety. The following figure illustrates CFD's average annual training hours completed by the person in each category separated into positions and includes 2020 and 2021 data.

Figure 126: Annual Hours by Category



Structural Firefighting Training

Structural firefighting is a high-risk, low-frequency event. As such, it requires a significant training investment to ensure responder capability. CFD first responders completed over 11,000 hours of training between 2020 and 2021. This total accounted for 28% of all training hours in those years.

Some subjects included in the structural firefighting venue include fire attack, engine and truck operations, tools, personal protective equipment, building construction, and fire behavior. CFD utilizes company-level and a formal training calendar to accomplish its training mission. In addition, online, didactic, and skills application training methods are part of the training program.

Rescue

Technical rescue is also a high-risk, low-frequency event. Because practitioners rarely get enough response experience, it also requires a significant training investment to ensure competency and safety. CFD's first responders completed over 5,900 training hours between 2020 and 2021 in rescue services. This total accounted for 15% of all training hours in those years. In each of those two years, each responder completed over 60 hours on average.

There are several specialties within the rescue category. Training topics include water rescue, ropes and tools, technical rescue techniques and support, and extrication. The most significant time investment during 2020 and 2021 was in aquatic rescue, accounting for nearly 31% of the rescue training category.

Policy, Procedure, & Ethics Training

Employees must be aware of and understand the general operational guidelines and policies that apply to them. Effective agencies indoctrinate employees early but require period reviews. CFD completed over 1,700 hours in this category in 2020 and 2021. This was 9% of the training hour investment, equating to over 10 hours per person on average during 2020 and 2021.

CFD is in the process of uploading its guidelines, policies, and procedures to a commercial system. The Lexipol system has a training component that CFD is planning on implementing. In addition, CFD operates and trains its staff under the Santa Cruz County policies. For example, policy 3206: *Personnel Accountability Report (PAR) Procedures* addresses the use of accountability tags and routine PAR checks. Training subjects in this category include guidelines, Occupational Safety and Health Administration (OSHA) mandates, vaccinations, and training on the records management system. 82% of the training hours were classified as policy and OSHA mandates in 2020 and 2021.

Wildland Urban Interface (WUI) & Wildland Firefighting Training

Wildland and WUI firefighting require specialized equipment and training. Initial and ongoing refresher training is necessary to maintain wildland firefighting credentials. This is also a high-risk activity and a significant threat to the CFD community. CFD utilizes several steps of firefighting credentialling. All career Firefighters must be certified as National Wildfire Coordinating Group (NWCG) Firefighter 2 and then Firefighter 1 before they finish probation. All Captains are qualified as NWCG Engine Bosses. All responders are required to maintain their specific level of certification and receive annual refresher training.

Wildland training accounted for 7% of the training hours completed by Firefighters during 2020 and 2021. This equated to approximately 16 annual hours for each Firefighter during those two years.

Hazardous Materials Training

HazMat responses require an additional set of skills. Some necessary skills include identifying a specific hazard, methods to safely respond to the hazard, emergency intervention, and technical HazMat response support. CFD utilizes the California Office of the State Fire Marshal certification levels for HazMat certification. Most responders are certified at the awareness or operations level. However, those responders that also serve on the Santa Cruz County Hazardous Materials Incident Team are technician level.

CFD personnel completed nearly 1,200 hours of HazMat training in 2020 and 2021. This accounts for approximately 6% of the total training hours, equating to an annual average of 7 hours per Firefighter during those two years.

Command & Control Training

Incident command is essential for responder safety and effective mitigation of hazardous conditions. Components of the incident command structure include common terminology, the chain of authority, and a flexible approach to incident management. Several systems are available. The Blue Card Incident Command and the command system (ICS) from the National Incident Management System (NIMS) are the two most prevalent. NIMS is very similar to the National Wildfire Coordinating Group (NWCG).

CFD completed over 941 hours of command-and-control training during 2020 and 2021. This accounted for 5% of the training hours during those years. Responders average 11 annual hours annually in incident command training, although the average was higher for Captains and career Firefighters.

CFD utilizes the ICS system, formally adopted by the State of California. All responders are required to receive an introduction to incident command and NIMS system, including the 100, 200, 700, and 800 certifications. In addition, all are required to obtain and maintain wildland firefighting training, which has an incident command component.

Captains are expected to be certified at the ICS-300 level and Chief Officers at the ICS-400 level. This system appears consistent with surrounding agencies. In addition, ICS is also commonly used during more significant incidents, such as fires in the wildland-urban interface (WUI) and disasters. Santa Cruz County is working on standardizing arrival reports, situation reports, and how a command is established on the radio, which CFD will utilize when finalized.

Responder Health & Safety

Responder's safety does not happen organically. Therefore, fire agencies must create policies that encourage safe behavior. The organization needs rules such as incident accountability, safe practices policies, enforced regulations on the proper use of personal protective equipment, and standardized communication techniques. However, additional wellness, nutrition, fitness, and cancer prevention policies and education should also be adopted to improve employee longevity.

CFD firefighters documented over 500 health and safety training hours in 2020 and 2021. This accounted for approximately 3% of all annual training hours for those two years. Responders averaged 6 hours annually of health and safety training. Topics included injury prevention, safety, survival, and mental health.

According to recent research, emergency apparatus involved in accidents result in a considerable level of liability.[52] To help mitigate this, agencies need effective policies, oversight, and additional training. Although CFD has assigned an online defensive driving course to be completed annually, it was unclear if this was documented in the training hours. For example, only 1 hour was labeled as driving safety in 2021 and none in 2020. However, the training may be captured in one of the other subjects listed in the health and safety category.

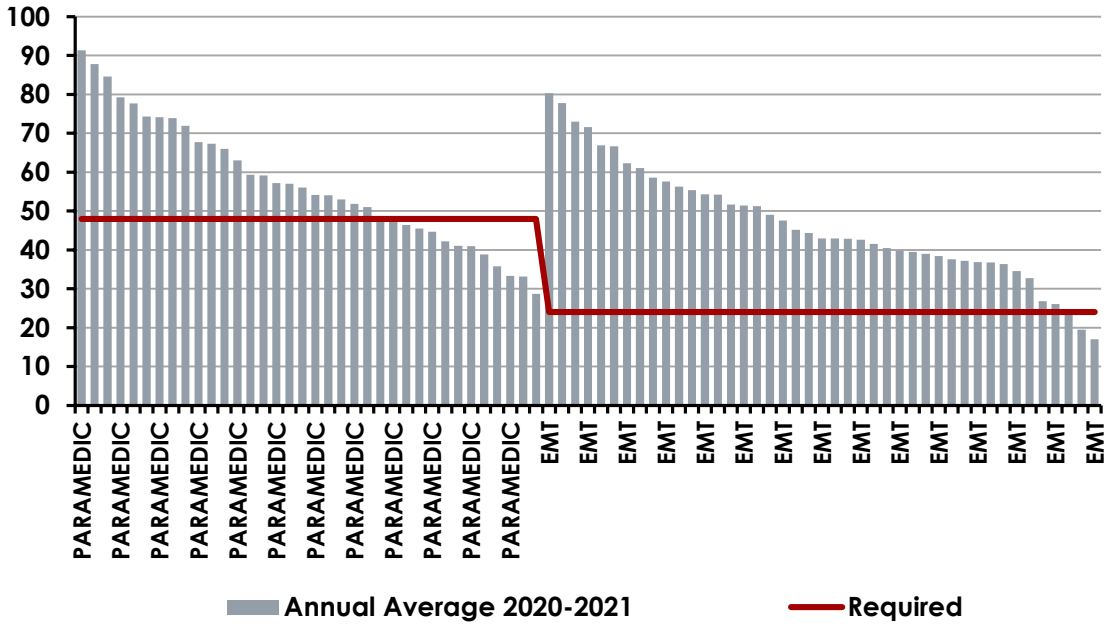
Emergency Medical Training

Unlike the requirements for firefighting training, emergency medical training is much more specific and mandated by the State of California. For example, there are training hours and skills check-off requirements based on the level of certification.

CFD utilizes private companies and local colleges to provide medical training. However, the most recent job vacancy announcements required candidates to possess a valid emergency medical technician (EMT) or Paramedic certification. Thus, initial training is done by candidates before hiring. When initial certification is required of an employee, CFD sends candidates off-site. Once a new candidate is hired or promoted, their onboarding is overseen by the EMS chief and the Training Battalion Chief.

CFD is a founding member and participant of the Santa Cruz County Emergency Medical Services Integration Authority (EMSIA) joint powers authority. The EMSIA is recognized by California as a continuing education provider for Paramedics and emergency medical technicians (EMTs). Each level of certification requires a different number of continuing education (CE) hours each year. For example, Paramedics must attend 48 hours of CE and EMTs 24. CFD responders logged over 4,400 hours of EMS-specific training in 2020 and 2021. This accounts for 23% of all training hours for those years, and each responder averaged approximately 52 hours annually. The following figure shows career responders by certification level and their associated CEs averaged for 2020 and 2021. Employee identification is not included.

Figure 127: EMS Continuing Medical Education Hours by Certification



The preceding figure only counts those hours identified as EMS in CFD's system. While there appear to be a few who have not met either the 48- or 24-hour requirement, other training hours might be applied for recertification. For example, topics such as responder safety and incident command are often used in EMS CEs. In addition, since CFD is part of the EMSIA, an authorized training center, hours included in the other programs may apply to these requirements. However, this figure does highlight the potential disparity of available training hours offered, assigned, or attended.

Training Methodology

Modern firefighting requires a variety of skills. These skills are rarely used but must be recalled instantly and performed to perfection when needed. In addition, skills often build on one another, requiring mastery of each step for successful completion. Therefore, training programs must be developed to take the place of daily operational experience. However, a program that dictates repetitive and static drills can lead to learner frustration and burnout.

In contrast, if left to make up their own training program, Firefighters tend to work on subjects they enjoy, potentially missing those skills they need to practice. Therefore, a successful training program must use modern techniques to keep Firefighters engaged and practicing essential skills. The program schedule determines the frequency, and content delivery aids retention and skill development.

Scheduling

Frequent formalized education and company drills enable Firefighters to focus and indicate an organization's commitment to training. Firefighters should know in advance what the training schedule looks like or have an idea of what is required of them during each shift.

CFD utilizes a County-wide training block calendar system. Every six weeks, a different set of skills specific to a firefighting discipline is identified. During the six weeks, the training starts with a review of the skill basics. It then becomes more complex, culminating in a multi-company drill. Finally, every two blocks or 12 weeks, all stations and shifts across the County convene for a multi-agency exercise.

Company Officers are also encouraged to add depth to the training program and address any deficiencies for their crew. This company-level training is self-directed, planned, and executed at the crew level.

Delivery

A well-designed program will include several methods of content delivery. Firefighters will move through three phases as they learn the psychomotor skills to operate effectively. Cognition is the initial phase. During this phase, they must be instructed on and practice step-by-step procedures for a new task. The associative phase is reached when the Firefighter is comfortable enough to self-correct, improve fluidity between steps, and understand the connections between each step.

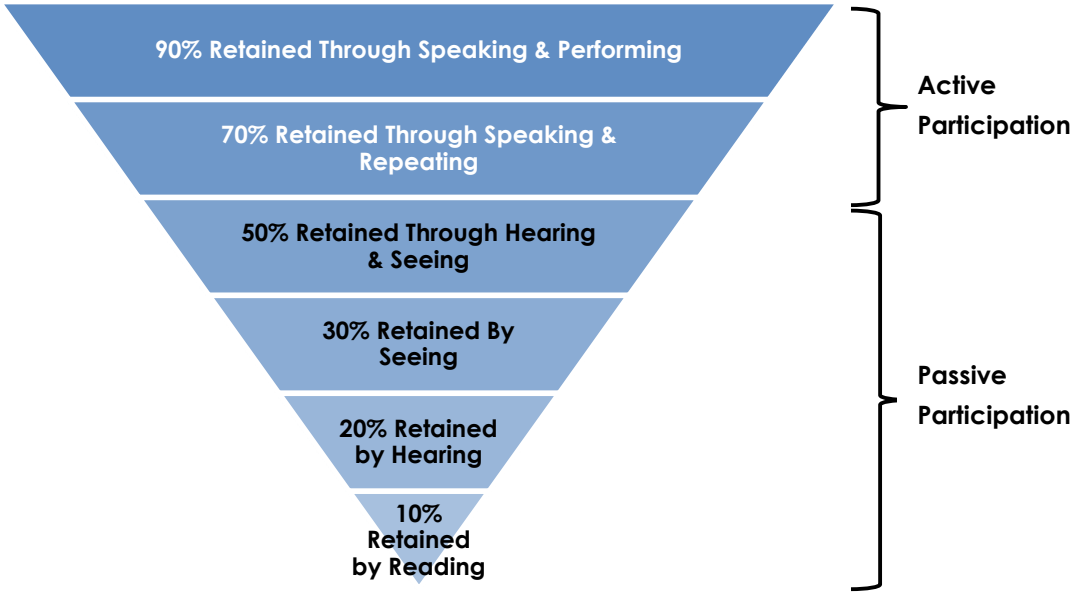
Finally, a student will enter the autonomous phase, where the actions become more natural, and they no longer need to think about each step. Firefighters are more effective when they move through these processes and become competent with one set of requisite information and skills before proceeding to the next. This is called competency-based or mastery learning.[53]

CFD follows the competency-based practice in several ways. First, initial Firefighter training is accomplished during a County-wide Firefighter academy for career Firefighters. Paid call Firefighters' initial training is completed in-house. These follow the International Fire Service Training Association (IFSTA) Firefighter 1 and 2 structural firefighting curriculum. Finally, career Firefighters progress through the NWCG Firefighter 2 and 1 training during their probationary process.

After initial and concurrently with the probation period and continuing throughout the years, Firefighters follow a training schedule. Lesson plans for the 6-week blocks are produced either internally, using commercially available products, or following training designed by the State of California. These lesson plans follow the competency-based learning philosophy, starting with basic and moving to more complex skills.

Content delivery is perhaps the most critical factor in creating a successful training program. Delivering effective content to adults requires an understanding of how they learn. Typically, 75% of the information processed by the brain is introduced by sight, which includes reading. However, retention of presented information happens at different rates, depending on the method used. The following figure is an adaptation of the cone of learning published by IFSTA.[54]

Figure 128: Cone of Learning



CFD utilizes several training approaches. The formal lesson plans start with didactic lectures and end with multi-company drills. In addition, some training, notability policies, safety, driving, and much of the EMS content are delivered utilizing computer-based training (CBT). CBT training is helpful in reaching a broad audience at their convenience. However, as indicated above, retention is reduced when content encourages learners to be more passive. Content requiring active participation, such as a drill environment or interactive CBT courses.

CFD incorporates multiple companies and fire departments regularly during training. This interaction and activity are critical to success during larger and more complex incidents. However, CFD does not currently have a training manual.

Evaluation

IFSTA recommends a 4-step model when developing a training curriculum. These steps include identifying the training needs, course design, program implementation, curriculum evaluation, and starting over. [55]

CFD creates annual training goals and objectives and uses this to develop its 2-year training schedule. However, they do not currently conduct skills performance evaluations or formal post-incident analyses. Without this information, it would be difficult, although not impossible, to determine training needs.

Employee training records are tracked electronically, and non-responder staff is included in some training. However, an annual training report is not completed for all staff. This feedback is valuable when evaluating the training program. For example, reports indicating employee attendance and skill evaluation help them understand their performance and gives managers information to improve the curriculum. CFD does publish annual reports for the public. In the 2021 annual report, the training division does list its yearly highlights, but this would not be considered an evaluation of the training program.[56]

Training Facilities & Resources

Emergency service training requires funding, staffing, facilities, and equipment to be effective and consistent. Without adequate resources and training location staff, training methods cannot hope to address the varied demands of the fire service.

Training Facilities

Office space for the CFD training staff is located at the administrative building, adjacent to the Live Oaks station. The office space is sufficient, and the supplies and equipment for administration are modern. However, this location, away from the center of the District and training facility, provides logistical and access difficulties for crews and training cadre.

CFD maintains a classroom with modern audio-visual equipment, a drill ground, and a drill tower at its Aptos station. The classroom can seat 12 to 20 students and is adequate for in-house training. It also has a training tower at the Live Oaks station and a house used for training adjacent to the station. The Aptos station training facility is dedicated, while the tower at the Live Oak station is a part of the station, occasionally used for training. The following figure lists CFD's facilities, major props, and their adequacy to meet the District's needs.

Figure 129: Training Facilities

Resource Type	Location	Adequacy
Training building	Aptos Station (Station 5)	A two-story Connex constructed structure. Useful for internal hose evolutions, high-angle simulations, and confined space training. Limited usefulness for full-scale simulations due to size and lot size. In addition, live burns are limited to when the adjacent school is out of session. No apparatus access to the south and east sides of the building, no exterior hose streams, and no standpipe or sprinkler simulations.
Classroom	Aptos Station (Station 5)	Two classrooms with room for 12 to 20 students, modern audio-visual equipment, a comfort station, good lighting, and many windows. The station has limited parking requiring private vehicle parking on the drill ground. This limits the facility's usefulness for a combination of lecture and drill-type training.
Training building and tower	Live Oaks Station (Station 1)	The fire station and administrative structure act as a tower simulation. An adjacent house can be used as a single-family residential simulator. However, these have limited usefulness as the access is poor, requiring the same approach with slight variation in the scenarios. In addition, the station and administration buildings are ineffective for training when in use for their primary purpose.
CAL FIRE, Ben Lomond Training Center (BLTC) Live fire facility	BLTC is 45 Minutes Northwest of CFD	The training center has a fire behavior prop, a flow path prop, and a two-story burn building with a room for burning on floor two. The facility has a large land area allowing for multiple approaches and scenarios, and is accessible by agreement. However, it is located several miles from CFD stations.
Driver's course or training area	None	Station locations and the training facility are inadequate spaces for driver training.

The training facilities are minimally adequate for standard drills and limited scenarios. However, CFD's facilities are inadequate for full-scale or complex situations. In addition, while both training buildings can be filled with simulated smoke, only the Aptos training facility can be used for live fire during limited windows. Finally, CFD does not have a large area for driver training, and the Aptos facility pad needs repair. As a result, CFD relies on borrowed spaces and in-station training for large water flow and apparatus training.

Training Equipment, Supplies, & Props

CFD has several portable and fixed props available for training. Props include a miniature house for fire behavior simulations, multiple forcible entry doors, vehicles available for auto extrication, ventilation props, a vent-enter-search window prop, smoke machines, and rescue manikins. CFD also maintains an instructional library in the classroom at the Aptos station. In addition, much of the written instructional materials are available electronically, and the District has computer simulations through a vendor. Training videos are either produced in-house or are made available through mass media sites such as YouTube.

EMS-related props are provided by EMSIA, and training supplies are available at the Aptos station storage lockers. The EMSIA props include intelligent manikins for the practice of advanced life support skills. EMSIA also provides training and moulage supplies for larger type drills such as active shooter.

Training Finances

The training division is led by the Battalion Chief of Training and Safety. Since the merger and single budgets started in fiscal year 2021/2022, the training budget amount is listed as a summary item in the program budget. However, it is difficult to tell what specific line item the training budget is being managed. For example, the total funding for outside training or training materials was not apparent in the budget. The funding for training, not including salaries, is approximately 2% of the budget in the 2021/2022 fiscal year.

Training Staff

Training is identified as a high priority for CFD. It is listed as a priority in their strategy and values statements. Before the merger in February 2021, the two agencies had one training officer. After the merger, they added a third and an Administrative Analyst to the Training Division to support the mission. The training staff includes a Battalion Chief, two Captains, and an Administrative Analyst.

CFD indicates they utilize certified instructors for specific training topics, especially those they host for outside agencies or during initial academies. The training cadre and invited subject matter experts lead the bulk of the training. However, the available Battalion Chief and Captain job descriptions only require a California State Certified Fire Officer certification.

These job descriptions apply to those Officers assigned to training.[57] However, this certification with the state does not require any fire service instructor experience, certification, or specialty training.[58] While not definitive, it might indicate a lack of specialized training certification and knowledge needed by CFD's training staff. Specific certifications are not required for effective Training Officers. However, without these certifications, it is difficult to prove the officers are qualified to perform the needed training functions.

Section III:
COMMUNITY RISK ASSESSMENT

Community Characteristics

CFD provides services to Aptos, Capitola, La Selva Beach, Live Oak, Rio Del Mar, and Soquel communities in Santa Cruz County. The District's northern part includes the City of Capitola, including the northeastern shore of Monterey Bay. The western side of the District is the Pacific Ocean, and the eastern edge is bounded by the Forest of Nisene Marks State Park and the Aptos Hills. The climate is similar to that found in the Mediterranean.

The District formed in 2021 when the Central Fire Protection District and Aptos/La Selva Fire Protection District consolidated to become one organization. The estimated population is 72,320, and the median household income is $91,398 based on 2020 census data.

CFD operates out of seven fire stations, administrative and community risk reduction offices, and fleet maintenance. CFD provides a range of services, including community risk reduction, community education, emergency medical services, water rescue, fire investigations, hazardous materials response and mitigation, urban search and rescue, and training.

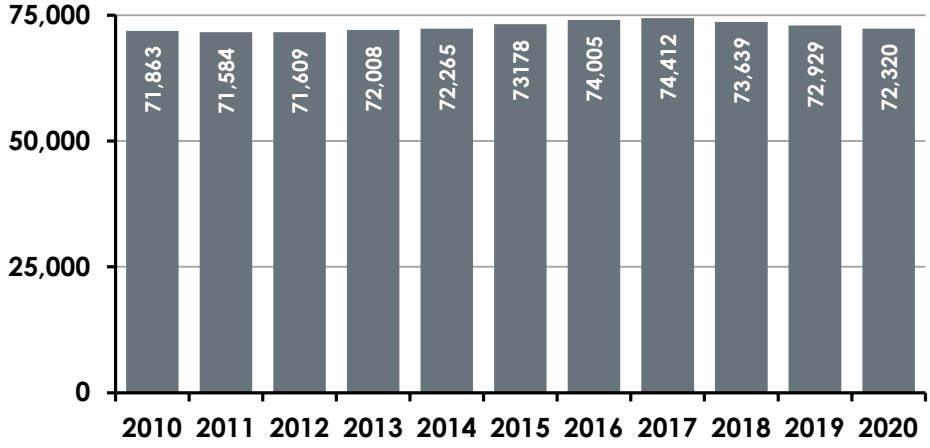
Population & Demographics

The population and demographics can directly impact the service delivery provided by CFD. The following provides information on the residents within the CFD district and can be used to develop programs to prevent or mitigate unintentional injuries or deaths.

Population

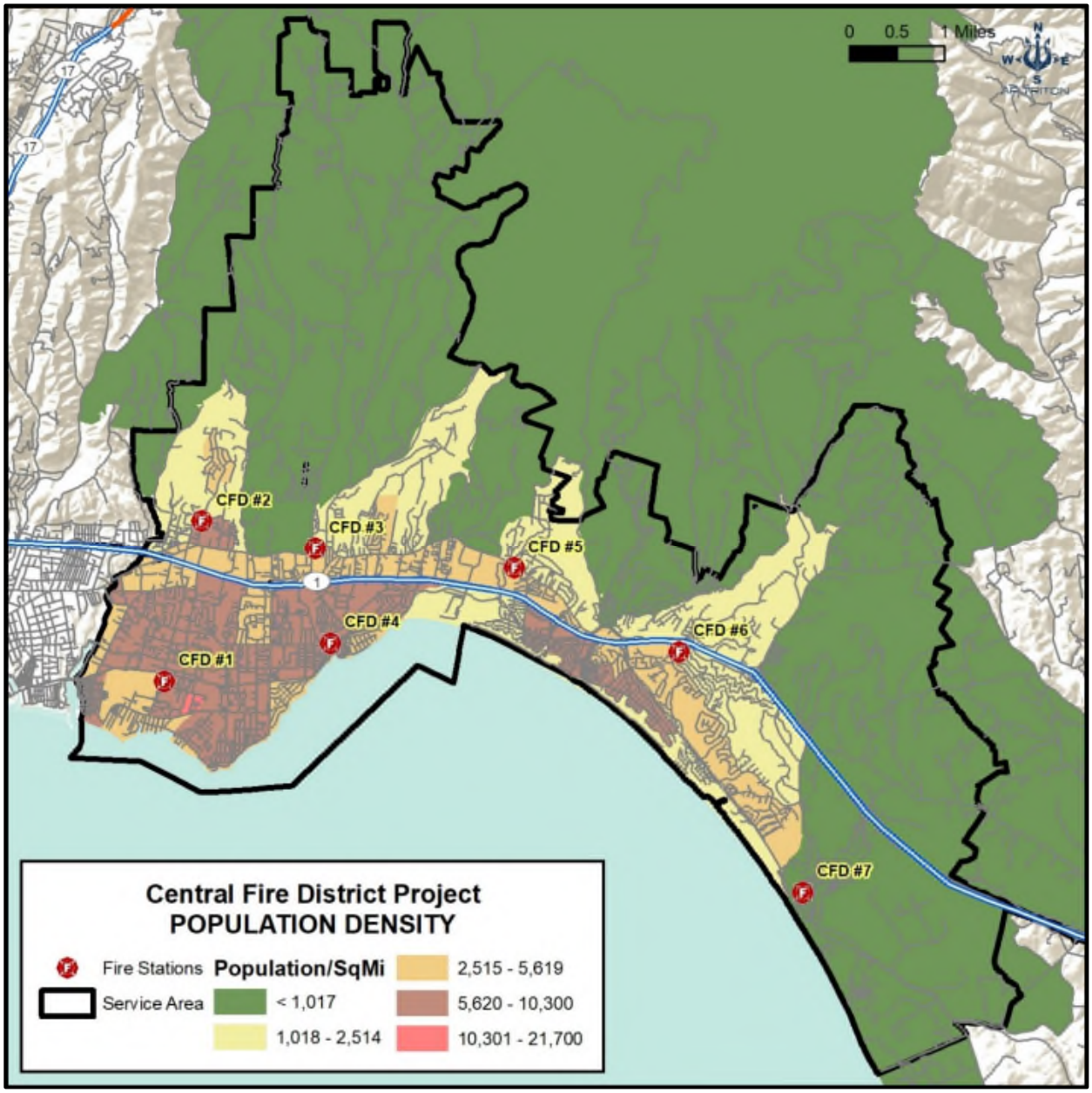
The following population estimates are from the American Community Survey 5-year estimates and ArcGIS Insights. The estimated population in 2020 is 72,230 and has decreased from a high of 74,412 in 2017.

Figure 130: Population Estimates, 2010–2020



The highest population areas are along the coast, primarily south of the Cabrillo Highway and, to a lesser extent, to the north of the highway, as shown in the following figure.

Figure 131: Population Density



At-Risk Populations

An area's population has different residents at higher risk of fires and other unintentional injuries. When an incident occurs, it affects service delivery for the department. The CFD response area is considered urban but has other areas considered suburban or even rural, ranging from single-family homes to multi-family apartments. NFPA has identified groups with an increased risk of injury or death from a fire, as follows.[59]

- Children under five years of age
- Older adults over 65 years of age
- People with disabilities
- Language barrier
- People in low-income communities

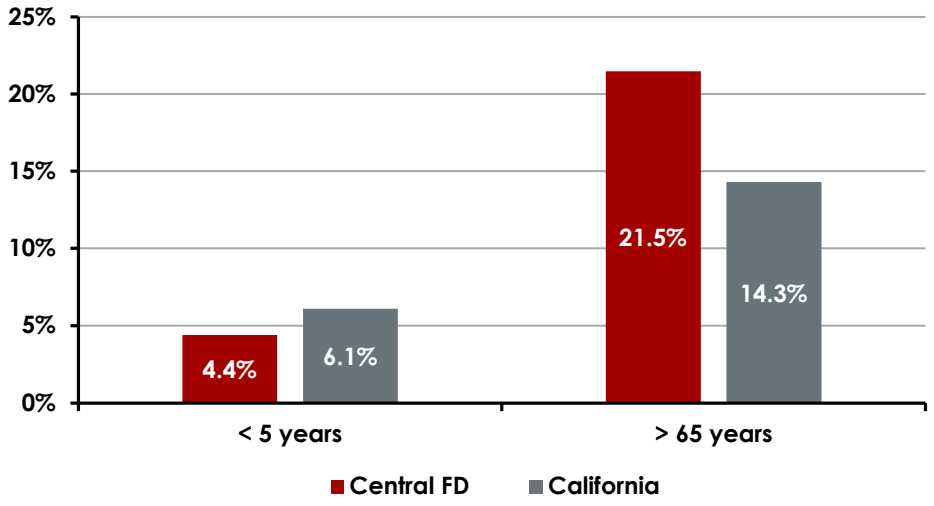
Data from the 2020 U.S. Census American Community Survey 5-year estimates identified several groups in these categories that are more likely to need emergency services, specifically EMS, than other populations.[60]

Age

A person's age in a high-risk population directly relates to increased unintentional injuries and death or injury from a fire. Older adults are 2.6 times more likely to die in a fire than the United States' overall population. These age risks increase service demand, specifically for older adults needing additional medical care.[61]

Children under the age of five are at more risk because of their inability to care for themselves and need additional assistance during an emergency. Recent trend data (2018) from the U.S. Fire Administration indicates that this age group's relative risk of dying in a fire has dropped 30% in the last ten years and is credited to increased fire prevention and education. The percentage of children under five is 4.4%, which is lower than in California at 6.1%. The population of those over 65 is 21.5% in CFD, much higher than the state at 14.3%. The following figure shows the percentage of children less than five years of age and those 65 years and older.

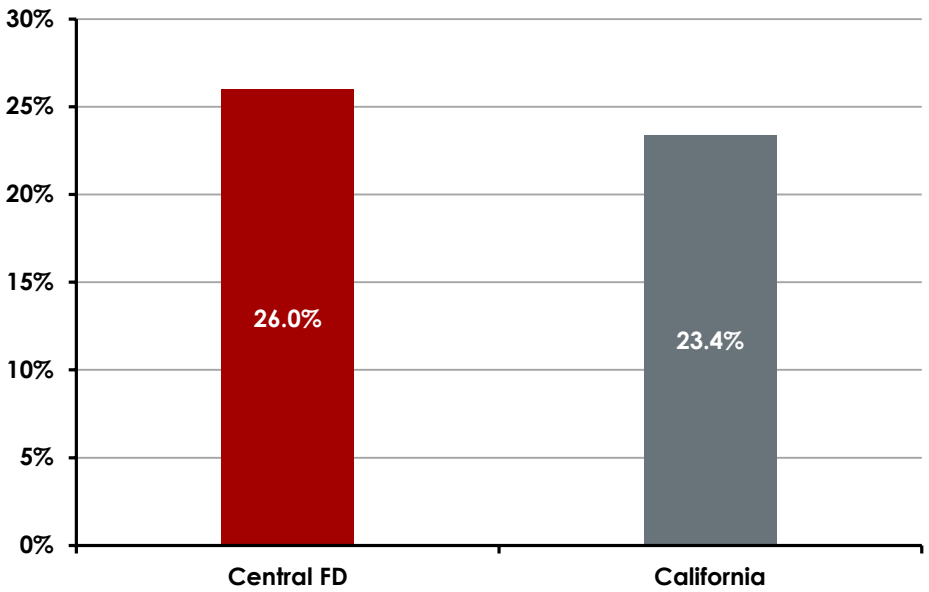
Figure 132: Percentage of the Population by Age Risk



Disabilities

The residential population with disabilities is 26% in CFD compared to the state at 23.4%. This population group may be unable to self-evacuate a building during an emergency or need additional medical services because of their disability. This may create additional demand for medical services, specifically as they age. The following figure depicts the percentage of households with a disability.

Figure 133: Household Population with a Disability



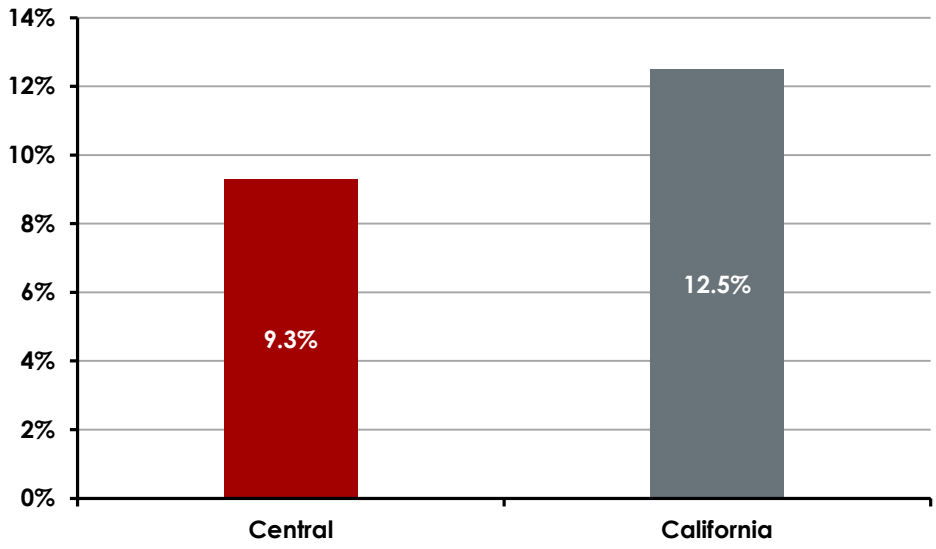
Language Barriers

Although the number of people over 18 speaking another language than English is less than 1%, substantially lower than the state, CFD may encounter someone who needs another type of communication. This population may not understand smoke alarm technology designed to provide early warning during a fire, increasing the risk of injuries or death in their home.

Low-Income Persons

The lack of high incomes increases the risk of fires and medical illnesses in the population because of their age, inability to receive adequate medical services because of no health insurance, thus inability to pay, and the condition of their housing. People living below the poverty level are considered at the highest risks when combined with other factors such as education levels, disabled, or unable to work. The median household income is $91,398, higher than the states at $80,044. The percentage of households in poverty is 9.3% compared to the state at 12.5%, as shown in the following figure.

Figure 134: Percent of Households in Poverty



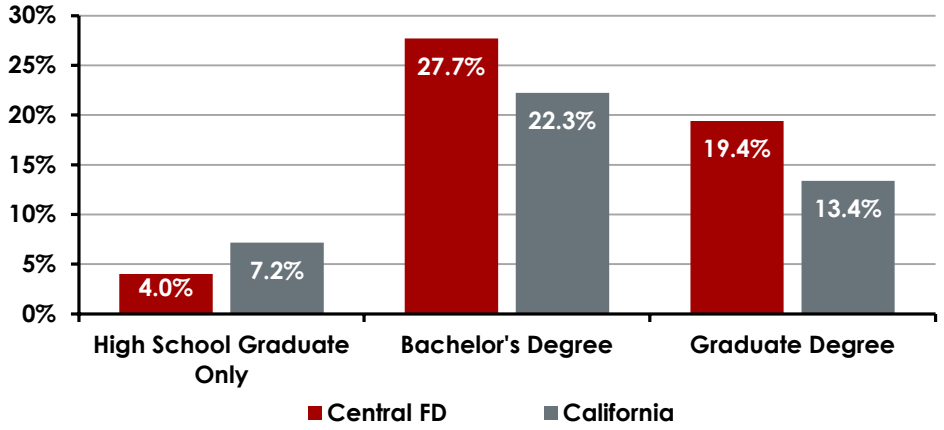
Other Demographics

Education

Educational attainment is not considered one of the at-risk populations but is recognized as another risk group when developing fire and life safety education programs. In CFD, only 4% have a high school diploma, which is lower than the state at 7.2%. Nearly 28% have a bachelor's degree, and 19.4% have a graduate degree, compared to the state at 22.3% and 13.4%, respectively.

This group may fall into other categories, such as lower incomes and no health insurance. The following figure provides information on the levels of education in CFD.

Figure 135: Education Levels



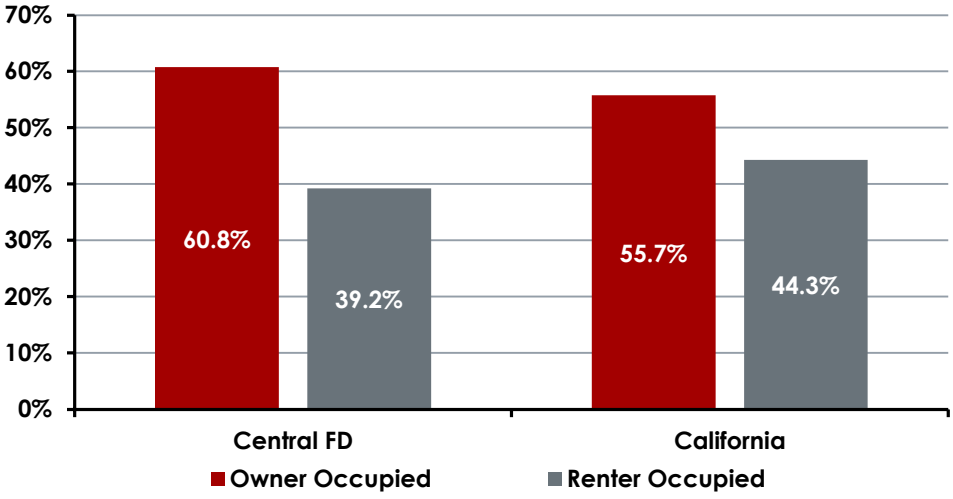
Housing Characteristics

The housing types vary in a community and can provide insight into ownership, the age of the home, and the number of units in the building. Most fire deaths occur in one or two-family dwellings, so understanding the housing types can provide information on where higher risks can occur.

Home Ownership

Home ownership in CFD is 60.8% compared to the state at 54.9%. The following figure shows the percentage of owner and rented occupied housing in CFD and the state.

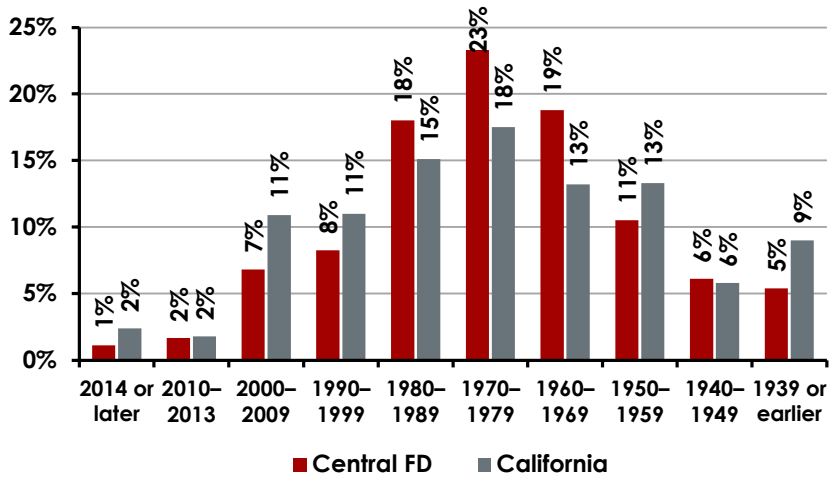
Figure 136: Housing Ownership



Age of Housing

All buildings are built to last a period of time, and as it ages, more problems occur when it is not maintained. Approximately 64% of CFD homes were built before 1980, with high growth periods between 1960–1989. Homes built before smoke alarm requirements pose a higher risk to occupants if none are present. The following figure illustrates the percentage of housing built by year.

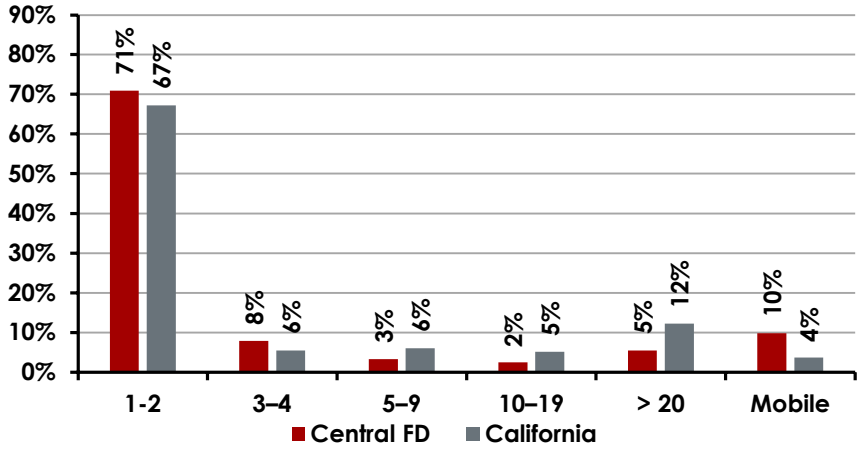
Figure 137: Age of Housing



Housing Units

The number of people living in one- or two-family dwellings is 71% compared to the state at 67.1%. This high percentage is reflective of homeownership. The following figure lists the percentage of housing unit types per building.

Figure 138: Housing Units per Building



Risk Classifications

Risk Assessment Methodology

Developing a risk score to determine risks in a community is necessary to provide an organization with a method for creating response protocols for an incident. The Three-Axis Heron model establishes a score by reviewing probability, consequence, and impact factors and assigning a score between 2–10 in each category.[62] A description of the incident types for each risk is located in Appendix A.

Use of the Three-Axis Heron Formula includes the following equation:

$$\text{Risk} = \sqrt{\frac{(PC)^2 + (CI)^2 + (IP)^2}{2 \quad 2 \quad 2}}$$

The risk is graphically illustrated through a three-axis model as follows:

- **P** = Probability (Y-Axis)
- **C** = Consequences (X-Axis)
- **I** = Impact (Z-Axis)

When developing the score, it is recognized that each of the three scoring components is based on CFD incident data. Although a low risk may have a higher risk than a moderate or high risk, the probability is a significant factor in the score. In many instances, the number of low-risk incidents is high, while the consequence and impact on the department are low.

Probability

Probability is the likelihood of an incident occurring in the community over time. This axis reflects the probability of a particular incident occurring (contributing to the risk level). Many factors include the time of day, location, hazards present, the season of the year, building construction and maintenance, demographic factors, and more. It can range from a rare event to one that occurs often. The following figure defines the score, category, and probability or likelihood of occurrence during an incident.

Figure 139: Probability or Likelihood of Occurrence

Score	Category	Probability or Likelihood
2	Minor	Unlikely. < 0.02% of total call volume. Expected to occur very rarely.
4	Low	Possible. 0.02–0.07% of total call volume. Expected to occur rarely.
6	Moderate	Probable. 0.07–0.3% of total call volume. Expected to occur monthly.
8	High	Likely. 0.3–2% of total call volume. Expected to occur multiple times per week.
10	Extreme	Frequent. > 2% of total call volume. Expected to occur one or more times per day.

Consequence

The consequence of an incident can vary from minor casualties to severe impacts that may destroy historical or significant facilities in the community and create a considerable loss of employment or life. The following figure defines the score, category, and consequence of an incident to the community.

Figure 140: Consequence to the Community

Score	Category	Consequence to the Community
2	Minor	1–2 people affected (injuries/deaths). < $10,000 loss
4	Low	< 5 people affected (injuries/deaths). < $500,000 loss
6	Moderate	5–50 people affected (injuries/deaths). $500,000–$1,000,000 loss
8	High	50–100 people affected. $1,000,000–$5,000,000 loss
10	Extreme	> 100 people affected (injuries/deaths). > $5,000,000 loss

Impact

The third factor in determining the risk is the fire department's impact and the critical tasking needed to control or mitigate an incident. This includes the number of emergency responders and apparatus available internally or from external agencies. It measures the department's ability to respond to a given risk or incident while providing service to the remaining parts of the District. The following figure defines operational forces' score, category, and impact during an incident.

Figure 141: Impact on Operational Forces

Score	Category	Impact on Operational Forces
2	Minor	≥ 90% Remaining Apparatus/Crews
4	Low	≥ 75% Remaining Apparatus/Crews
6	Moderate	≥ 50% Remaining Apparatus/Crews
8	High	≥ 25% Remaining Apparatus/Crews
10	Extreme	< 25% Remaining Apparatus/Crews

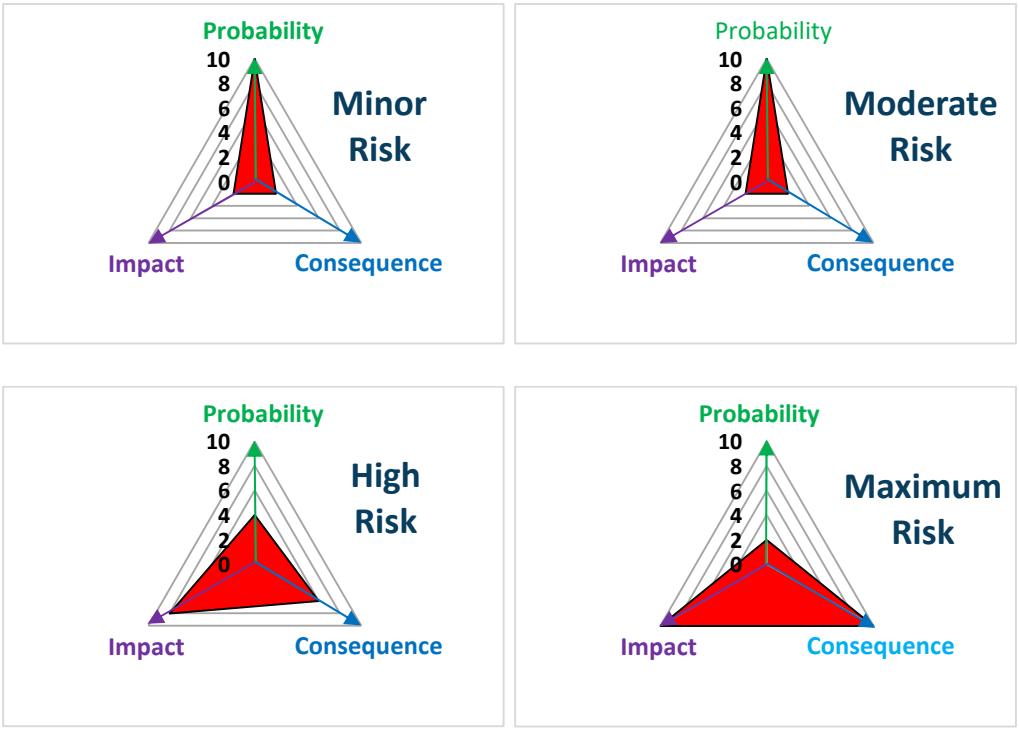
Fire Response

CFD is the primary provider of mitigation of fire-related incidents in their response area. These range from low-risk incidents such as a vehicle fire to a maximum-risk for a fire involving a school. Fire risks for a vehicle fire are considered low compared to a maximum-risk for a school that houses students. This scoring is applied to four different categories of fire incidents in CFD's district to provide staffing needs to meet critical tasks on the fire ground. The following figures provide the fire response risk assessment scoring and the 3-axis risk classifications.

Figure 142: Fire Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	10	2	2	6	4	4	4	6	8	2	10	10
Score Assigned	20.2			26.5			44.1			73.5		

Figure 143: Fire Risk Classifications



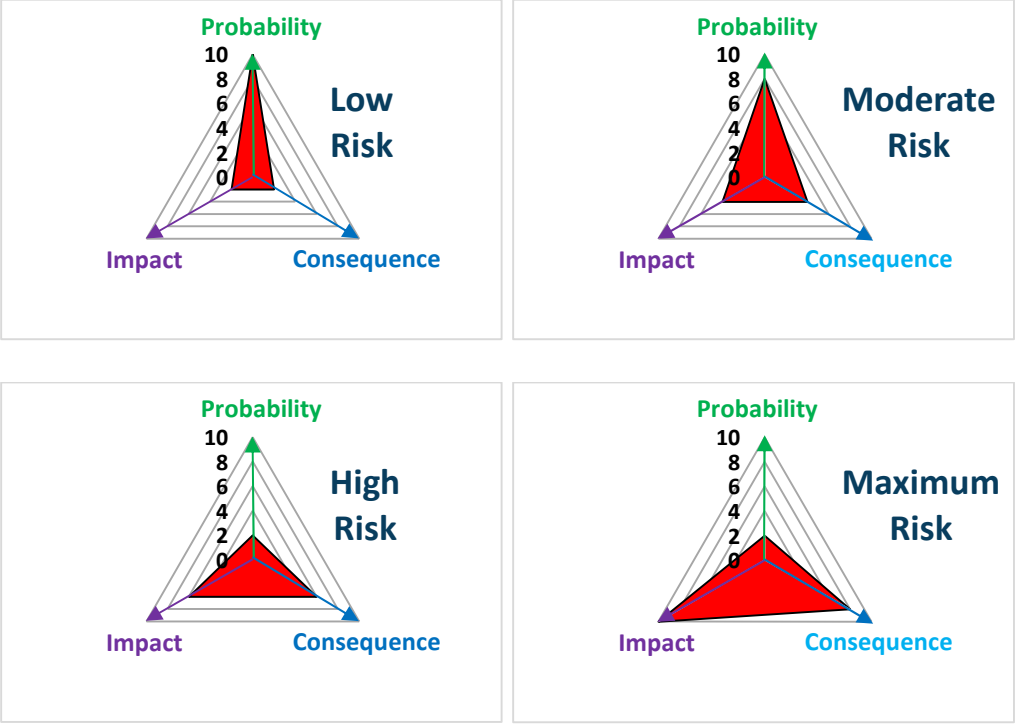
Emergency Medical Services Response

CFD provides advanced life support emergency medical care in their district and contracts with a third party for transport services. Low-risk incidents range from medical assist to a maximum-risk incident for an active shooter. The following figures provide the EMS response risk assessment scoring and the 3-axis risk classifications.

Figure 144: EMS Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	10	2	2	8	4	4	2	6	6	2	8	10
Score Assigned	20.2			33.9			28.1			59.4		

Figure 145: EMS Risk Classifications



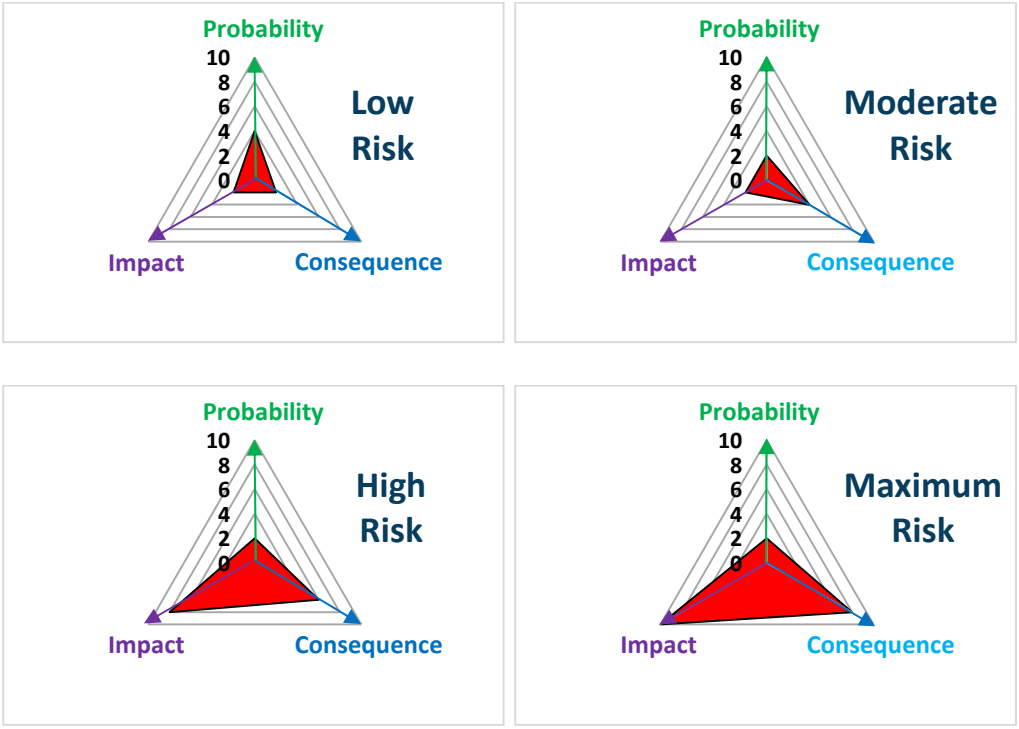
Technical Rescue Response

Rescue services can vary from a low-risk incident, such as accessing a locked vehicle with a child inside to a confined space incident (maximum) that potentially requires many personnel to mitigate the incident. The following figures provide the technical rescue response risk assessment scoring and the 3-axis risk classifications.

Figure 146: Technical Rescue Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	4	2	2	2	4	2	2	6	8	2	8	10
Score Assigned	8.5			8.5			36.8			59.4		

Figure 147: Technical Rescue Risk Classification



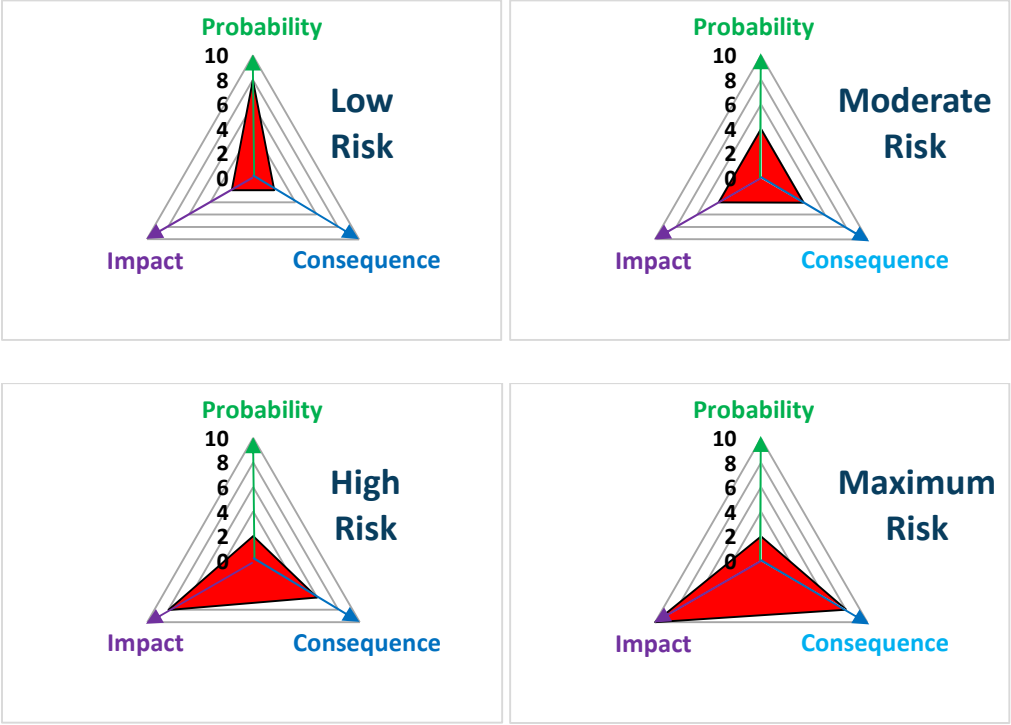
Hazardous Materials Response

Hazardous materials responses can vary from low-risk odor investigations to the maximum-risk for a fuel tanker fire in higher populations. Most of these incidents can be managed by CFD, but higher risks may need assistance from outside resources. The following figures provide the scoring of the hazardous materials response risk assessment and the 3-axis risk classifications.

Figure 148: Hazardous Materials Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	8	2	2	4	4	4	2	6	8	2	8	10
Score Assigned	16.2			19.6			36.8			59.4		

Figure 149: Hazardous Materials Risk Classifications



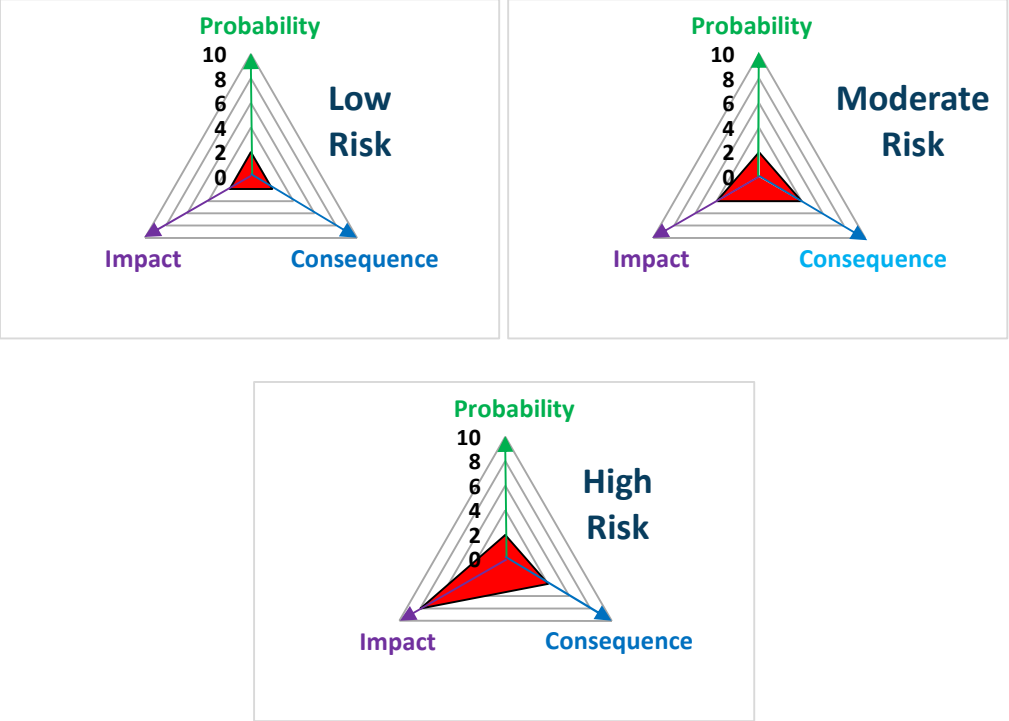
Wildland Fires Response

The types of wildland fire risk vary from small grass fires to large forest fires requiring many internal and external resources. The following figures provide the wildland fire response risk assessment and the 3-axis risk classification scoring.

Figure 150: Wildland Fires Response Risk Assessment

Description	Low			Moderate			High		
Risk Score	P	C	I	P	C	I	P	C	I
	2	2	2	2	4	4	2	4	8
Score Assigned	4.9			13.9			25.9		

Figure 151: Wildland Fires Risk Classification



Environmental & Physical Hazards

Environmental Hazards

An environmental hazard is an event that can threaten a community and affect the population to include natural disasters. Santa Cruz County has experienced 29 natural disasters since 1953, and the following figure shows the type and number.[63]

Figure 152: FEMA Designated Disasters

Disaster Type	Number
COVID-19	2
Coastal Storm	1
Drought	1
Earthquake	1
Fire	9
Tsunami	2
Freezing	1
Hurricane*	1
Severe Storm(s)	12

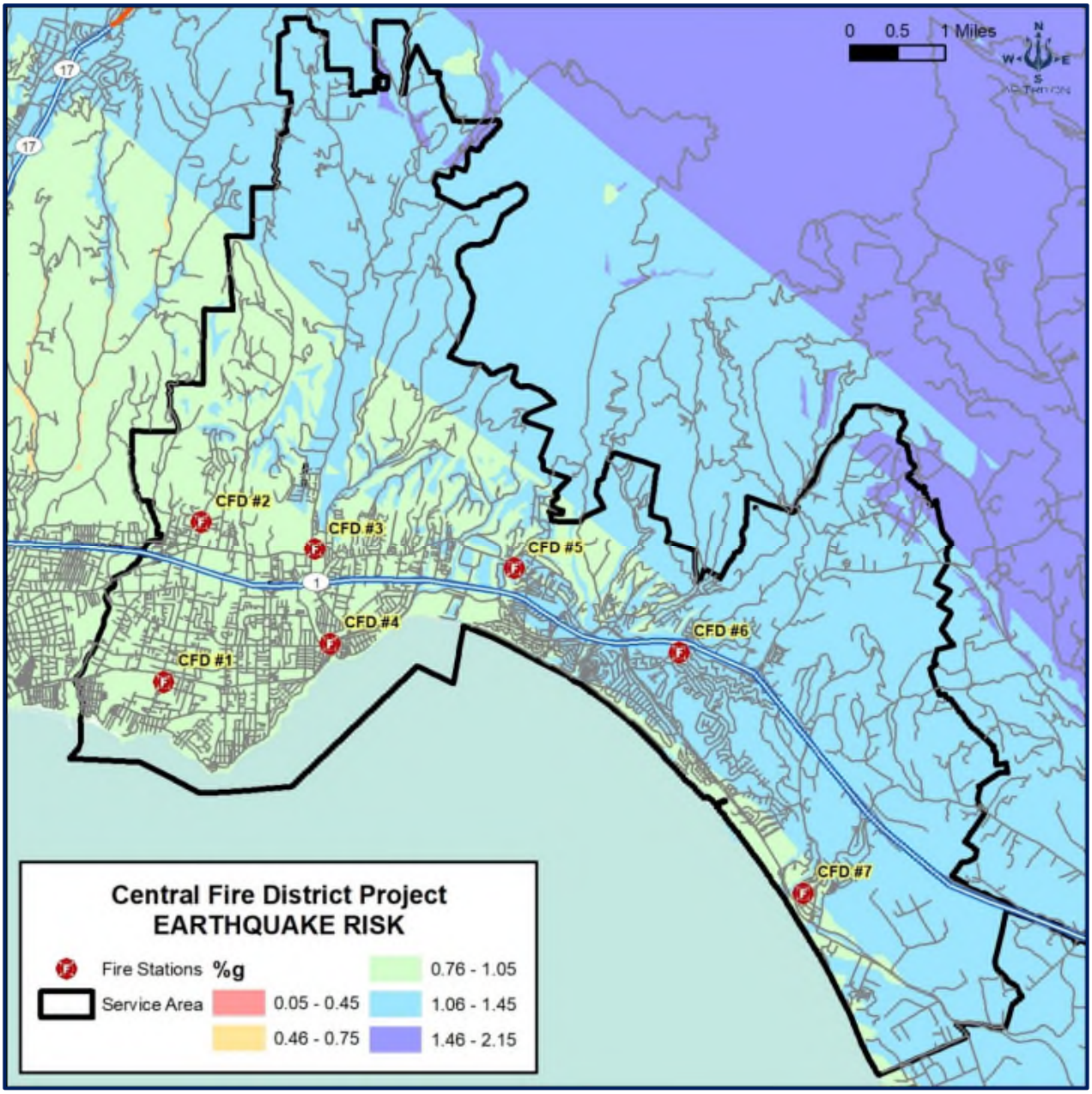
Earthquakes

The earthquake risk in Santa Cruz County is high; thus, CFD is susceptible to damage during an event. The region's most recent substantial earthquake felt was the Loma Prieta in 1989, which registered at 6.9. Damage occurred throughout Santa Cruz County, and three deaths were attributed to the earthquake. The County saw the earthquake destroy 674 dwellings, 32 mobile homes, and 310 businesses. Other significant events include the 1906 San Francisco earthquake.

Several major faults are near CFD, such as the San Andreas, San-Gregorio-Hosgri, and East Monterey Bay, while others include the Monterey Bay and Zayante-Vergeles faults.[64] The County of Santa Cruz Local Hazard Mitigation Plan (HMP), 2021–2026, identifies Butano, Sargent, and Corralitos as other faults in the County. Damage to roads, utilities, and buildings will impact CFD during a significant earthquake, and response times may increase. Earthquakes increase other risks, including fires, landslides, and ground cracks.

Liquefaction is when soil transforms from loose and water-saturated soils to a liquid state and causes structures to become damaged or collapse when a foundation fails. The HMP maps show that the overall risk of liquefaction in the District is low, but higher-risk areas are located along Soquel Creek, Aptos Creek, and small creeks at La Selva Beach. The following figure shows the earthquake risks in CFD.

Figure 153: Earthquake Risks



Wildland Fires

Without proper planning, the wildfire risk in the community increases. Mitigation and prevention efforts can lower the chance of substantial losses during a fire and reduce the community's wildfire threat. In today's current climate and extreme drought conditions, property owners should understand what specific threats can affect their homes or business.

Implementing proactive mitigation efforts can reduce the fire risk of damaging or destroying a building in an urban interface. Removing fuels such as dead trees, plants, grasses, or weeds is a first step for the property owner. This defensible space surrounding the property focuses on vegetated or landscaped areas and how to harden the home or building from fire. The National Fire Protection Association (NFPA) provides information on developing defensible spaces by breaking the property into three zones.[65]

Immediate zone—This area is between 0'–5' from the furthest extent of the building, which is considered noncombustible.

- Clean the roofs and gutters of leaves and pine needles.
- Replace missing or loose shingles to prevent ember penetration.
- Install metal mesh screens around any exterior vents to reduce embers passing through the opening.
- Remove combustible materials away from the exterior walls or items stored under decks or porches.

Intermediate zone—This area is from 5'–30' away from the furthest exterior portion of the building.

- Clear vegetation around propane tanks and create fuel breaks using driveways, paths, etc.
- Keep grasses cut to no more than 4" in height.
- Prune trees within 6'–10' from the ground.
- Space trees, so the crowns are separated to prevent a spreading fire.
- Keep trees at least 10' away from a building.
- Maintain shrubs and trees in small clusters on the property.

Extended zone—The area is between 30'–100' from the building.

- Remove dense accumulations of dead vegetative material.
- Cut back any small trees growing in developed areas to reduce fuels.
- Remove vegetative material away from storage sheds or other small buildings.

This guidance reduces the impact on a property during a wildfire. Programs have been developed from grant funding to assist homeowners in removing vegetative materials and establishing chipping programs. These programs also reduce risks to Firefighters when they respond to a wildfire. Overgrown vegetation can prevent emergency responders from gaining access to the property, thus increasing their risks during the incident. Debris flows can occur when vegetative materials are destroyed after a major wildfire in areas where the topography is steep, and the ground becomes saturated with rain.

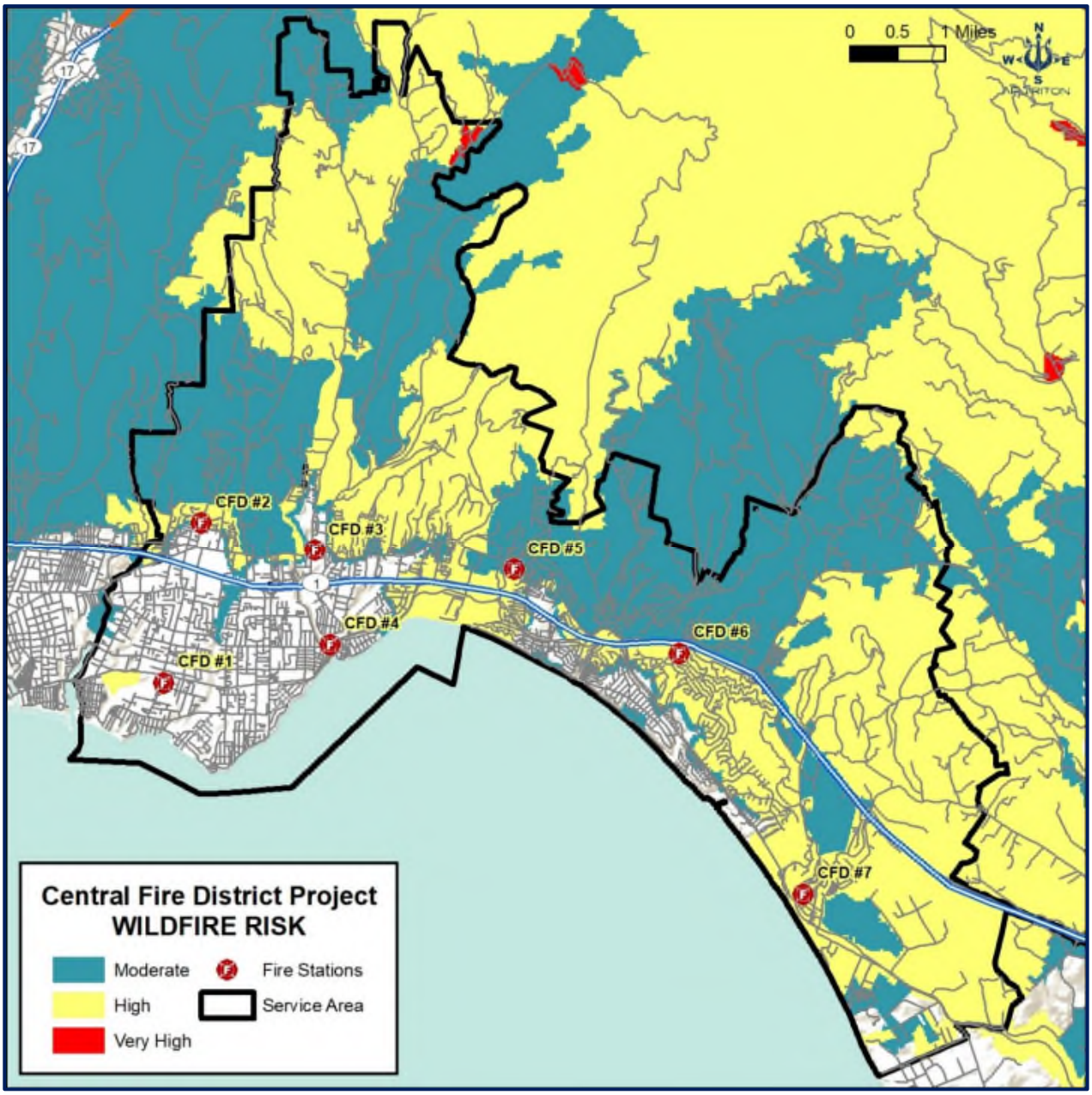
Wildland Urban Interface (WUI) areas are identified in the Santa Cruz County San Mateo County Community Wildfire Protection Plan (CWPP) by district, and areas were suggested for mitigation projects. The District is divided into several high-hazard areas for inspections every other year.

CFD adopted the 2019 California Fire Code, which includes section 103.5, law enforcement powers, and allows CFD to issue civil penalties for non-compliance. For properties in the high-hazard WUI, CFD conducts inspections that begin in June and conclude in the fall of the year to ensure compliance with rural fire safety standards. The primary focus of CFD is to educate the property owner about the hazards associated with their surroundings and how a wildland fire may impact them. Issuing a citation is rare and not the main component of their WUI risk reduction program. Since the 2020 CZU Lightning Complex fire, compliance has improved as the public has increased awareness of the problems of living in the WUI. CFD hired two part-time employees and two trainees to provide defensible space inspections and weed abatement complaints. CFD provides information on their website regarding defensible spaces and inspects single-family homes by request.[66]

Nine communities in the CFD service area are now participating in Firewise USA® to reduce the risk of a wildfire and develop defensible spaces around their properties. CFD participates in the Santa Cruz Fire Safety Council, which helps guide the community living in the WUI. Their website provides a checklist for download for property owners to assist them in preparing for a wildfire.

The following figure identifies the wildfire risks.

Figure 154: Wildfire Risks[67]

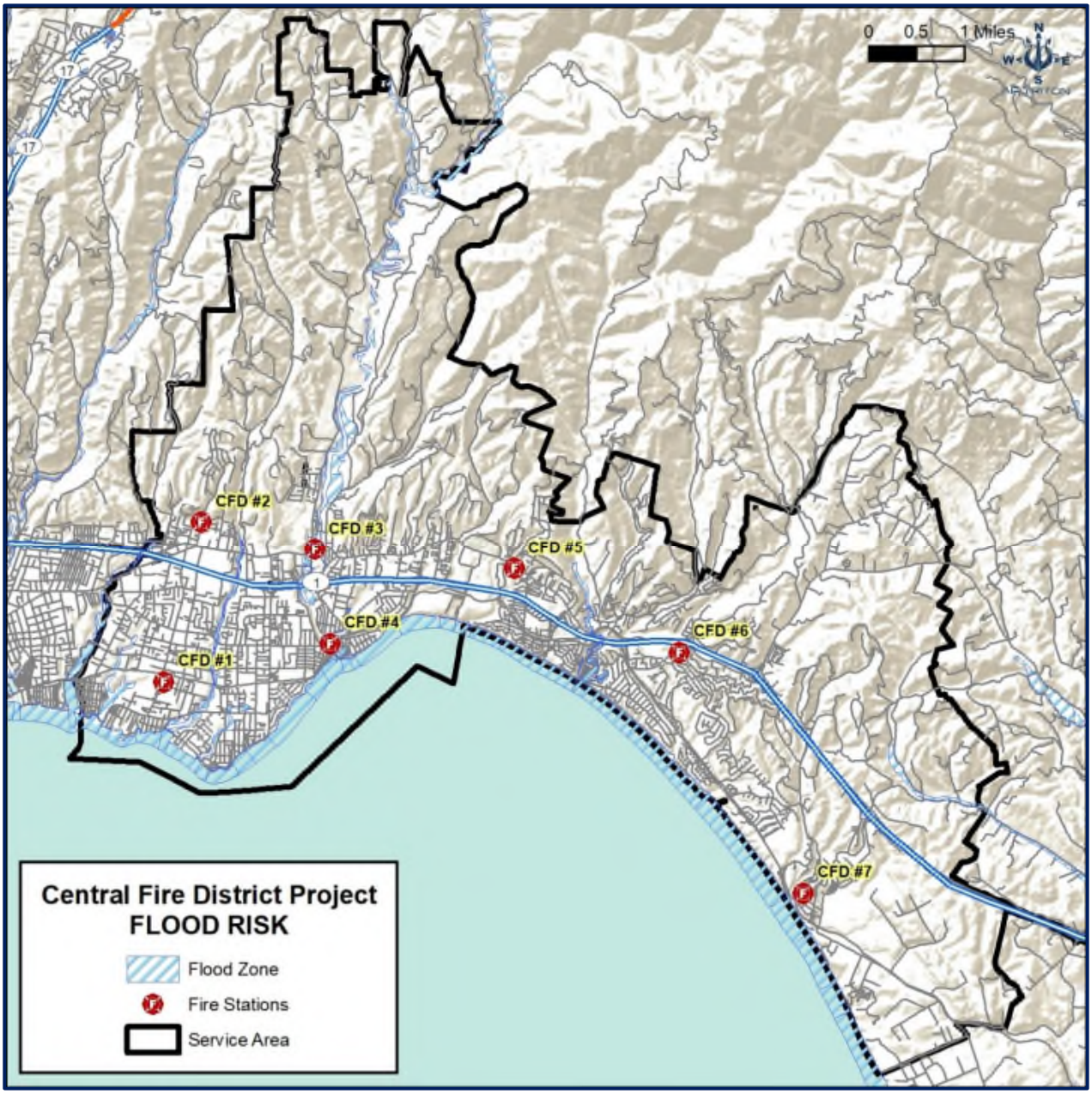


Flooding

Portions of CFD fall within the FEMA-classified flood zones. According to FEMA's website, "AE," regulatory floodways areas are along the western portion of the District along the Arana Gulch, Leona Creek, Soquel Creek, and Aptos Creek and their tributaries. The AE designation is considered "*Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods*." and is further defined as a 26% chance of a flood occurring in 30 years.

"VE" areas, known as coastal high-hazard areas, are considered high-risk. These areas extend along the entire coastal area of the District and are locations subject to a 1% annual chance of flooding. This flooding occurs because of wave action at the dunes and is caused by coastal storms or seismic events. These events are expected to increase because of sea-level rise.

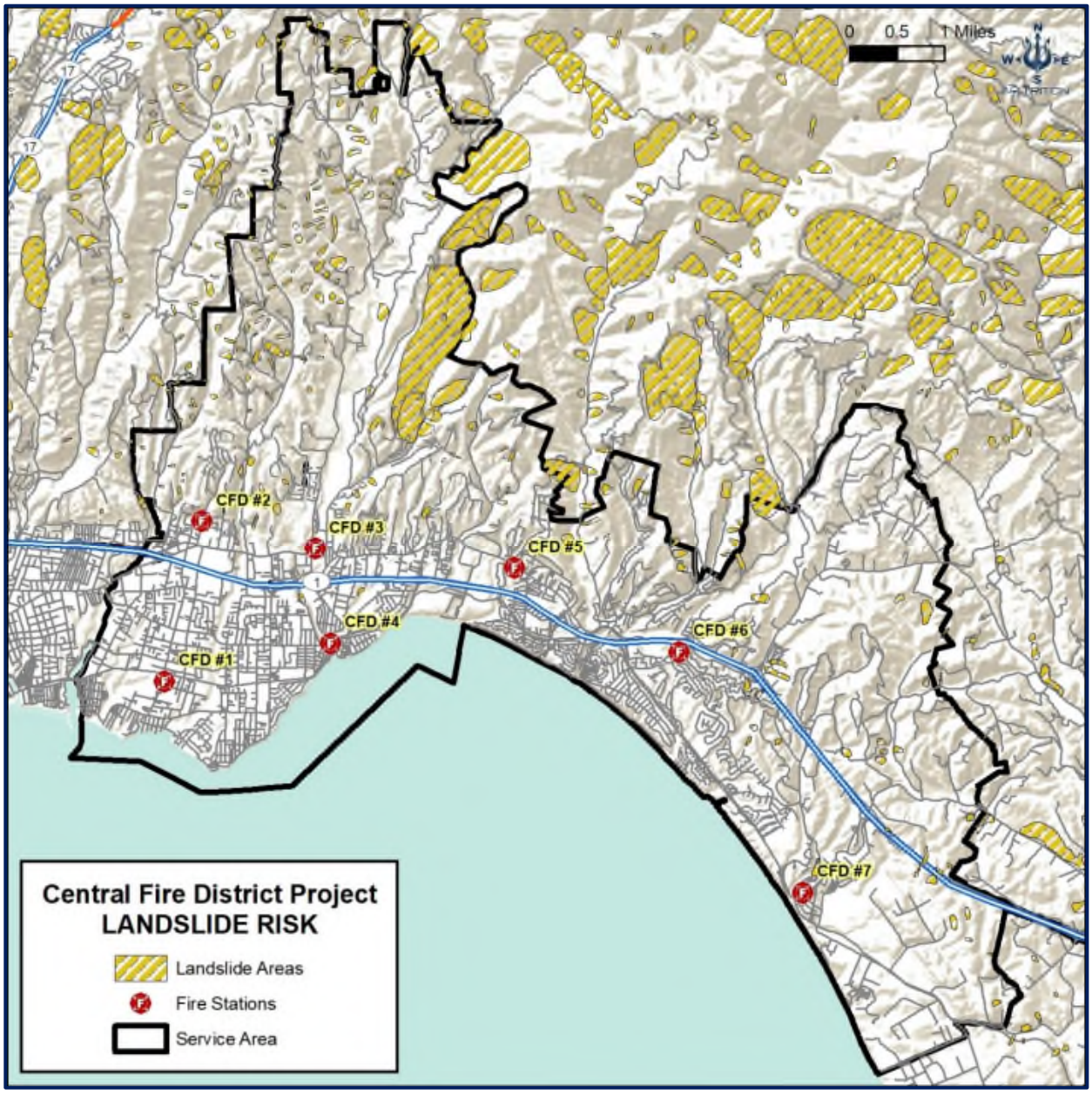
Figure 155: Flood Zones



Landslide

Although few locations have landslide risks in CFD, these events may occur during heavy rain, an earthquake, or after a fire removes all the fuel, thus only leaving the soil exposed to a heavy rain event.

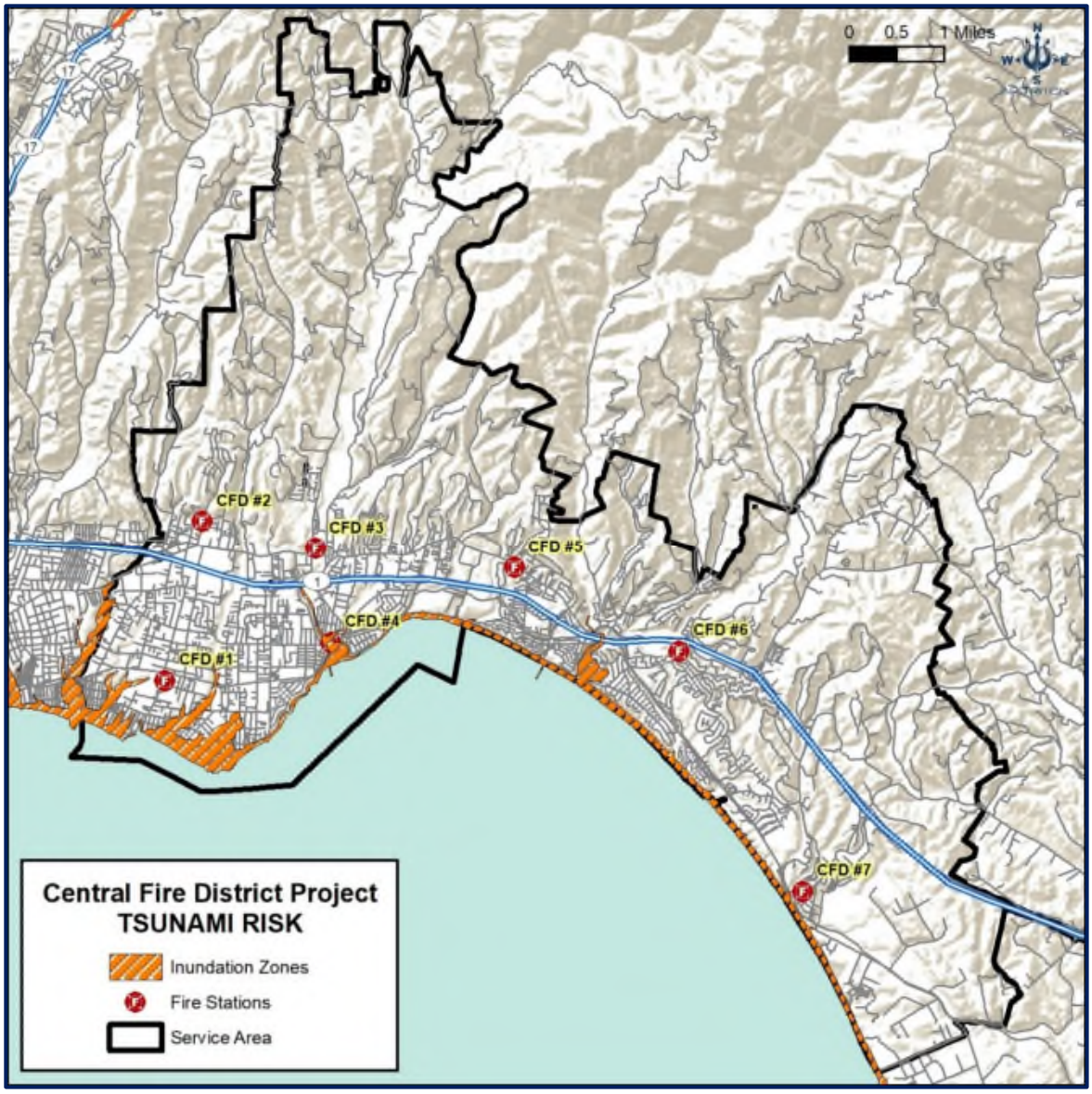
Figure 156: Landslide Threats[68]



Tsunami

There is a chance of a tsunami occurring in the CFD caused by a seismic event. Two types of tsunamis that may impact CFD are telesunamis, which occur from an earthquake in the Pacific Ocean, or the numerous faults in the region. These events may occur in the Pacific Ocean or the Pacific basin and create tsunami waves that reach the coast of Santa Cruz County. The most recent event with significant damage occurred in 2022 after an eruption of an underwater volcano near the Pacific island of Tonga and caused an estimated $6 million in damage.[69] This event had less damage than the one in 2011where the waves associated with the tsunami caused approximately $20 million in damage in Santa Cruz Harbor. The following figure shows the tsunami inundation areas.

Figure 157: Tsunami Risks[70]



Physical Hazards

A physical hazard is generally described as a natural disaster or weather event that affects the community. The event may last a few hours or extend for a lengthy period, such as a heatwave or drought. The National Weather Service (NWS) issues watches, warnings, or advisories for these hazards when conditions exist or are in the immediate forecast.

Weather Conditions

Temperature

The temperature can affect CFD and the surrounding area during the year.[71] The average high temperatures range from a low of 63 °F during December to a high of 82 °F in September. The following figures provide the average monthly high and low temperatures from the Santa Cruz weather station.[72]

Figure 158: Average Monthly High Temperatures

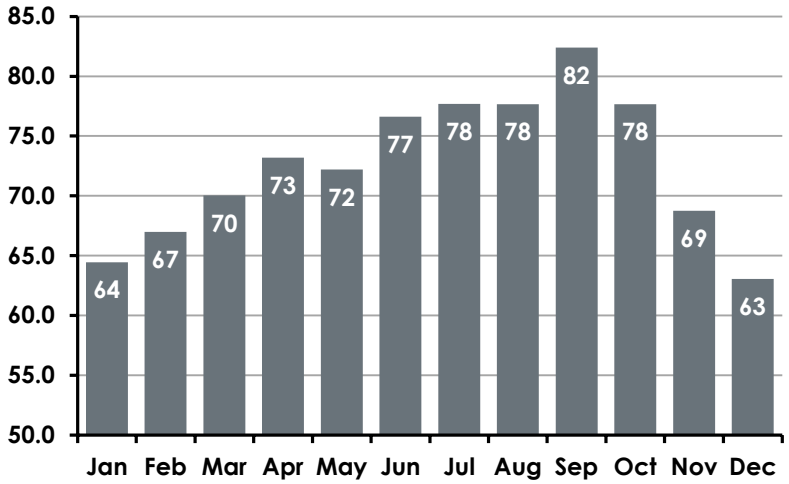
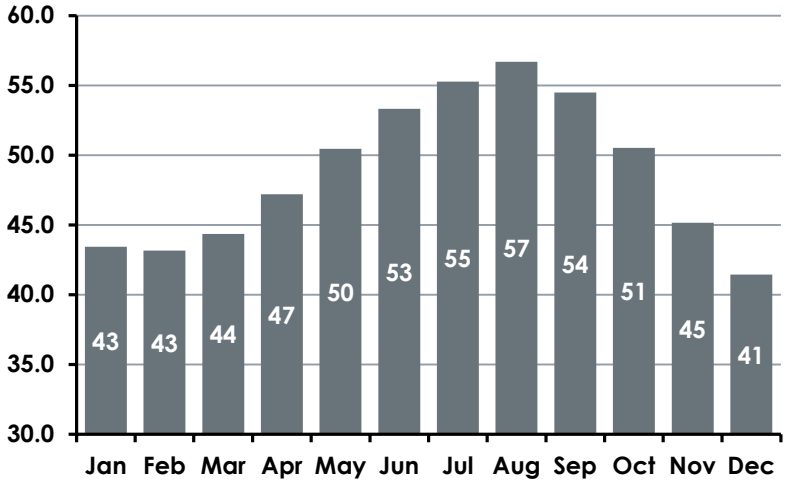


Figure 159: Average Monthly Low Temperatures



Winds

Wind speed and direction influence how CFD manages events such as a wildfire or hazardous materials incidents. The highest average winds occur between April through June of each year. The following figures show the average monthly wind speeds and yearly winds rose, showing the prevailing winds from the Watsonville Airport.[73]

Figure 160: Wind Conditions

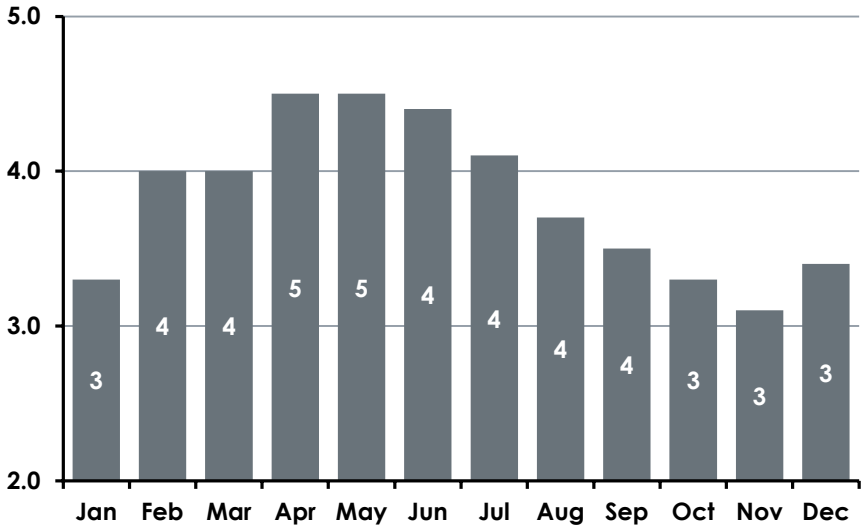
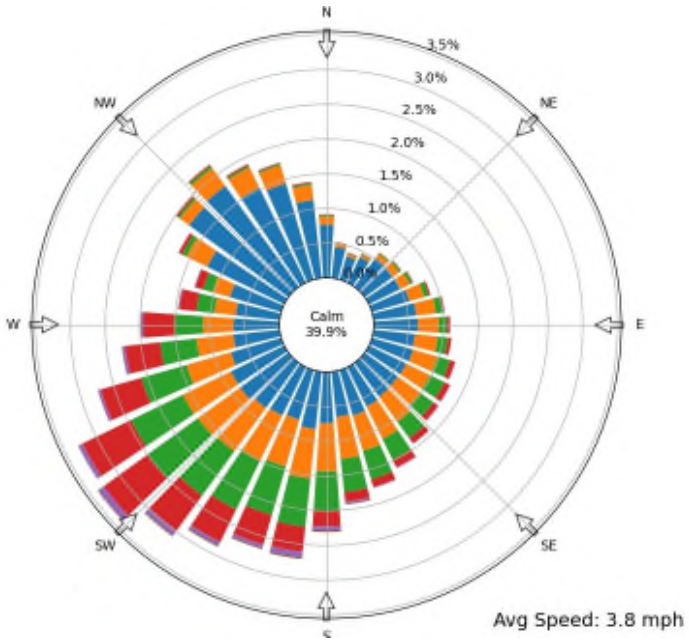


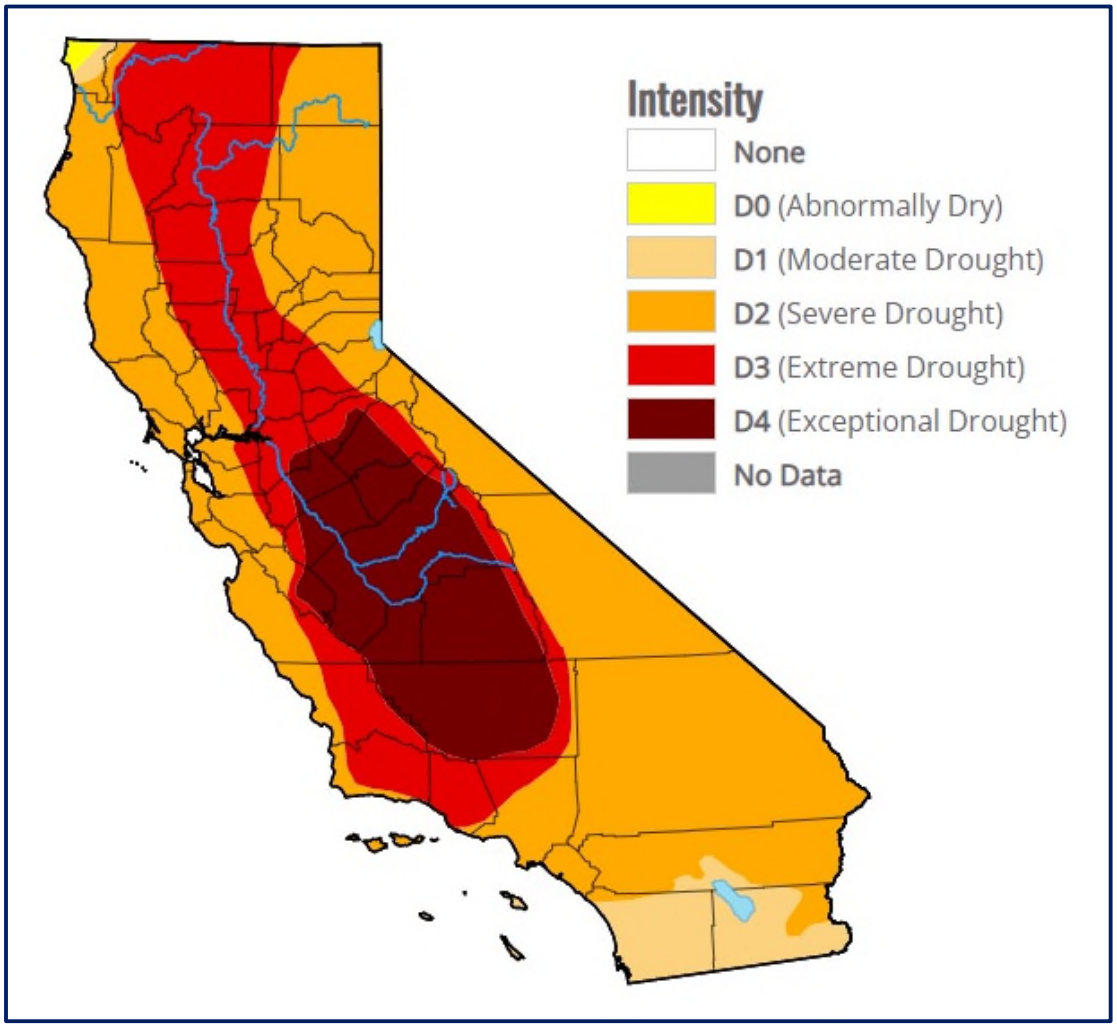
Figure 161: Watsonville Airport Wind Rose



Drought (Precipitation)

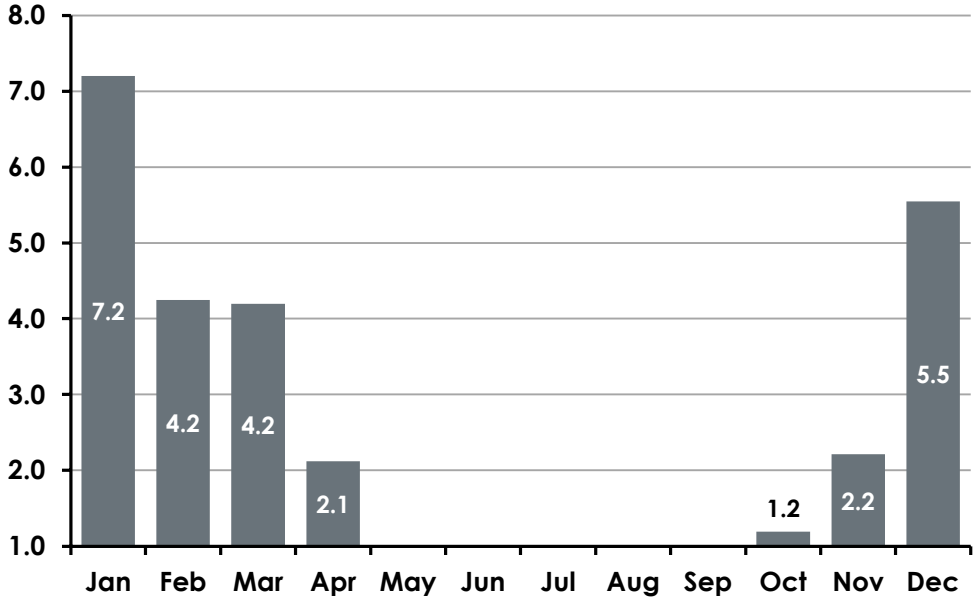
Drought is an extended length of time without rain or other forms of precipitation. Droughts occur over a long period and may become persistent. It becomes difficult to grow crops or replenish water supplies without sufficient rainfall. The current drought condition is severe, as shown in the following figure as of September 13, 2022.

Figure 162: Drought Map[74]



Precipitation can vary from month to month in the area. The highest rainfall occurs between December and March. The following figure shows the average monthly rainfall between 2015–2021, as registered at the Santa Cruz weather station.

Figure 163: Monthly Rainfall (2015–2021)



Land Use & Occupancies

Land Use

The concept of land use regulation is to provide attractive social and environmental outcomes to assist in the management of development efficiently. Land use for a community is designed to assign a classification for properties within a geographical area normally under governmental control. Zoning areas may vary from one portion of the service area with a mixture of low-, moderate-, and high-risk properties.

- **Low Risk:** Areas zoned for agricultural purposes, open spaces, low-density residential, and other low-intensity use.
- **Moderate Risk:** Areas zoned for medium-density single-family properties, small commercial and office uses, low-intensity retail sales, and similarly sized business activities.
- **High Risk:** Higher intensity business districts, mixed-use areas, high-density residential, industrial, storage facilities, and large mercantile centers.

CFD lies within the unincorporated areas of Santa Cruz County, and the City of Capitola and each governmental body have created General Plans to guide future development.

Santa Cruz County's general plan outlines some of the following guiding principles, including focused development that is compact, open space and resource development, economic viability, housing options, equitable and inclusive decision-making, governmental coordination, and fiscal sustainability. Guiding principles for the City of Capitola include community identity, community connections, neighborhoods and housing, environmental resources, supporting the local economy, fiscal responsibility, mobility, and health and safety.

Future growth is expected in the District and will likely follow the guidance of the Santa Cruz and Capitola General plans. The 2014 Capitola General Plan wants to increase the density around the 41st Avenue commercial corridor, and there are several proposals to redevelop the Capitola Mall.[75] Other developments include an expansion by Kaiser Permanente to build two medical facilities (3–4 stories) on Soquel Avenue, ten Habitat for Humanity houses on Harper St, 15 lot subdivision on Maplethorpe Lane, and 20 townhomes on Mission Drive. As the area continues to see additional growth and redevelopment, it may impact CFD with increasing incidents and requests for service.

Occupancies

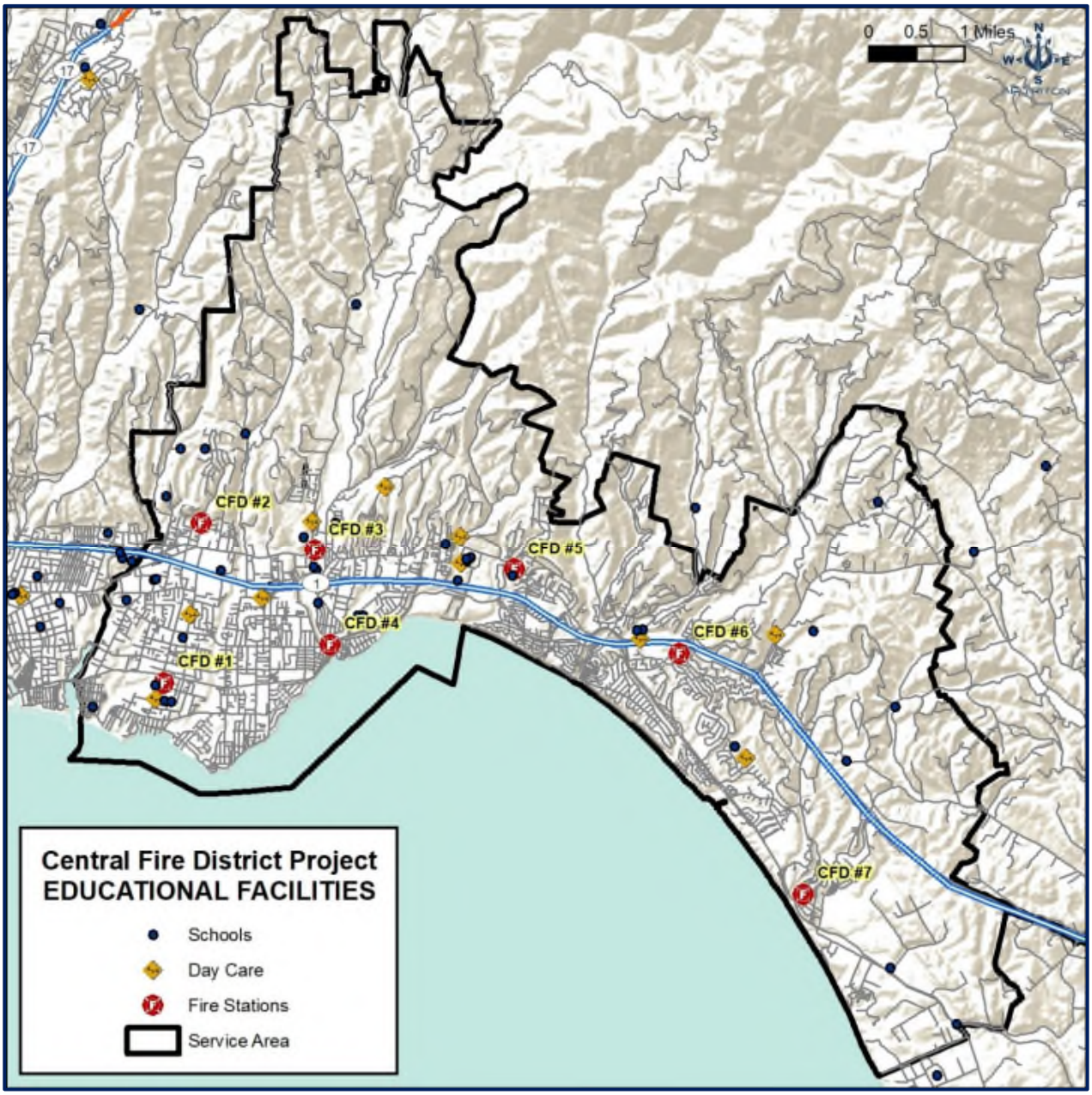
Commercial occupancies or properties are considered target hazards in every community because of the special or unique risks to emergency responders and the occupants during an incident or event. Fires occurring in buildings can present responding personnel with special or unique problems. Many different types of occupancies may exist in a response area. CFD should have a comprehensive pre-incident planning process to develop strategies and tactics during a fire or other emergency. The surveys allow responders to become familiar with the building, property, and special hazards to assist them when making tactical and strategic decisions during an incident.

Educational and Daycare Facilities

Public and private schools and childcare facilities increase risks in any community and require substantial assistance during a significant event, such as a mass casualty or fire response. In CFD, numerous schools and childcare facilities require inspections and pre-incident plans to ensure the property is safe and that emergency responders are familiar with the location and site-specific hazards. Daycare facilities pose a special concern because of the children's young age and, in some cases, the inability to evacuate during an emergency. These facilities require childcare workers to assist small children or physically carry infants when an evacuation is necessary.

The next figure provides the location of educational and daycare occupancies in CFD.

Figure 164: Educational Occupancies

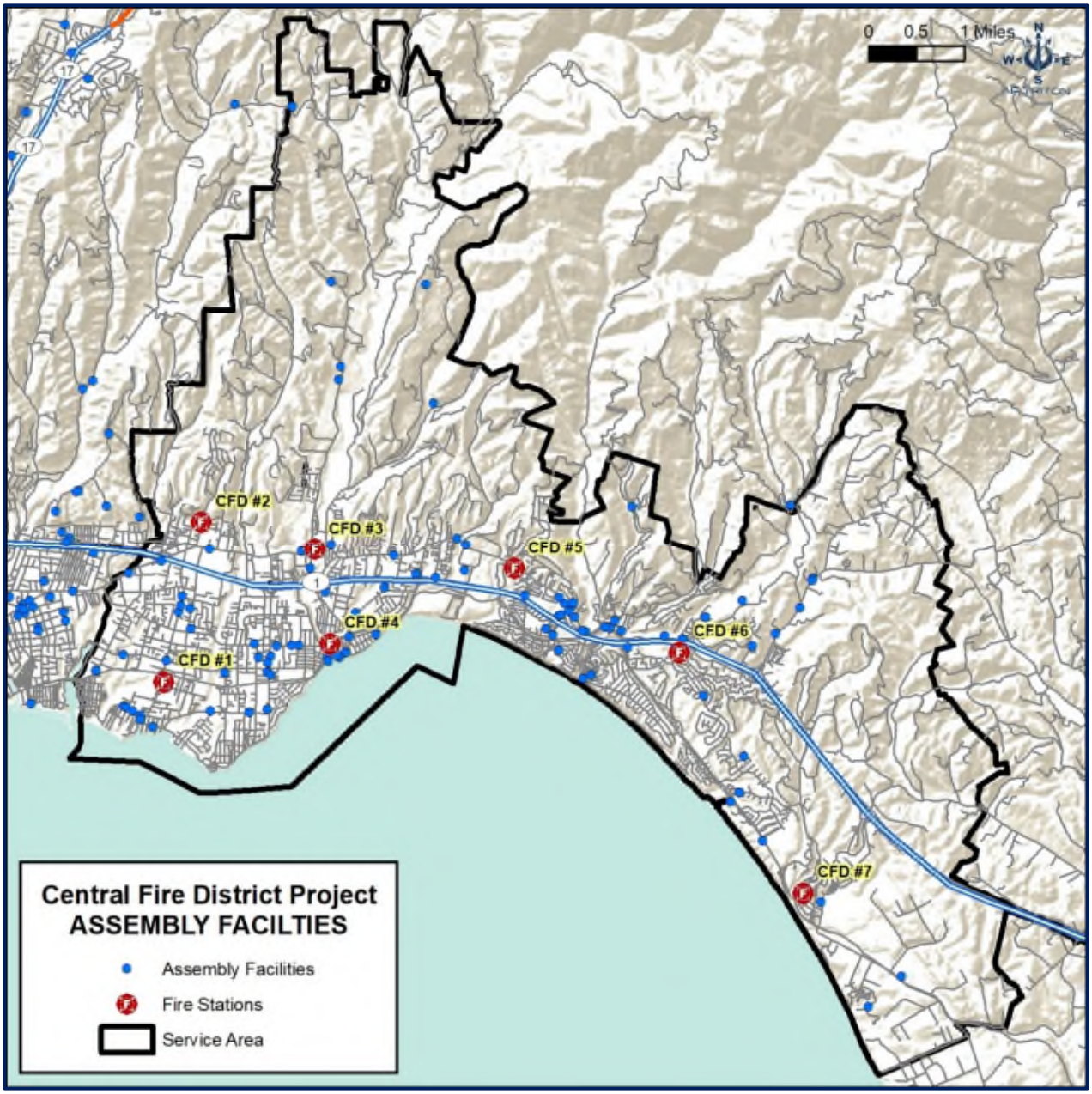


Assembly

Risks increase when a large group gathers in a single location or building, such as a place of worship, entertainment, or eating establishment. Other special events may include outside festivals such as a street fair or large sporting venues.

These occupancies or outdoor venues may require many responders during an incident if a fire or active shooter incident occurs. Significant outdoor events should be required to submit a public safety plan. The plan should include emergency vehicle access and egress, fire protection, emergency medical services, public assembly areas, directing of vehicular traffic and attendees, vendor, and food concessions, need for law enforcement, fire or EMS personnel, and weather monitoring. The following figure indicates the locations of assembly occupancies on CFD.

Figure 165: Assembly Occupancies

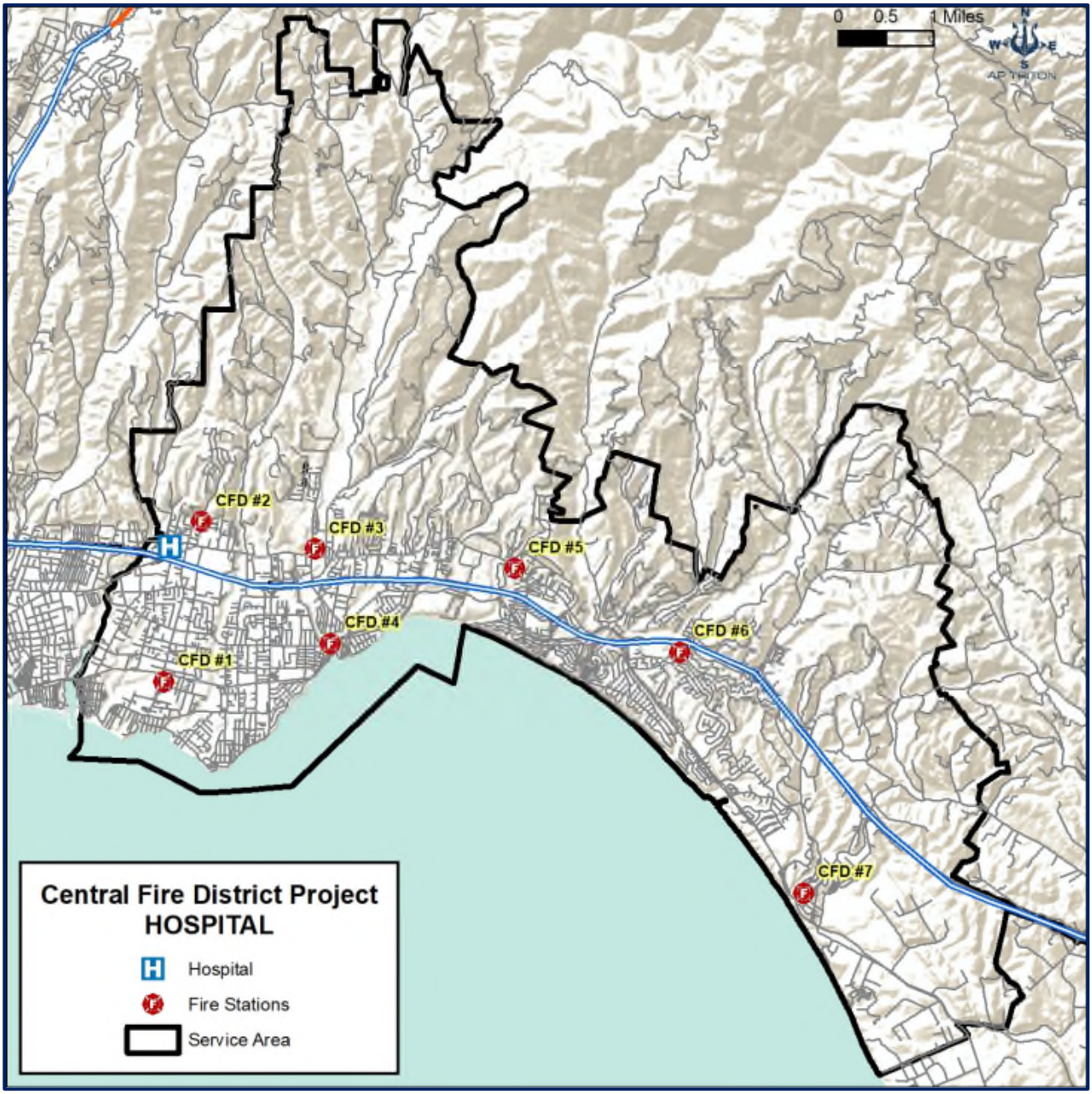


Hospital and Medical Facilities

These facilities provide medical care in the community to assist the sick or people seeking healthcare services. Hospitals are at a higher risk because of the inability of patients to self-evacuate the facility. These locations require more fire and life safety requirements than medical clinics to enhance the occupants' protection. Other protection includes a fire alarm to notify the occupants of an emergency or a fire sprinkler system to control or extinguish a fire.

Dignity Health Dominican Hospital is located in the CFD district and provides various services, including a 24-hour emergency room. The hospital is the primary receiving facility for heart patients and operates two cardiac catheterization labs for the Transcatheter Aortic Valve Replacement procedure. The following figure provides the location of the hospital.

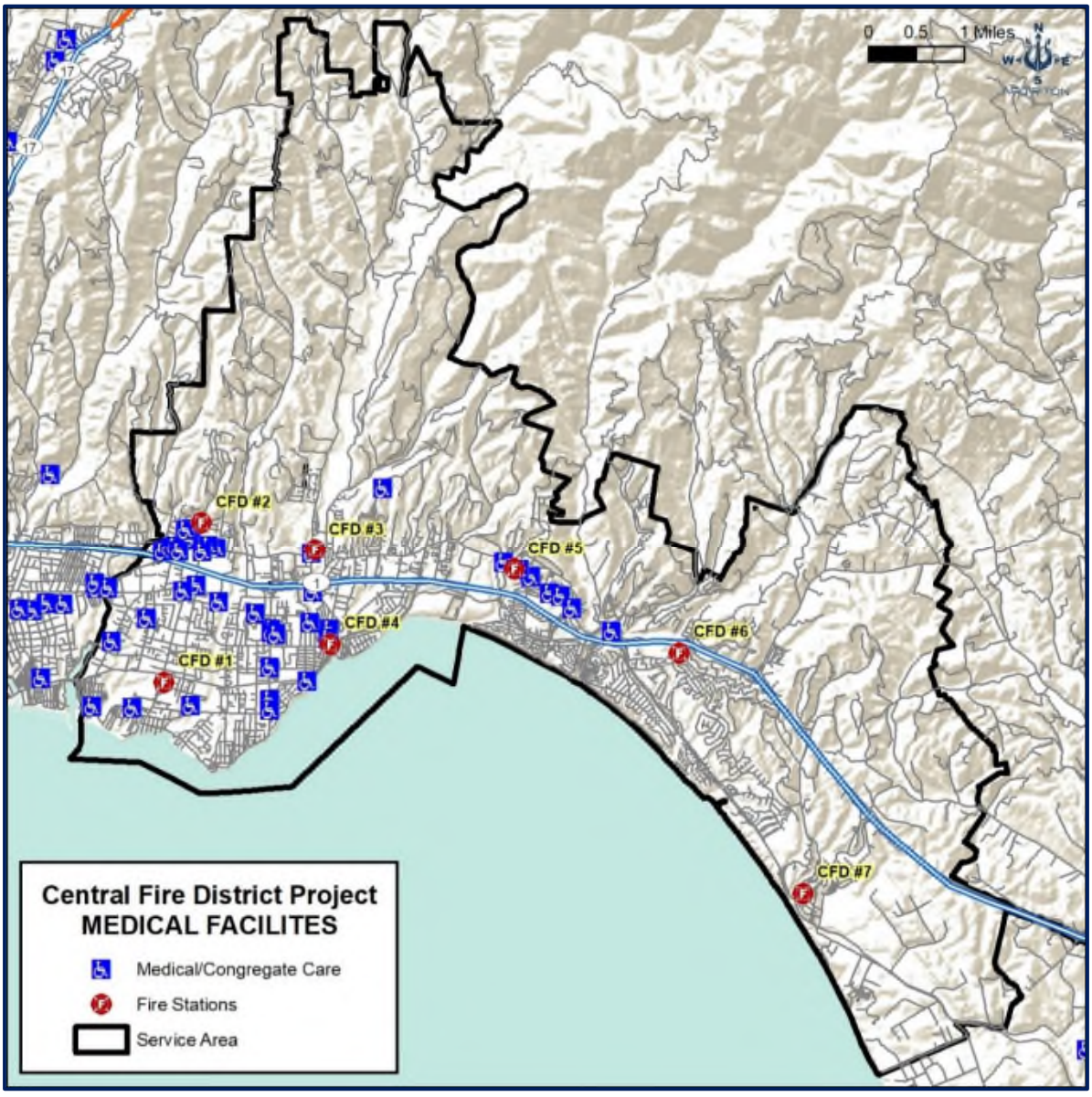
Figure 166: Hospitals



Congregate Care Facilities

As people age, additional care may require them to seek a facility to meet their needs. Depending on their mobility or cognitive conditions, they may need more assistance when evacuating the building. Staff should have developed plans for removing the occupants or patients during an emergency. These locations require additional fire protection systems to protect the occupants, like a hospital. Special locking arrangements for areas where patients with dementia or Alzheimer's are living are allowed to prevent them from leaving the facility. The following figure shows the congregate care facilities in the CFD district.

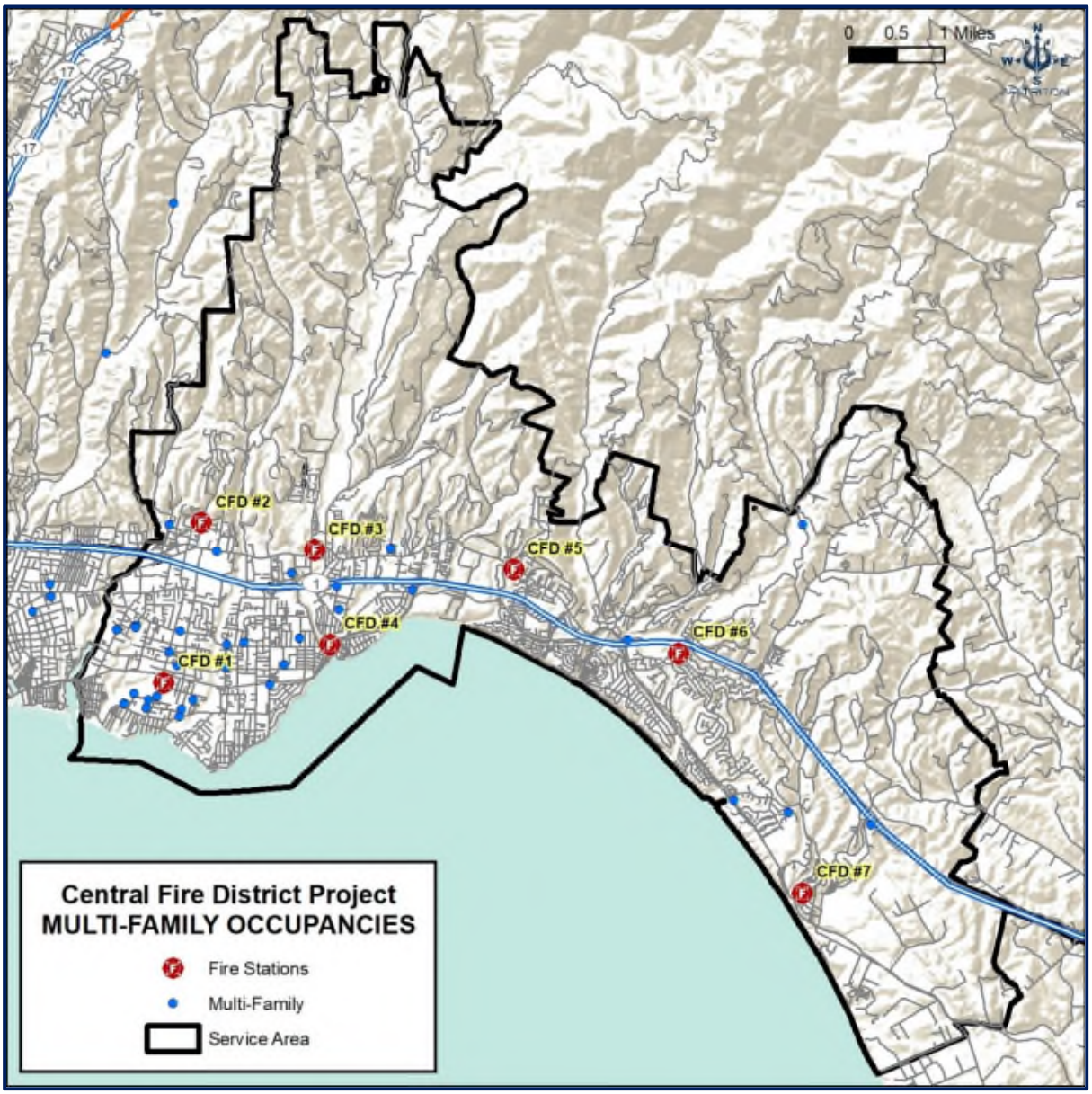
Figure 167: Congregate Care Facilities



Multi-family

Although multi-family housing has fewer fires caused by electrical or heating malfunctions, the risk of cooking fires is twice the rate of other building fires.[76] Updated building and fire codes now require these buildings to have a residential fire sprinkler system installed and interconnected smoke alarms in all bedrooms, hallways, and floors. These fire protection systems are designed to provide enough time for the occupants to evacuate the building. The following figure provides the locations of multi-family housing.

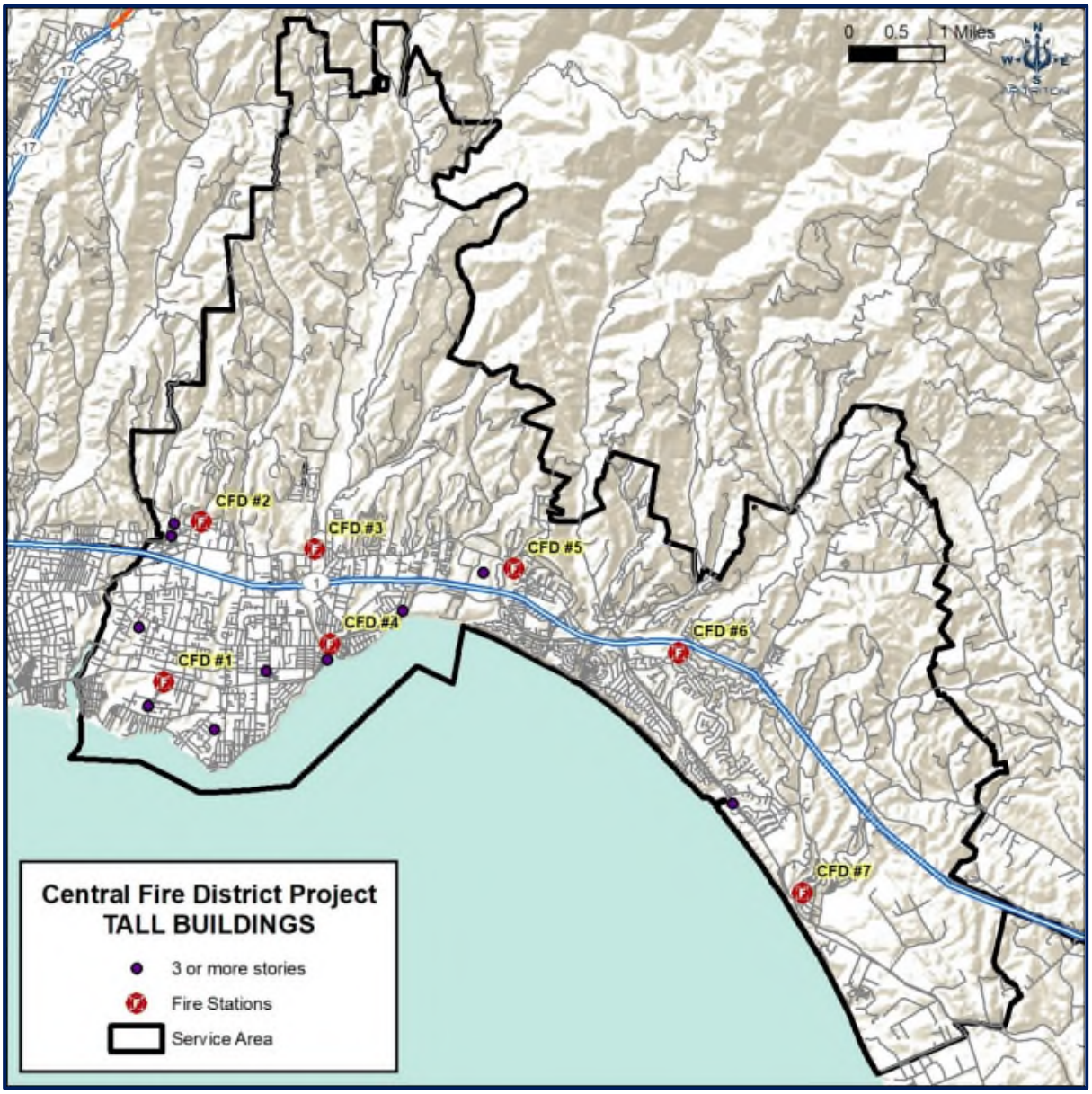
Figure 168: Multi-Family Housing Occupancies



Buildings Three or More Stories in Height

Structures three or more stories in height require a response of an aerial apparatus with elevated master stream capabilities. The Insurance Services Office (ISO) reviews the coverage area for all buildings within 2.5 miles of a ladder truck. A ladder truck may be necessary to access these higher buildings' upper floors or roofs since most ground ladders cannot reach these heights. The following figure displays the location of buildings more than three stories in height.

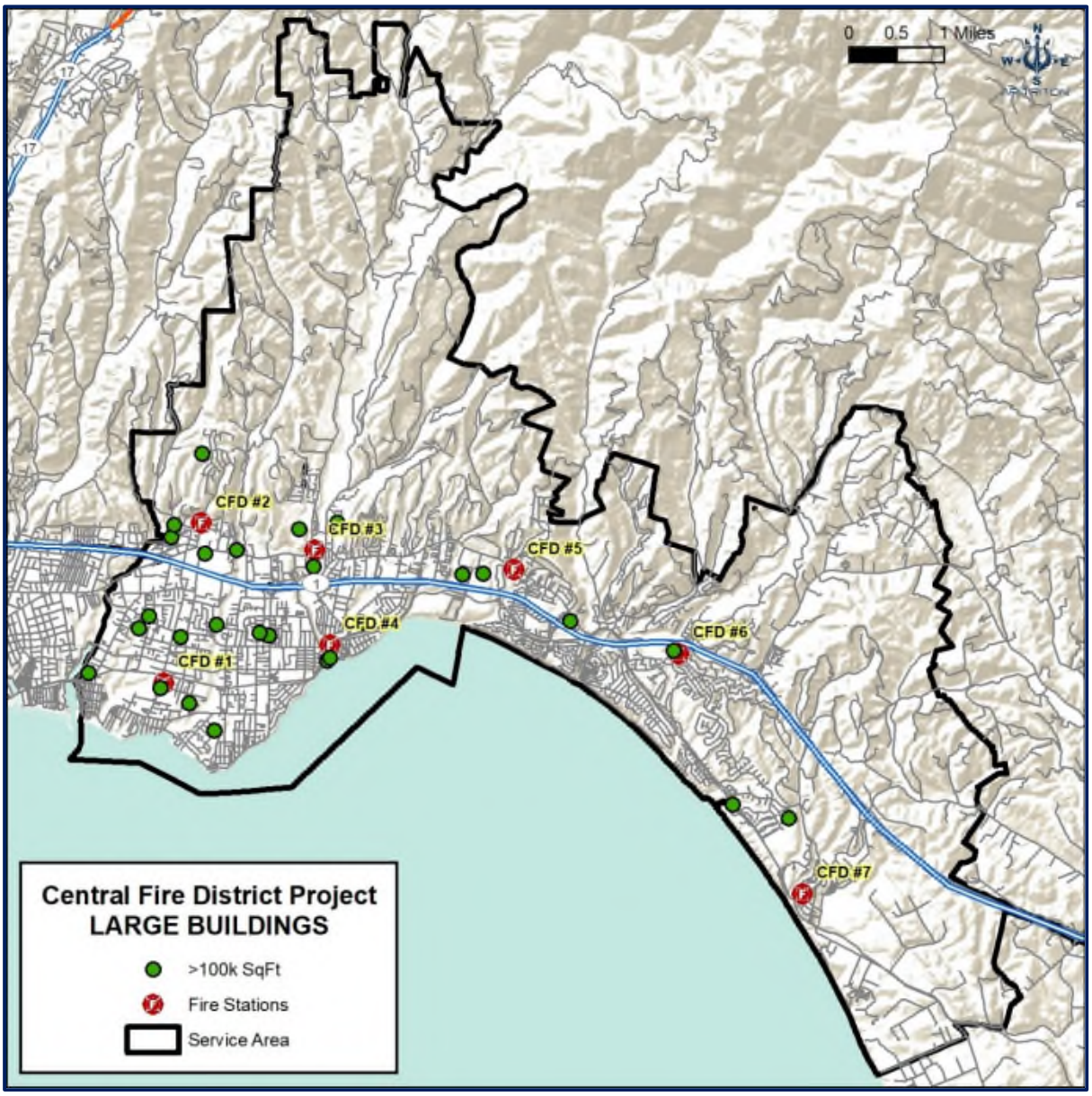
Figure 169: Buildings Three or More Stories in Height



Large Square footage Buildings

Large buildings, such as warehouses, strip malls, and large "box" stores, need more significant volumes of water for firefighting and require more Firefighters to advance hose lines long distances into the building. An incident at these locations may overwhelm CFD and require outside assistance. The following figure shows the locations of buildings greater than 100,000 square feet in area.

Figure 170: Buildings Greater Than 100,000 Square Feet

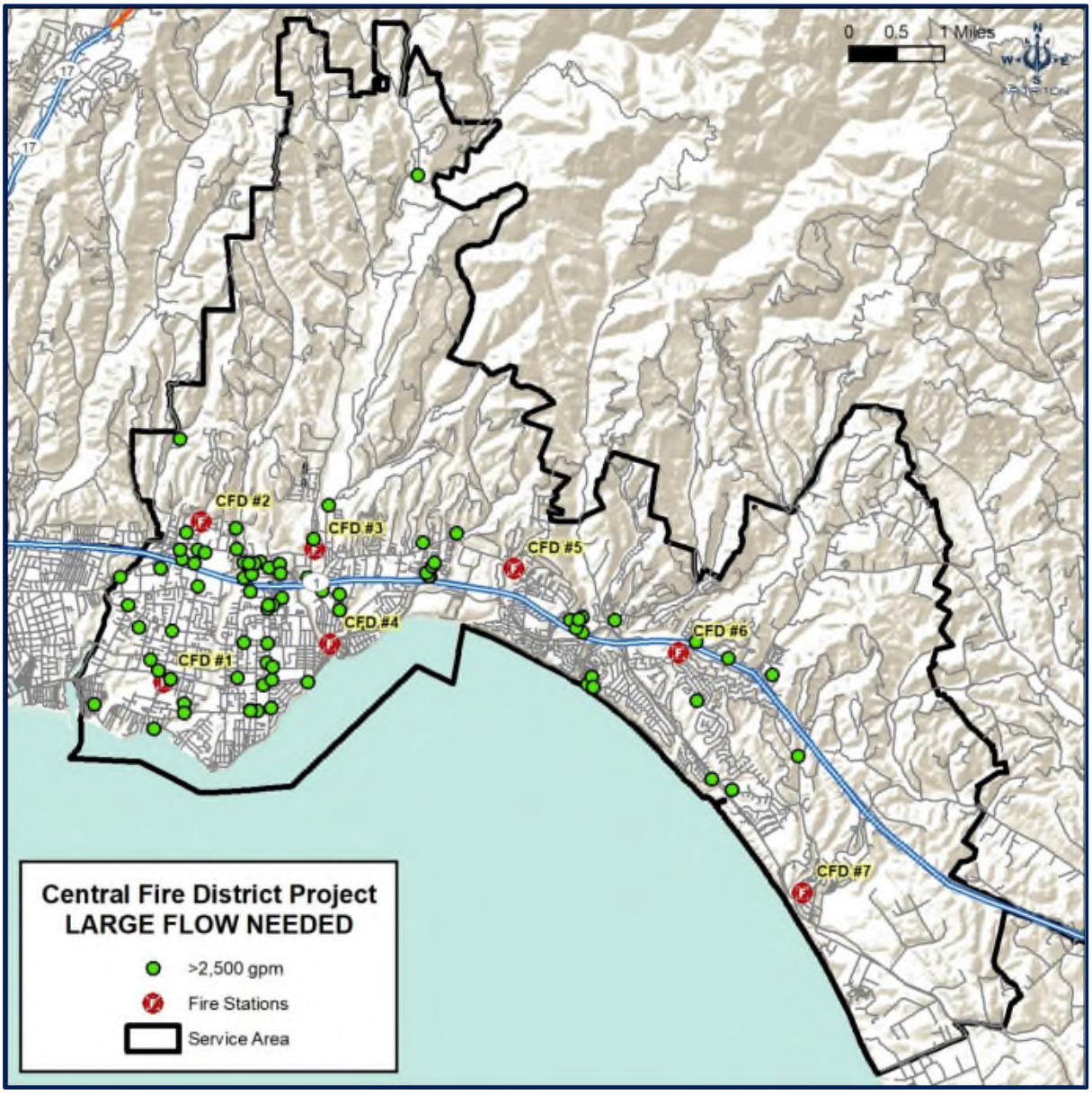


Large Fire-Flow Occupancies

Occupancies are classified according to their risk level. Risk factors that classify occupancies as low, medium, or high include the size of the building(s), construction type, the presence or absence of fire suppression features such as sprinklers and standpipes, the needed fire flow, the risk to life, the presence of chemicals or hazardous processes, and the amount of water available to control or extinguish the fire.

Many buildings with high fire flow requirements are identified by the Insurance Service Office (ISO) and provide a needed fire flow for select buildings in CFD. The following figure lists occupancies with a fire flow greater than 2,500 gallons per minute.

Figure 171: Fire Flows Greater than 2,500 Gallons Per Minute



Technological (Human-Caused) Hazards

If a building or facility stores or produces hazardous materials, it may require special personal protective clothing and equipment to control or mitigate the event. Locations that have hazardous materials on-site during the year exceeding the limits established by the Environmental Protection Agency are required to file Tier II reports. These reports to local jurisdictions, local emergency planning committees, and the State's Emergency Response Commission are required by the Emergency Planning and Community Right-to-Know Act of 1986, also known as SARA Title III. These thresholds require submission:

- Ten-thousand pounds for hazardous chemicals.
- Lesser of 500 pounds or the threshold planning quantity for extremely hazardous chemicals.

Although no significant hazardous materials production facilities exist in the service area, other businesses may store or produce these products.

Santa Cruz County operates a joint hazardous materials team supported through a Memorandum of Understanding (MOU) created in 2009, and it provides a funding source for the team. The Scotts Valley Fire District manages the hazardous materials team, which other fire agencies in the County support with personnel for an incident. CFD has nine trained members at the technician or specialist level. These team members must attend three out of four quarterly training sessions annually.

Critical Infrastructure

Critical infrastructure and key resources (CIKR) explain what is crucial for a community to function in a modern economy. Critical infrastructure is defined as a sector "whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof." There are sixteen defined Critical Infrastructure Sectors (CIS):[77]

- Chemical Sector
- Commercial Facilities Sector
- Communications Sector
- Critical Manufacturing Sector
- Dams Sector
- Defense Industrial Base Sector
- Emergency Services Sector
- Energy Sector
- Financial Services Sector
- Food and Agriculture Sector
- Government Facilities Sector
- Healthcare and Public Health Sector
- Information Technology Sector
- Nuclear Reactors, Materials, & Waste Sector
- Transportation Systems Sector
- Water and Wastewater Systems Sector

All these sectors may not be in the CFD district; each community must determine critical infrastructure locations and develop pre-incident plans for responding personnel.

Other buildings to consider as target hazards could include occupancies with a potential for a significant loss of life, such as places of public assembly, schools and childcare centers, medical and residential care facilities, and multi-family dwellings. Other considerations include buildings with substantial value to the community—economic loss, replacement cost, or historical significance—that, if damaged or destroyed, would have a significant negative impact.

Responses to target hazards may require many CFD resources and automatic aid during an incident.

Transportation Network

Emergency personnel needs a transportation network to respond efficiently to an incident. A delayed response can occur without a system of interconnected roads and streets. Interconnectivity provides multiple access points to a location if another approach is unavailable. The primary thoroughfare in CFD's response area is California Highway 1, or Cabrillo Highway. Many local streets in the Capitola are on a grid system, while the remaining portion of the District has more subdivision streets interspersed with cul-de-sacs that only provide one access route, thus preventing quick response if the street is blocked and inaccessible. Long winding streets or roads used to access homes in the lower mountains may increase response times if an incident occurs.

Preemption, when working correctly, turns the traffic signal green in the direction of travel to clear the intersection of other vehicles. The use of traffic signal preemption systems can increase the safety of responding apparatus and personnel by allowing a smooth flow of traffic through intersections. The CFD district has an Opticom preemption system, but it has been disabled because of the older apparatus's electrical system and the limited number of intersections in the District. CFD should review the current apparatus to determine if the installed equipment can be reactivated. It is also recommended to review the current Opticom technology for an upgrade that may provide enhanced service.

The following figure provides vehicles' and trucks' average daily traffic counts.

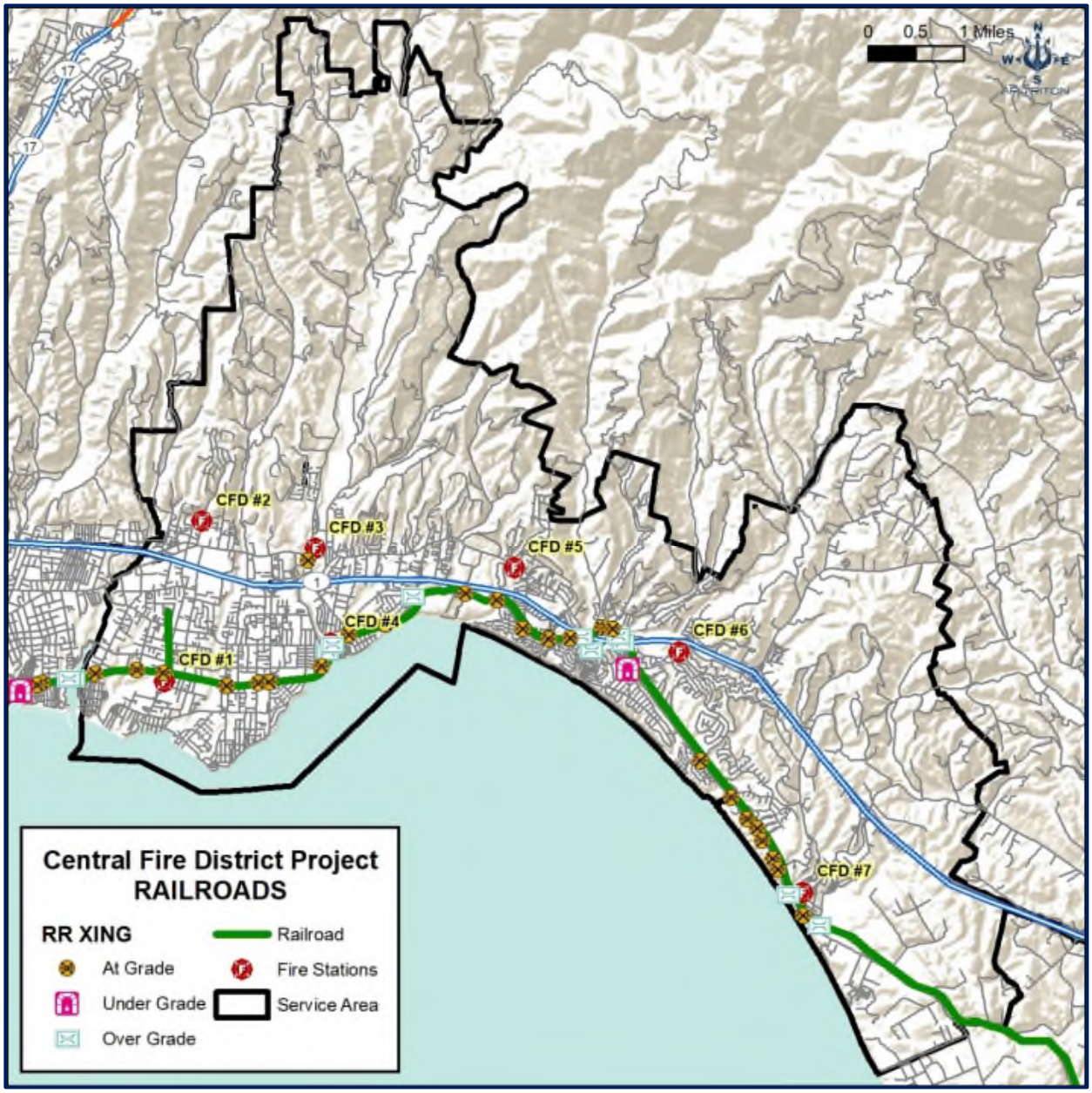
Figure 172: Average Annual Daily Traffic Counts[78]

Location	Avg Annual Daily Traffic–Vehicles	Avg Annual Daily Traffic–Trucks
Cabrillo Hwy at 41st St	93,000	No data
Cabrillo Hwy @ Soquel Ave	79,000	5,220

Rail

Union Pacific previously operated a rail line that travels through the District but is abandoned and no longer in use. Before shutting down, there were nine accidents at rail crossings since 1976, the most recent in 2007. There have been no injuries but only property damage to vehicles. In 2012, the Regional Transportation Commission purchased the rail line from Union Pacific for future use for transportation in the region.[79] The following figure provides the locations of rail crossings.

Figure 173: Railroads and Crossings



Energy

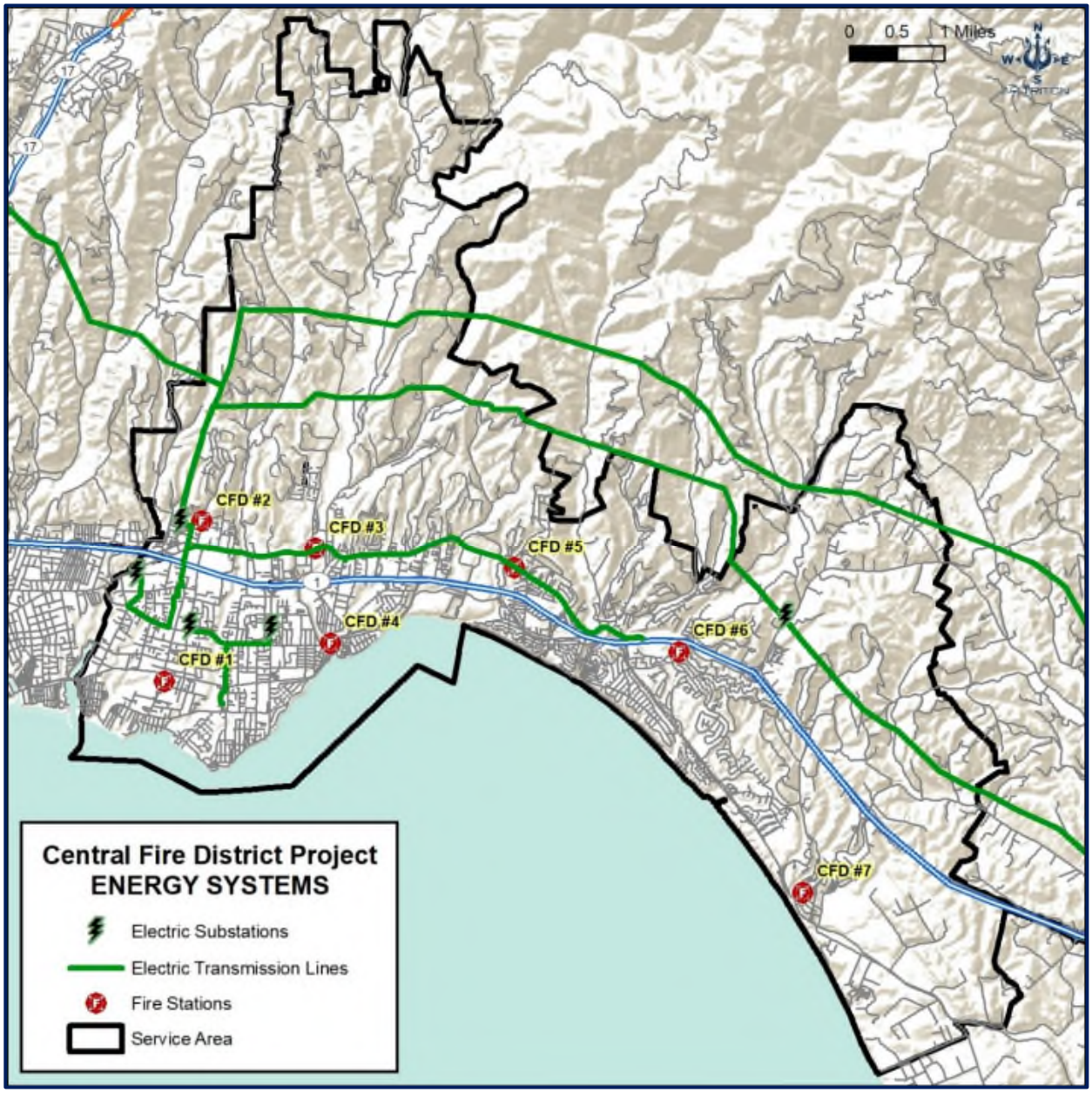
The ability to provide energy is a necessary component of a thriving community. The community depends on energy sources: electricity generation and transmission systems, fuel distribution and storage tanks, or natural gas pipelines and regulator stations. Pacific Gas and Electric (PGE) provides power and natural gas for CFD. The need for power includes communications to traffic signals to normal operations, which requires energy use.

Electricity

High voltage electrical transmission lines travel through CFD. Electrical lines with 65-kilovolt and 115-kilovolt travel through the District portion in a northwest-southeast direction. Where they terminate, an electrical sub-station steps down the voltage in the distribution system. There is an electrical substation at Houts Drive and Patterson Lane. Any incident involving an electrical sub-station requires assistance from PGE, and CFD personnel should not enter the site until advised.

Although not common, PGE may implement Public Safety Power Shutoffs during red flag warnings. These warnings occur when high winds (> 25 mph or gusts above 45 mph), low humidity, or when PG&E observes an issue preventing a fire from igniting because of powerlines causing a spark even in locations considered at low-risk. These shutoffs usually are temporary. PGE alerts customers before shutting off power, but the customer must sign up for text, phone messages, or email notifications.[80]

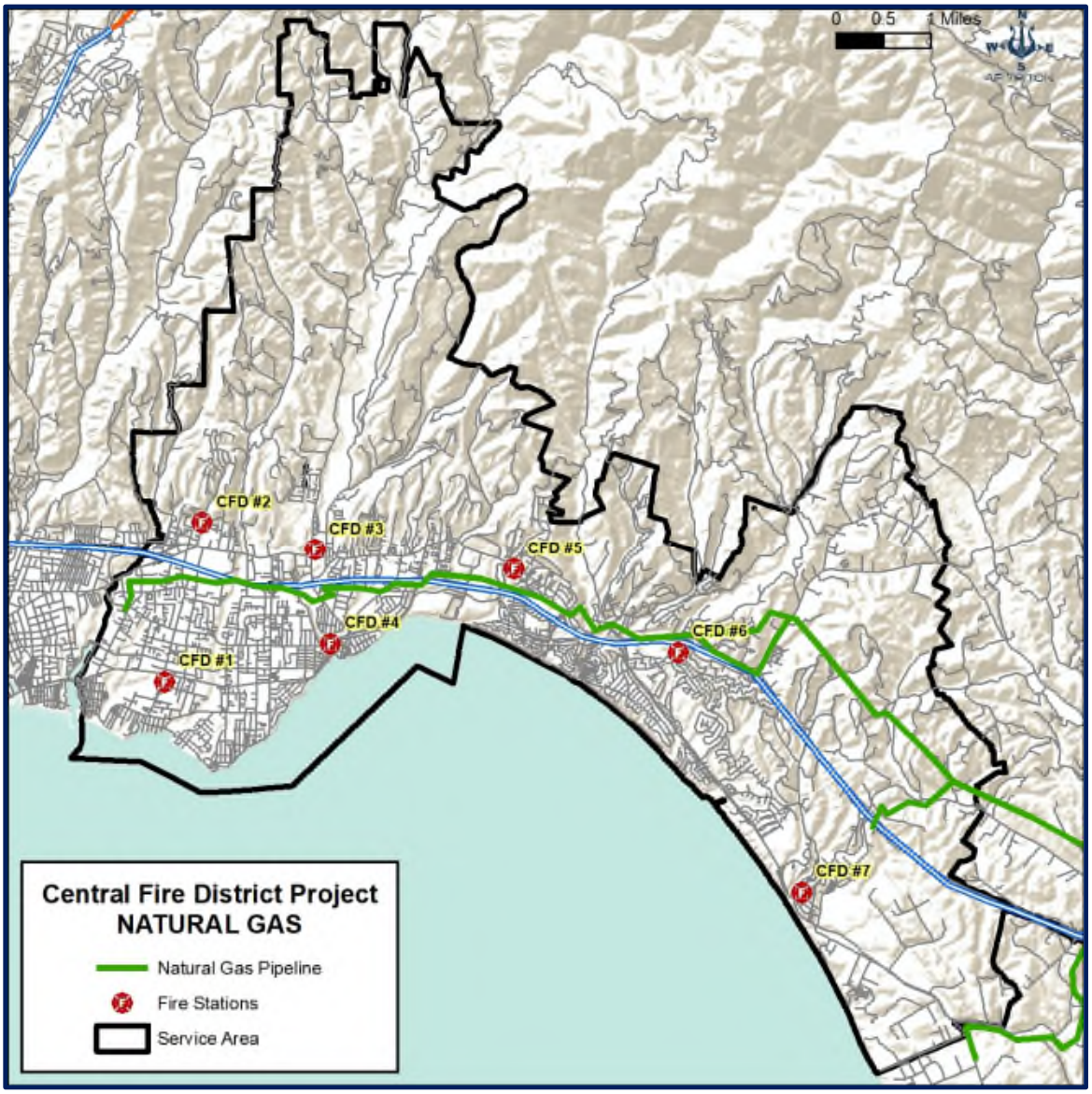
Figure 174: Electrical Transmission Lines



Natural Gas

PGE provides natural gas service in the District. There are natural gas interstate pipelines in the area and a system of distribution pipelines with pressures ranging from ¼ pound to 200 at a gate station. The customer distribution lines operate at different pressures, and regulators control devices reduce the pressure for everyday use. Locating services indicating where a gas line is buried before digging in the area. Natural gas leaks can occur when a contractor or homeowner damages the line. Education is critical to reducing accidental damage that may require a fire department response. The following figure shows the natural gas transmission lines for PGE.

Figure 175: Natural Gas Transmission Lines

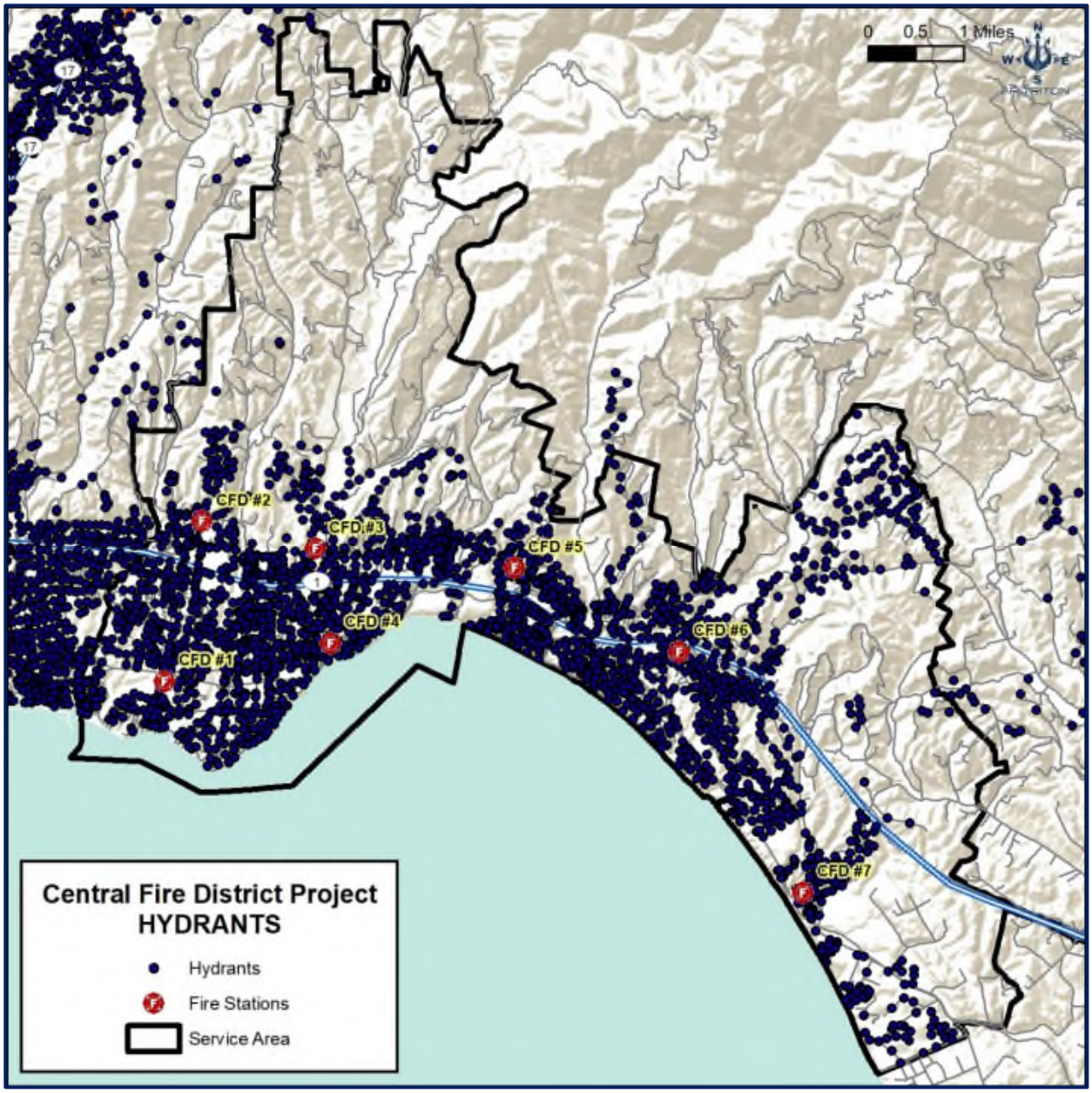


Water

Controlling a fire becomes challenging without an adequate water supply and distribution system consisting of water storage, mains, and a fire hydrant system. A system of well-distributed hydrants and appropriately sized water mains are necessary to provide the required water for fireground use. There are areas in the District where water flows are low and other locations where new developments have been built where tender shuttles are needed for a water supply. CFD has two tenders and mutual aid departments to provide water in these areas.

Five different companies, Santa Cruz Water Department, Soquel Creek Water District, Trout Gulch Mutual Water District, Central Water District, and San Andreas Mutual Water Company, provide water for CFD throughout their response area. CFD has agreements with all water purveyors to provide minimal maintenance to fire hydrants. The maintenance includes turning the operating valves, painting hydrants, clearing vegetation, and replacing the reflective markers. Each water company performs significant repairs to the hydrants. The agreements with each water company have been in place for many years and should be reviewed.

Figure 176: Fire Hydrants



Communications

When an incident occurs, essential facilities to receive and transmit alarm information require a communication center to communicate with emergency responders properly. Other communications are critical to the community, such as cellular phones, Voice over Internet Protocol (VoIP) telephone systems, or transmission lines from the local telephone company. These systems allow the public to notify emergency services of an incident. Internet services are essential for the public, commercial establishments, and emergency services to conduct daily business. Whether the internet services are through cellular access or an internet service provider, the failure of these communication systems can significantly impact emergency services and the public.

Santa Cruz Regional 911, or NetCom, provides dispatching services for CFD. NetCom is the County's primary Public Safety Answering Point (PSAP), and there are two backup locations at the Watsonville Police Department and Hollister. If there is an electrical failure, the PSAP has an uninterrupted power supply that can power the building for one hour and has a generator for extended loss of electrical service. The PSAP provides services to 18 agencies and includes Emergency Medical Dispatch, which prioritizes medical responses and allows the telecommunicators to provide pre-arrival instructions for the patient, such as how to perform CPR. The PSAP utilizes seven-12-hour shifts that vary during the two-week pay period.

Governmental Buildings

Governmental buildings are typically located close to their customers to manage proper public services. Therefore, the buildings are considered a part of the critical infrastructure needed to operate local, state, or federal government services.

Comparison of Fire Risks in Other Communities

Fire Loss

In 2020, fire departments responded to more than 1.4 million incidents in the United States that caused 3,500 civilian fire fatalities and over 15,200 civilian fire injuries. The property damage was estimated at more than $21.9 billion. The NFPA reported that 64% of the fire deaths occurred in one-or two-family dwellings. The report stated that $4.2 billion of property fire losses from wildland urban interface incidents occurred in California.[81]

Fire loss rates can fluctuate from year to year based on the type of property damaged or destroyed during a year. A significant loss can cause the amount to increase substantially but may drop the following year. Property loss per capita for CFD is considerably lower than the national average, with the highest occurring in 2019. CFD recognized after their merger that the different organizations were collecting fire loss data inaccurately and they are placing additional quality control to ensure property and content losses are tracked in their RMS. The following figure shows the CFD service area's property loss per capita for 2018–2020.

Figure 177: Property Loss per Capita

Year	CFD Property Loss per Capita	U.S. Property Loss per Capita
2018	$3.55	$78.25
2019	$3.58	$66.62
2020	$0.53	$66.07

The number of fires per 1,000 population in the CFD response area is lower than the national average, with populations ranging from 50,000 to 99,999, as shown in the following figure.

Figure 178: Fires per 1,000 Population

Year	CFD Fires per 1,000 Population	U.S. Fires per 1,000 Population
2018	2.6	2.9
2019	2.6	2.9
2020	2.0	3.2

Intentionally Set Fires

Intentionally set fires, or in many cases considered as arson, are defined as "any willful or malicious burning or attempt to burn, with or without intent to defraud, a dwelling house, public building, motor vehicle or aircraft, personal property of another.[82] As shown in the following figure, the number of intentionally set fires remained steady between 2018–2020 but dropped significantly in 2021.

Figure 179: Intentionally Set Fires

Year	Intentionally Set Fires
2018	22
2019	21
2020	24
2021	11

Insurance Service Office

The Insurance Services Office, Inc. (ISO©) is an independent organization that collects and analyzes data from fire departments in communities throughout the United States to determine rates for fire insurance. According to their report, the ISO's Public Protection Classification program, or PPC, "is a proven and reliable predictor of future fire losses." Commercial property insurance rates are expected to be less in areas with a lower (better) ISO PPC Class rating.

The ISO Fire Suppression Rating Schedule (FSRS) measures four primary elements of a community's fire protection system: *Emergency Communications* (max 10 points); *Fire Department* (max 50 points); *Water Supply* (max 40 points); and *Community Risk Reduction* (max 5.5 points), for a maximum possible total of 105.5 points. ISO then assigns a grade using a scale of 1 to 10. Class 1 represents the highest degree of fire protection, and Class 10 designates a fire suppression program that does not meet ISO's minimum criteria.

CFD has two ISO ratings because of the merger and now has a rural and urban rating. Both classifications were effective March 1, 2019. The District is scheduled to be re-evaluated in December 2022

Central FPSA had a Class 2/10 rating assigned during the most recent report. The first rating number applies to any property within five miles of a fire station and a fire hydrant within 1,000 feet. The second number is for any property outside of the five-mile distance from a fire station.

The earned credits totaled 88.43 out of 105.5 available, as shown in the following figure. Areas for improvement are in the Fire Department feature for Company Personnel, where 9.33 credits were received out of 15.

Figure 180: ISO Earned & Available Credits for Central FPSA

ISO Feature	Earned Credit	Available Credit
Emergency Communications	9.01	10
Fire Department	40.38	50
Water Supply	37.13	40
Divergence	-2.41	0
Community Risk Reduction	4.32	5.5
Totals:	**88.43**	**105.5**

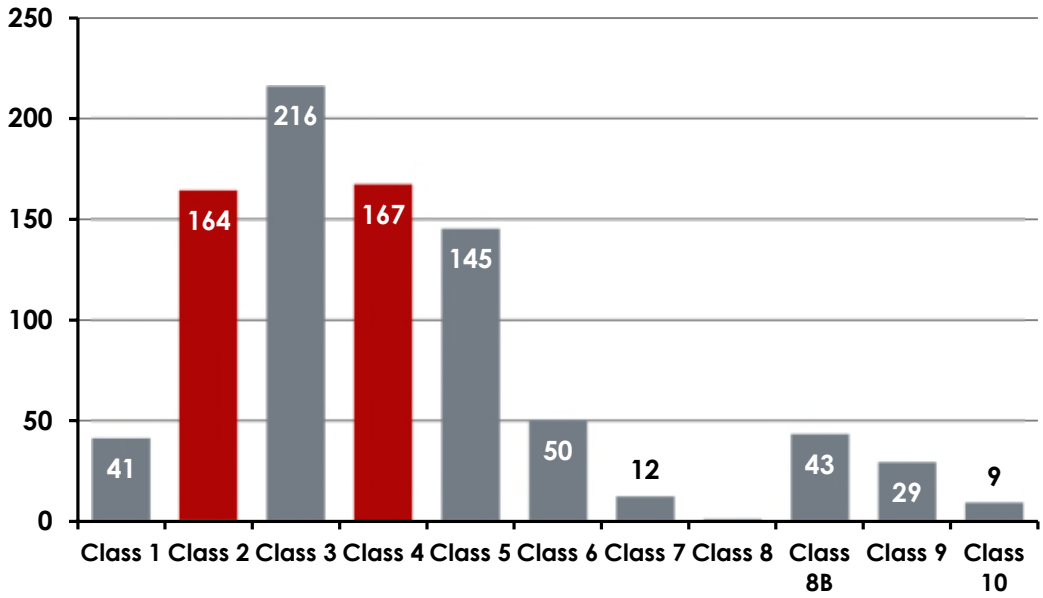
The earned credits totaled 68.03 out of 105.5 available, as shown in the following figure, which provides a Class 4/10 rating. Areas for improvement are in the Fire Department feature for Company Personnel, where 8.16 credits were received out of 15, and the Water System feature for Supply System received 11.65 credits out of 30.

Figure 181: ISO Earned & Available Credits for Central FDS

ISO Feature	Earned Credit	Available Credit
Emergency Communications	9.01	10
Fire Department	37.79	50
Water Supply	21.35	40
Divergence	-4.44	0
Community Risk Reduction	4.32	5.5
Totals:	**68.03**	**105.5**

The following figure shows the two different ISO classifications provided during the organization's last survey before the consolidation in 2021.

Figure 182: Comparison of ISO Class Ratings (California)[83]



Section IV:
FINDINGS & RECOMMENDATIONS

Findings

- CFD General Fund property tax revenues provide the majority of the District's revenues and have shown consistent growth during the review period.
- Growth in salaries and benefits has consumed most of the growth in property tax revenues.
- Growth in benefit costs has been fueled by very significant growth in funding towards the Unfunded Actuarial Liability portion of the pension liability of the District.
- CFD has created a capital replacement program and provided significant funding from the General Fund to be in a position to cash fund all but the most significant (stations) of capital replacements.
- General Fund reserve balances have increased during the review period.
- The District anticipates borrowing funds in FY 2025 to purchase apparatus to replace their aging fleet.
- From discussions with the District's Finance Director, revenue growth is expected to continue similarly to that experienced during the period reviewed.
- The Live Oak Station is sufficient in design. However, repeated problems with the large middle overhead door may require additional capital to permanently fix the problem.
- The Thurber Station has structural problems on the living quarter's side, likely because the station is settling. Addressing this early will be more cost-effective moving forward.
- The Soquel Station is inadequate, needs significant repair and maintenance, and is not located to the District's best advantage. It also sits in a flood zone and is at risk of being unavailable during a flood. Floods are a time when full organizational availability is essential.
- The Capitola Station is inadequate in design and size, while it is also located in a flood zone. However, the necessity of this station location was demonstrated during the site visit because of the traffic situation.
- The Aptos station's sewer situation is inadequate. In addition, the building size and arrangement are insufficient for the Community Risk Reduction Division, training, and the fire station.
- The Aptos station is not adequately designed to house the height of the current truck apparatus. It would require a significant capital investment to house this apparatus.
- The Rio Del Mar station is not a good design for a fire station. Crews should have better access to the bay floor and additional space to address health and safety concerns.

- The La Selva Beach station is insufficient in design and size. It is also located inappropriately to serve the District's response needs.
- The administration building is sufficient in design and layout for current staffing levels. However, it is nearing full occupancy and will not support a large influx of new staff.
- The fleet services location is of excellent design for a fire apparatus shop. The expected repairs and remodeling will enhance its usability. However, it is nearing its capacity to house additional mechanics and apparatus.
- CFD does not have public medical information, education plan, or approach. This could be addressed in a complete community risk reduction plan.
- CFD's ALS deployment model meets current best practice research.
- The capital improvement and budget tool do not include capital equipment specific to EMS.
- CFD's business and WUI inspection programs appear robust.
- CFD does not have a community risk reduction plan in place. Additionally, it does not have stated program outcome goals.
- Lifeguard services are inconsistently available on public beaches throughout CFD's response area.
- Administrative staffing appears sufficient for the needs of the organization.
- Logistics staffing, mainly the mechanical support functions, requires continual evaluation to ensure they can provide the promised services.
- The number of Firefighters per population protected is like the region and appears to meet the operational needs. However, the number of employees needed to maintain operational staffing based on absenteeism requires continual evaluation.
- Policies, guidelines, rules, and regulations are in the process of being blended after the merger.
- The mission, vision, and values statements have not been recently updated.
- CFD has not adopted a standard of performance.
- CFD's alarm assignments do not equate to the critical tasking analysis.
- CFD does not appear to have a standard training hour requirement or a system to manage Firefighter attendance and performance. As a result, there is a wide disparity in the amount of training received by individual responders.
- CFD includes its administrative staff in the training program. This is not common but could be an asset for staff management if used appropriately.

- CFD participates in the Santa Cruz County Emergency Medical Services Integration Authority, which allows them to create and manage their own EMS continuing education programs.
- CFD does not have a review program to create its annual curriculum. Without Firefighter performance, post-incident analysis, or other formal evaluation tools, it will be challenging to understand training deficiencies and needs.
- CFD's training drill grounds are inadequate for overall program delivery. Space and adjacent occupancies limit live fire, defensive water flows, and driver training. The closest adequate facility appears to be 45-minutes out of the District.
- CFD staff is not required to acquire and maintain training certifications such as the State of California's Fire and Emergency Services Instructor 1, 2, or 3.
- Service demand and system analysis for 2020 and 2021 may be driven by the COVID-19 pandemic and associated societal measures taken to prevent its spread. The research indicated a significant change in the utilization of emergency services. It is supposed that many people were reluctant to call for medical aid, leave their homes, or travel during the pandemic. As a result, incident volumes for these years may not be what agencies might expect in less restrictive times. For this reason, further evaluation is warranted as non-pandemic data becomes available.
- The incident volume indicated a significant dip during 2020, with a rebound in 2021 to levels more like pre-COVID-19 years. However, the number of responses may change significantly as the community recovers.
- Monthly workload is busiest in January, and daily workloads are higher during the latter part of the week. The workload is highest during the daytime hours, with Engines having the highest workload of the fleet. Response workload is the greatest around Stations 1, 2, 4, and between Stations 5 and 6
- Reliability to respond in the station primary area is lower for Station 3 and Station 4.
- Call processing times exceed NFPA recommendations with an unusual spike at 2 a.m.
- Turnout times also exceed NFPA recommendations
- The five water companies' agreement with the District has been in place for many years, and they all need to be reviewed.

Introduction to Recommendations

Based on the analysis and considering community expectations, recommendations are offered to assist the District with long-range planning and improve the delivery of fire and emergency services to the community. Triton does not expect that CFD will implement all recommendations in the short term. Some may wait until economic conditions allow their implementation. However, all the recommendations offered chart a course to improved capability and service. The recommendations are described as goals and should be implemented as funding allows. Each will improve CFD's ability to provide effective service to the community.

Recommended Short-Term Strategies

The short-term strategies listed in this report are a compilation of the recommendations aimed at improving the current conditions and levels of protection over the next one to two years.

Recommendation A-1: Review Incident Data Annually.

Description: Due to potentially distorted data during the COVID-19 pandemic years, trends and predicted demand may be flawed. It is essential to understand the full effect of the pandemic on service delivery, and that will only be possible with continued analysis. Evaluating demand, service types, and other information annually until the pandemic-specific effects are fully accounted for and understood is critical. Until that effect is fully understood, the analytics created using the pandemic-era data have the potential to be misleading.

Outcomes: Creating an understanding of the pandemic era effect on, and creating appropriate adjustments to, service delivery and performance analytics.

Estimated Cost: Costs will vary depending on the approach adopted. At a minimum, staff time will be required. Additional costs may include training, increased staff levels, compensation, equipment, or fees paid to outside vendors.

Recommendation A-2: Improve Recordkeeping for Facilities.

Description*:* The facility systems in place appeared well organized and designed. However, this seems to require key personnel to remember what happened and what needs to be done. CFD should work to formalize a documentation process for facilities that can be passed on to new managers. Vendor-supplied software programs can assist with this, but this is by no means necessary.

Outcomes: An easily understood and verifiable methodology to understand facility needs and preventative maintenance performed.

Estimated Cost: Staff time. Additional costs may incur if a third-party vendor is selected.

Recommendation A-3: Develop a Capital Improvement, Station Location, and Replacement Plan.

Description: There is a significant need for facility updates, movement, and remodels. This should be evaluated by the staff and assessed for forecasted changes such as additional mergers or other County-wide initiatives. This plan needs to be captured, costs fully defined, and priorities established. The plan should allow continuity for the next 10–30 years of district operations, regardless of management or leadership changes. In addition to the changes and replacements, a capital plan for expensive system replacement and maintenance should be developed.

Outcomes: A roadmap for facilities capital improvement initiatives.

Estimated Cost: Staff time.

Recommendation A-4: Create a Community Risk Reduction Plan.

Description: A clear risk reduction plan with defined goals and outcomes can help direct the coordinated efforts of the community risk reduction division and operations. Production can be accomplished by following established sources, such as Vision 20/20 or NFPA 1730, or creating a custom document.

Outcomes: Clear objectives, outcomes, and direction for the community risk reduction efforts.

Estimated Cost: Staff time.

Recommendation A-5: Determine and Advocate Effective District/Regional Lifeguard Services.

Description: Often, a lifeguard on a public beach responds rapidly in life-threatening situations. In addition, a trained observer can enhance early notification of additional rescue services as needed. While this is not a service provided by CFD, the lack of consistency directly affects the District's ability to provide effective lifesaving services in ocean rescue situations.

Outcomes: The first outcome is to study the problem in detail and determine the best option to ensure the adequate deployment and staffing of lifeguard services. The subsequent development is to adopt the best solution, advocate and see the solution is implemented.

Estimated Cost: Staff time. Additional costs may be incurred for specialized evaluations, work with local lifeguard jurisdictions, or consulting studies are utilized.

Recommendation A-6: Finalize the Merger of Policies, Guidelines, Rules, and Regulations.

Description: Post-merger, the controlling documents of both agencies needed to be merged into one set. This process should be made a priority and completed in the short term.

Outcomes: The agency should work from a single set of policies, guidelines, rules, and regulations that are known, published, and understood by all employees.

Estimated Cost: Staff time.

Recommendation A-7: Establish and Adopt Performance Goals and Adjust Dispatch Policy.

Description: CFD does not have performance goals for each program or level of risk. These performance goals should reflect the community's expectations and be developed with an approved methodology.

Outcomes: Adopted specific performance objectives for each program and level of risk.

Estimated Cost: Staff time.

Recommendation A-8: Consider adding a Peak Hour Response Unit During Special Events and High Call Volume Days.

Description: CFD protects areas that experience numerous special events resulting in congestion and the potential for delayed response.

Outcomes: Establishing this type of unit(s) will lower response times during peak demand hours and enhance Emergency Response Force and initial attack among other benefits.

Estimated Cost: To minimize costs, consider initiating a pilot project possibly using an existing piece of apparatus staffed with overtime positions.

Recommendation A-9: Complete the Strategic Plan Process.

Description: CFD has committed to a community-driven strategic plan process. The process includes updating the mission, vision, and values statement. This is critical to completing a roadmap for the agency's future success.

Outcomes: Updated mission, vision, and values and a comprehensive 3-to-5-year strategic plan.

Estimated Cost: Staff time and consultant costs.

Recommendation A-10: Adopt and Enforce a Continuing Education Training Policy.

Description*:* Developing minimum standards for responders can help direct employees and managers toward improvement goals. The requirements should identify the number and types of training hours required by their position and regular reports to the responder and managers.

Outcomes: Clear objectives, outcomes, and direction for the various training programs.

Estimated Cost: Staff time.

Recommendation A-11: Develop a Training Needs and Evaluation Process.

Description*:* Staff skills evaluations and post-incident analysis can help the agency understand where they need to focus their training efforts. While no one likes to get critiqued, honest reflection about service performance can provide the training division with valuable information. Without formal review processes, training may be focused on programs where responders are already very proficient, or worse, not address a weakness.

Outcomes: A formal, collaborative evaluation system to direct training activities.

Estimated Cost: Staff time.

Recommendation A-12: Evaluate Additional Certification Requirements for Training Cadre.

Description*:* Being a training officer is a specialty within the fire service. There are certifications and training that can add to the training cadre's capabilities and credibility. State fire instructor certifications or other training program certifications can add depth to the training program.

Outcomes: An appropriate level of training for those responsible for managing and leading the training programs.

Estimated Cost: Staff time and potential costs associated with certification.

Recommendation A-13: Determine if the Traffic Signal Preemption System can Become Operational.

Description: The current traffic signal preemption system is not operational.

Outcomes: CFD should determine why the electrical system is impacting the use of the traffic signal preemption system on the apparatus and if the current system can be upgraded to newer technology. The preemption system can reduce the chance of an accident between two other vehicles when an emergency apparatus approached an intersection or between a vehicle and the apparatus.

Estimated Cost: Staff time is required to determine why the electrical problems exist on the apparatus and if the current system should be upgraded. Cost savings may occur if there are no accidents involving other vehicles and CFD's apparatus.

Recommended Mid-Term Strategies

The mid-term strategies are progressive enhancements of the current conditions. Many will likely require three to five years to accomplish.

Recommendation B-1: Relocate the Soquel Station.

***Description**:* The Soquel Station is in a poor response location, a flood plain, and needs updating and repair. In addition, there appears to be unused land close to where the station could be moved for the District's best benefit. Land in the immediate area is available but may not be soon. The timing of this move, under current real-estate conditions, may be critical to district success.

Outcomes: A location that will meet the agency's needs for the foreseeable future.

Estimated Cost: Approximately $20.3 million inclusive of land acquisition, construction, and furnishings

Recommendation B-2: Create Enough Permanent Office Space for Administration to Include Community Risk Reduction.

***Description**:* The location CRR currently occupies is insufficient for their needs and interferes with other operational sections. They will need enough office and parking space to support their mission and staffing levels, currently 11 positions. The location should be sufficient for their operations and a location that enables them to be an integral part of the overall district mission.

Outcomes: Office space that will meet the agency's needs for the foreseeable future.

Estimated Cost:
Option A: Rebuild Administration on the current site. Approximately $14.1 million. This includes parking/paving to increase parking spaces to meet need, hard and soft construction costs, and demolishing the current facility to build office space with room for expansion (25 to 30 people/offices).

Option B: Remodel current building to create three more offices and increase parking spaces. Approximately $915,000.

Recommendation B-3: Construct a new Training Facility with the Consideration that it be a Regional Facility.

Description: The training facility should be added to CFD's overall facility improvement plan. While the Aptos station is adequate for classroom work, parking limits the number of participants, and the drill ground is inadequate for modern fire service training needs. Since there does not appear to be a neighboring facility, CFD should collaborate with surrounding agencies to identify a location and jointly invest in a training facility.

Outcomes: Adequate space to conduct all fire ground training evolutions, driver training, and live burn training.

Estimated Cost: Approximately $31.5 million inclusive of land acquisition, and construction to include training facility with classrooms and office space as well as lockers.

Recommendation B-4: Move the Ladder Truck to Station 5

***Description*:** Currently, the ladder truck is stationed in the far west of the District at Station 2. This recommendation will necessitate the remodel of Station 5.

***Outcomes*:** The ladder truck at this location would improve incident coverage and add needed apparatus and staff resources to somewhat alleviate the concerns with distant effective firefighting force assembly within a reasonable response time.

***Estimated Cost*:** The estimated cost to remodel Station 5 is approximately $20.6 million, including the demolition of the current station and rebuilding it to facilitate staff of 10 to 12 per day with four apparatus bays at a minimum, an engine company of three, truck company of four, BC, and 2–4 future expansion.

Recommendation B-5: Recruit Additional Paid Personnel and Staff the District's Truck Company.

***Description*:** The District's risk exceeds the expectations of cross staffing the truck company. Additional personnel should be recruited that will facilitate staffing the truck company 24/7.

***Outcomes*:** Enhanced coverage, improved effective response force, and compliance with ISO criteria.

***Estimated Cost*:** The estimated annual salary and benefit costs for three Captains and six Firefighters are estimated to be approximately $2,035,101.29.

Recommendation B-6: Review Existing Agreements with the Different Water Companies.

Description: CFD should review the agreements with the five water companies and update them to ensure the proper entity is responsible for inspections, maintenance, and repairs of the hydrants.

Outcomes: Confirm the responsibilities of the five water companies and what is CFD's obligations when a hydrant needs to be repaired.

Estimated Cost: Staff time is required to review each agreement and meet with each water company if changes are necessary.

Recommended Long-Term Strategies

Recommendation C-1: Reconstruct, Move, or Significantly Update the Capitola Station.

***Description**:* While the location of this station is adequate for this area, the station is not practical or usable. The station does not meet current needs, but it also leads to significant risk due to the gender-related issues it does not address. In addition, this station has historically flooded. It will likely do so again unless considerable measures are taken to ensure this is addressed.

Outcomes: A station that will meet the agency's needs for the foreseeable future.

Estimated Cost: Approximately $7.75 million to demolish and rebuild on the current site.

Recommendation C-2: Relocate the La Selva Beach Station.

***Description**:* The location, size, and functionality of the La Selva Beach Station do not meet CFD's needs or requirements. This station should be moved closer to the area of higher call density and with better overall access to the region. CFD may wish to consider staffing this station seasonally and or utilizing the facility as the base for their Marine Division.

Outcomes: A location that will enhance the District's effective response force and accommodate the agency's needs for the foreseeable future.

Estimated Cost: Approximately $20.3 million inclusive of land acquisition, construction, and furnishings.

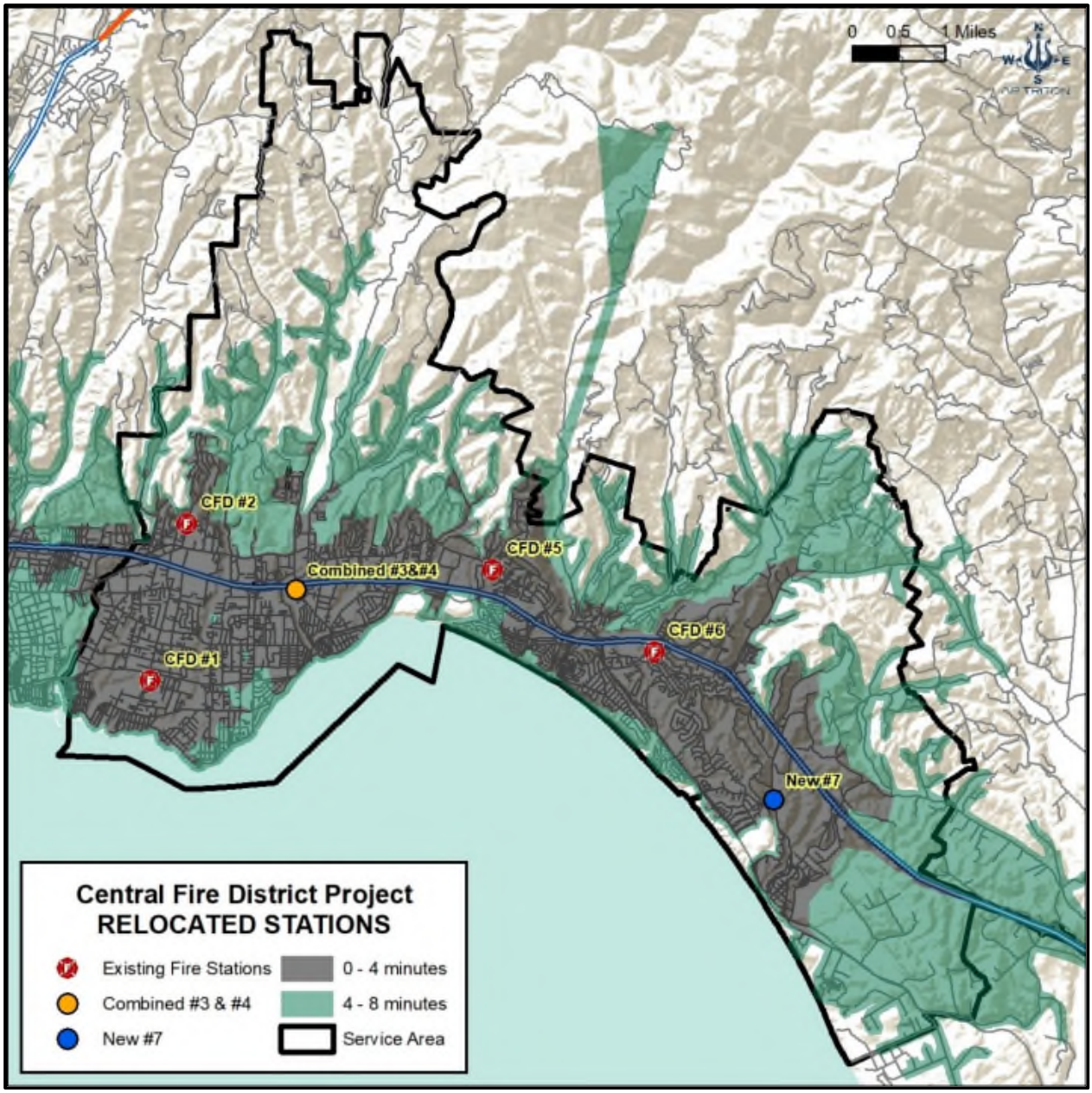
Alternative to Recommendations B-1, B-4, and C-1

Triton recommends consideration be given to locating property in the area shown on the following map and that a new station be built that would allow for the combining of Stations 3 and 4 and the relocation of the truck company.

***Outcomes*:** Enhanced response to the areas, stations located away from flood zones, truck company located to enhance ERF coverage to high-risk areas, a facility designed to accommodate the District's needs today and into the future, and economy of scale related to the cost of building one station versus relocating and building a new Station 3, a comprehensive remodel of Station 5, and demolishing and building a new Station 4.

Estimated Cost: To be determined.

Figure 183: Travel Time Projections of Recommended Station Relocations



Section V:
APPENDICES

Appendix A: Risk Classifications

Fire

Low Risk

These incidents are considered low in risk and are minor in scope and intensity. It requires a single fire apparatus and crew to manage fires involving passenger vehicles, fences, trash or dumpster, downed power lines, residential or commercial alarm investigations, or an odor investigation.

Moderate Risk

These are the first alarm response needed to manage a moderate fire risk incident. These incidents include smoke in a building, small outside building fires, commercial vehicle fires, a single-family residence, a lightning strike on a building, an automatic fire alarm at a high-risk occupancy, or a hazardous materials pipeline fire.

High Risk

These are a second alarm response needed to manage a high fire risk incident. These incidents include smoke in a high-life hazard property (school, skilled nursing, etc.), single-family residence with injured or trapped victims, multi-family residential building, or a moderate-sized commercial/industrial occupancy.

Maximum Risk

A third alarm response is needed to manage a maximum fire risk incident. These incidents include a hospital, assisted living facility, fire in an apartment building, high-rise building fire, a large commercial or industrial occupancy, hazardous materials railcar, or storage occupancy. Incident assignments include additional command staff, recalling off-duty personnel, and mutual aid assistance for other critical tasking needs.

EMS Risks

Low Risk

A single EMS unit can manage a low-risk EMS incident involving an assessment of a single patient with a critical injury or illness, no-life threatening medical call, lift assist, or standby.

Moderate Risk

A two-unit response is required to control or mitigate a moderate risk EMS incident. It involves assessing and treating one or two patients with critical injuries or illnesses or a motor vehicle crash with 1–2 patients.

High Risk

A multiple-unit response is required to control or mitigate a high-risk EMS incident. It involves 3-8 patients with injuries ranging from minor to critical. Patient care will involve triage, BLS, ALS treatment, and a coordinated transport of patients.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum risk EMS incident. It involves more than nine patients with injuries ranging from minor to critical. Patient care involves triage, BLS, ALS treatment, and a coordinated transport of patients. If this is an active shooter incident, the response may require a casualty collection area unit to treat patients, not in the hot zone.

Technical Rescue

Low Risk

A single fire unit can manage a low-risk technical rescue incident involving minor rescues, such as a child locked in a vehicle, elevator entrapment, or minor mechanical entrapment.

Moderate Risk

This type of incident involves a motor vehicle crash that requires patient extrication, removal of a patient entangled in machinery or other equipment, or a person trapped by downed power lines. A two-unit response is required to control or mitigate a moderate technical rescue risk incident. Support is not usually required from a technical rescue team.

High Risk

A multiple-unit response is required to control or mitigate a high-risk technical rescue incident. This type of incident may involve full-scale technical rescue operations ranging from structural collapse to swift-water rescues. It may involve multiple motor vehicles that require extrication, commercial passenger carriers, or a vehicle impacting a building. Support is usually needed from a technical rescue team. This incident may require multiple alarms.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum risk technical rescue incident. Support is required from a specialized technical rescue team and may have multiple operations locations. This type of incident will involve full-scale technical rescue operations such as victims endangered or trapped by structural collapse, swift water, or earth cave-ins. This incident will require multiple alarms and may expand beyond the identified critical tasking. Recall of off-duty personnel or assistance from auto or mutual aid may occur during a disaster or when additional alarms and command staff are needed.

Hazardous Materials

Low Risk

A single fire unit can manage a low-risk hazardous materials incident involving carbon monoxide alarms and other unknown hazmat investigations without symptomatic victims, less than 20 gallons of fuel, natural gas meter incident, downed power lines, equipment, or electrical problems, or attempted burning. Automatic alarms that may originate from a hazardous material.

Moderate Risk

A two-unit response is required to control or mitigate a moderate risk hazardous materials incident. Direct support is not usually required from a hazardous materials team. This type of incident involves a carbon monoxide alarm with symptomatic patients, a fuel spill of 20–55 gallons, or a gas or petroleum products pipeline break not threatening any exposures.

High Risk

A multiple-unit response with a hazmat team is required to control or mitigate a high-risk hazardous materials incident. This response includes a release with 3–8 victims, gas leaks in a structure, hazmat alarm releases with victims, flammable gas or liquid pipeline breaks with exposures, fuel spills greater than 55 gallons, fuel spills in underground drainage or sewer systems, transportation or industrial chemical releases, or radiological incidents. Support is needed for a Level 2 hazmat incident that involves establishing operational zones (hot/warm/cold) and assigning multiple support divisions and groups. Additional assistance may be required to expand operations past the identified critical tasks.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum risk hazardous materials incident. Support is required from an on-duty hazmat team and their specialized equipment. This type of incident involves establishing operational zones (hot/warm/cold) and assigning multiple support divisions and groups. Examples include nine or more contaminated or exposed victims, a large storage tank failure, hazmat railcar failure, or a weapon of mass destruction incident. This incident will require multiple alarms and may expand beyond the identified critical tasking. Recall of off-duty personnel or assistance from auto or mutual aid may occur during a disaster or when additional alarms and command staff are needed.

Wildland Urban Interface

Low Risk

A single fire unit can manage a low-risk wildland firefighting incident involving a fire minor in scope, structures not threatened, and Red Flag conditions that do not exist. These include low-risk wildland or grass fires, an outside smoke investigation, illegal or controlled burns, or small vegetation fires.

Moderate Risk

Multiple units are needed to manage a moderate risk wildland firefighting incident involving a significant fire in the brush, brush pile at a chipping site, grass, or cultivated vegetation. Red Flag conditions do not exist, and structures may or may not be threatened.

High Risk

Multiple units or alarms are needed to manage a high-risk wildland firefighting incident. The level is associated with Red Flag warnings with structures that may or may not be threatened. This fire involves a significant wildfire in brush, grasses, cultivated vegetation. And woodland areas. Additional alarm assignment, command staff, recall of off-duty personnel, and mutual aid assistance may require the operations to extend beyond the identified critical tasks.

Appendix B: Strategic Partners—Stakeholder Interviews

Triton interviewed a wide variety of the fire district's internal and external stakeholders. The purpose of these interviews was to gain a better understanding of issues, concerns, and options regarding the emergency services delivery system, opportunities for shared services, and expectations from community members.

It is important to note that the information solicited and provided during this process was in the form of "people inputs" (stakeholders individually responding to our questions), some of which are perceptions reported by stakeholders. All information was accepted at face value without an in-depth investigation of its origination or reliability. The project team reviewed the information for consistency and frequency of comment to identify specific patterns and/or trends. Based on the information reviewed, the team identified a series of observations and recommendations and felt they were significant enough to be included in this report.

Stakeholders were identified within the following groups: Elected Officials, Department Heads, Business Community Leaders, Citizens, Chief Officers, Labor Leaders, Volunteer/Reserve Firefighters. Rank & File, and Administrative Staff.

Elected Officials, City Management & Department Heads

What strengths contribute to the success of the District?

- The merger of Central, Aptos, and La Selva Fire Protection Districts.
- The combined fire agencies work well with other fire agencies and law enforcement.
- The District operates well with both the Police Department and other fire agencies.
- Since the reorganization of the two entities, productivity has increased, and training has been expanded to meet the needs of the District and as well as the surrounding area.
- The merger/consolidation has been well-received, and the two agencies quickly blended together.
- The District is located in a compact area; easier to manage than a rural area.
- Labor management relationship is positive.
- Economy of scale is working well.

- The Firewise program has doubled in size since 2020.
- Good response times.
- A good partner who helps surrounding communities with mutual aid.

What are some of the areas in which you think the District could make improvements?

- Facilities, which are a primary element when considering a regional approach; this is one of the main items that should be reviewed.
- There is a need for additional administrative office space.
- Two of the District's fire stations are located within the flood plains.
- Improve the marine response which will improve water rescue.
- Possibly consider combining two of the existing stations.
- Increase the current inventory of Quick Attacks.
- Recruitment and retention consider including an incentive program for employees to reside locally.
- The Fire District needs an additional station
- Consider building a Regional Training Center that includes a tower.
- Increase staffing levels.
- Think "regionally."
- Establish a minimum staffing level.
- There is an opportunity to strategically position fire stations.

What opportunities, in your view, are available to improve the service and capabilities of the District?

- Develop and/or review the Standard of Cover and if possible, include new stations.
- Monitoring the performance of the crews, i.e., a span of control
- Split into two Battalions to enhance supervision and chief officer support
- Designate an individual to be the person in charge of facilities.
- Increase water rescue capacity.
- Capabilities will be enhanced when we have a fully staffed truck company.

Please share your thoughts with us regarding dynamic deployment/staffing utilizing 12-hour shifts and peak-hour units.

- Excellent
- Add paid-call employees, Wildland Response Crews, and increased Engine Company/s.
- Could include Lifeguard staffing.

What do you see as the top critical issues faced by the District today?

- Facilities, Consolidation, and Strapped resources.
- Increased wildfire risk.
- Build or remodel a station, Identify the location. Succession Planning.
- Focus on apparatus concerns, Increase the size of "shop", Center.
- Ongoing water rescue training and Adequate staffing levels for the future.
- behavioral health issues and mental health issues.
- Fire code for building process approval.
- The Fire Code for building process approval.
- A Training Center, Prepare for future staffing and Adequate back-fill in the future.

On a scale of "1" to "10", how would you describe the level of services provided by the District?

- There is always room for improvement
- We are a diverse workforce which is a reflection of the community.
- Proud of where we are; there is always room for improvement.
- "8"
- "8+ - Excellent
- "7.5 to 8"
- "8.5–9"
- "9"

What, in your opinion, are some opportunities to improve service and/or coordination within the County.

- Enhancements to the existing EMS transport system.
- A local Incident Command Team.
- Reducing the current number of agencies would improve coordination between the agencies.
- The addition of a Training Center.
- On-going training for wildland fires.
- In order to address houselessness issues, agencies need to work together.
- County-wide joint training including Officer training practices.
- Building a stronger relationship with other Fire Agencies.
- The fire district has an opportunity to be a leader in this county due to the success of the merger (or) consolidation.

Business and Community Leaders, Members, Strategic Partners, and Community

Describe your expectations of the fire district.

- The District should be a good and transparent partner.
- Serve the community in a positive way.
- Expectation is high in regard to providing the highest level of service
- Continue providing excellent care to their patients.
- Expects a high level of response from strong, well-led professionals.
- EMS care is primary.
- Timely responses.
- The District's performance
- Maintain open communication.
- Honesty and transparency.
- Continue using First Watch in order to keep the momentum moving forward while reviewing our performance.

Which of these expectations are not being met to your satisfaction?

- Currently, expectations are being met.
- The fire district has exceeded expectations.
- Communication between the Fire District and the Spanish community is a challenge.
- There is a need for the regionalization of marine services.
- concern regarding the staffing level of the fleet services; can they meet the demands?
- EMS documentation process and transmittal could be improved.
- The District has exceeded my expectations.

What do you think the fire district is doing particularly well?

- A Smooth and successful transition.
- Good support and taking on more responsibilities.
- The consolidation is the right direction to go!
- Response time is sensational.
- The Fire District is a great partner with EMS and helped the County during Covid.
- When the community has a need; the Fire District will respond; they are service-oriented,
- The District's Community Risk Reduction Division is very active, especially their Defensible Space Inspections.
- The District is open to innovation, works well with stakeholders, and goes the extra mile.
- They are well-managed and very cooperative.
- The Training Division is well-staffed.
- The District creates interagency motivation.
- The District supports CERT
- Public updates and sharing information.
- Progressive
- The District has good collaboration with other agencies.

Are there other services that you believe the District should be providing that they currently are not providing now?

- Consider the firefighters to become CERT instructors.
- Implementation of a lifeguard or marine division that has a regional fire boat available.
- Initiate car seat installations as one of their community outreach programs.

What opportunities—in your view— are available to improve the service and capabilities the District?

- Coordination and interagency opportunities.
- Annual active shooter drill.
- Training: District and joint district training.
- Work with dispatchers and EMC regarding sending the correct unit that matches the requested need.

When you dial 911 to report an emergency, how long should it take for help to arrive?

- Within five (5) minutes or less.
- 5 minutes and those change depending on where they are in the community.
- *5 to 6 minutes*
- Less than 6 minutes.
- Citizens expect 3 to 5 minutes.

Does that expectation change depending on where in the community you are located?

- Yes, regarding traffic and access issues.
- Different areas should expect different response times.
- Citizens expect the same, but it is not reasonable.

Do you believe the first arriving response units should be staffed and quipped to take appropriate actions given the emergency?

- Advance Life Support is critical.
- Expect all-risk hazards initially; specialty operations to follow if needed.
- Fire attack and light extrication.

Chief Officers, Labor Leaders, Rank & File & Administrative Staff

What strengths contribute to the success of the District and, what do you do well?

- The Operations Division is well trained.
- Regionalization within the county.
- organizational flexibility that provides us to meet the community's expectations.
- Paid-call program affords opportunities to move to a full-time position.
- The District provides educational and training opportunities.
- There is an employee focus within the organization.
- Support for progressive training as well as stepping out of the box and trying new things.
- Special teams
- We are more resilient due to our size and the consolidation,
- The longevity of our employees speaks for itself.
- As a district, we are in control of our finances.
- Excellent access to managers.
- Retention of employees is particularly good.
- The Regional Academy is an excellent base for new members.
- The size of this district is stable; we are adaptable and flexible
- The organizational mentality is to always do the right thing.
- The paid-on-call system has encouraged legacy families to become employees.
- Feedback from our communities is incredibly good.
- Overhead support.
- Communication is exceptionally good among staff, across command and divisions.
- community outreach with the goal of finding ways to help senior citizens and others.
- The District spearheads county-wide training and cooperation.
- We have a Defensible Space Program and support Firewise communities.
- The Chief Officers care about and are part of our community.
- Employees focus on serving the public.
- Community the District relations are good.
- There is a culture here that supports growth and training.

What are some areas in which you think the District could make improvements?

- AMR responses and lack of staffing affect the District's response.
- Combing Standards and Protocols for both organizations.
- Communications from and with the Chief could be improved.
- Address operational culture challenges.
- Facilities and infrastructure need improvements, including facilities within the flood zone.
- Flexibility on the schedules for non-operational personnel.
- There are challenges with response plans for predictable disasters
- Lifeguard services are lacking on the south side.
- Moral is a concern within the Community Risk Reduction Division.
- Additional staffing to use as floaters
- Establish an apparatus replacement plan and adhere to it.
- Strategic plan.
- Improve communication from the top down.
- Recruitment
- Retention and recruitment for non-safety personnel.
- Succession planning including how we bridge the gap when a position is vacated.
- The current dispatch system and policies.
- Facilities are crowded due to parking limitations.
- Improving the specialty team deployment practices.
- Station placement needs to be addressed and the truck needs to be more centrally located.
- The truck should be a dedicated apparatus and not cross-staffed.
- Communications and coordination disconnect between community risk reduction and operations exist.
- Training calendar sometimes interferes with other duties.
- Need one voice, one vision, and one direction.

What challenges do you see in making the improvements?

- Involving staff members for improved leadership and ownership.
- Financial resources for our facilities.
- Taking ideas to combine into action and a direction.
- Internal communication.
- We need to focus and decide on what efforts take priority.
- Engaging staff for improved leadership and ownership.
- A new station with engine and truck will help the truck staffing model.
- "Roles" need better documentation.
- Battalion Chiefs need time to mentor.

What opportunities, in your view, are available to improve the service and capabilities to the District?

- Coordination and interagency opportunities.
- Annual active shooter drill.
- Training for the District as well as Joint District Training.
- Inter-agency opportunities.
- Annual active shooter training.
- Work with dispatchers and EMC regarding sending the correct unit that matches the requested need.
- Add one floating member to each shift.
- Fire service to assume ALS transport county-wide.
- Consolidation with the County.
- Ambulance availability and usage.
- Develop a community-based wildland fire plan.
- Create a vision and have one voice.
- Create globally interested individuals with growth incentives and opportunities.
- Cross divisional communications.
- Expand the community risk reduction model to include more public education and CPR.
- Consider expansion and mergers with other agencies in the future.

- Create a JPA for lifeguard services.
- Manage retired in-place leaders.
- Mental health response programs.
- Community outreach programs.
- Outreach to the community college fire program.
- Consideration of relocating Prevention in order to improve their work area and training facility usage.
- Prevention could move to administration, and training can gain some area.
- Regionalization and service sharing.
- Relocation of facilities to normalize response.
- Standardization county-wide.
- Station placement and facility repair capital funding.
- Take control of ambulance response due to AMR's struggles as well as their lack of ambulances in their fleet which has a negative effect of staffing at Station 5.
- With new leadership, there is an opportunity to improve policy and processes.
- Our new leadership appears to be interested in feedback.
- In the past, the District has sponsored events such as a pancake breakfast.

What do you see as the top critical issues by the fire district today?

- Facilities, consolidation
- Retaining existing relationship between management and Fleet space.
- Lack of a Succession Plan, the need for a staffed Truck company, and water rescues.
- Mental health and Behavior health
- Apparatus replacement Plan, Consistency in strategic issues, and adequate staffing level.
- Generational management issues, Internal communication, and Improving communication within the organization.
- Leadership, vision, and engagement.
- Retention, Communication within the organization, and Succession planning.
- Prepare for future growth, Build, or remodel a station, Apparatus issues.

Please share your thoughts/ideas regarding alternative staffing models and dynamic deployment.

- Could be helpful if we add and do not subtract abilities.
- Floating engines and seasonal workers make sense.
- Additional staffing will be needed.
- Pre-positioning apparatus based on known upcoming events seems appropriate.
- Tiered staffing models are out there, we could tap into one of those.
- Consider looking at seasonal staffing, balancing PPC staffing and seasonal employees.
- Consider adding paid-call employees, seasonal wildland response crew, etc.

If you could change one thing in the District, what would it be?

- Communication infrastructure.
- Adopt peak hour staffing.
- Community risk reduction staff schedule.
- Staffing
- Facility upgrade, repair and movement.
- Oversight and accountability.
- Training Center.

How would you describe the level of service provided by the fire district?

- (6–7) Strong, average, or above average.
- (7) Well above average.
- (7.5–8) Very proud at where they are at!
- (8) Pretty good overall, there is room for improvement.
- (8) Very good, room for improvement.
- (8) Very good, room for improvement.
- (8) Very good.
- (8) Very good.
- (8) Very good.
- (8) Always room for improvement; the Firefighters care what they're doing.
- (8–9) Doing very well; always room for improvement.

- (8–9) Excellent.
- (8–9) In general, particularly good.
- (9) Excellent, always room for improvement.
- (9) Excellent, could increase community outreach.
- (9) Excellent.
- (9) Very good with the exception for Special Teams.
- (9) Overall good; always room to improve.
- (9) Could fold us a little tighter.
- (9–10) Excellent, we can improve our Community Outreach.
- (10+) Over "10" when compared with the other agencies in the area.

What in your opinion are some opportunities to improve service and/or coordination within the county?

- Improve the licensing coordination for specific facilities i.e., schools, health care, etc.
- Consistent dispatch process across agencies.
- Coordinate with the county.
- Coordination of county-provided hazmat inspections.
- An overall review of all programs and response services.
- The joint Communications Center
- Fire service typically operates as separate entities; come together and operate as one agency will result in enhancing services we provide.
- An opportunity is to consider moving toward a regional approach.

Appendix C: Strategic Partners—Community Survey

As a part of this study, Central Fire District of Santa Cruz County (CFD) sought community input and opinions from its community. On June 29, 2022, AP Triton facilitated a virtual Community Town Hall for CFD. During the Town Hall, the purposes of this study were described, and the community was introduced to the survey, which was designed to identify the following:

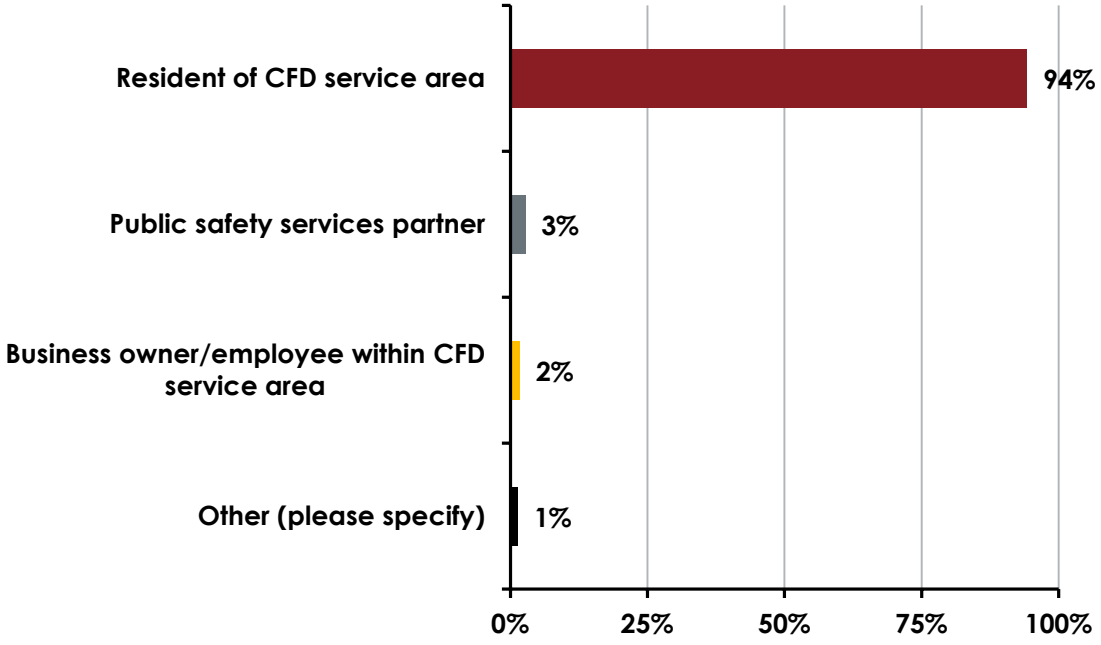
- **Service priorities.** Of the services provided by the fire district, which are more or less important to you?
- **Planning priorities.** Of the planning elements used by the fire district, which are more or less important to you?
- **Expectations.** What do you expect of your fire district? This would include such things as level of service, type of service, first responder qualities, etc.
- **Positives.** What do you think the District does particularly well?
- **Concerns.** What concerns do you have about the District (the services it delivers, or the way in which it delivers them)?
- **Other thoughts.** What other ideas do you have to share with the District as they begin this project?

The survey was administered in English and Spanish and was completely anonymous and confidential. There were 294 virtual responses, and one hard copy response. The following summarizes the results of the survey.

Please note, that the open-ended responses are minimally edited for grammar and/or clarity. Select responses appear in the form they were submitted.

Residency of the Respondents

Figure 184: Residency



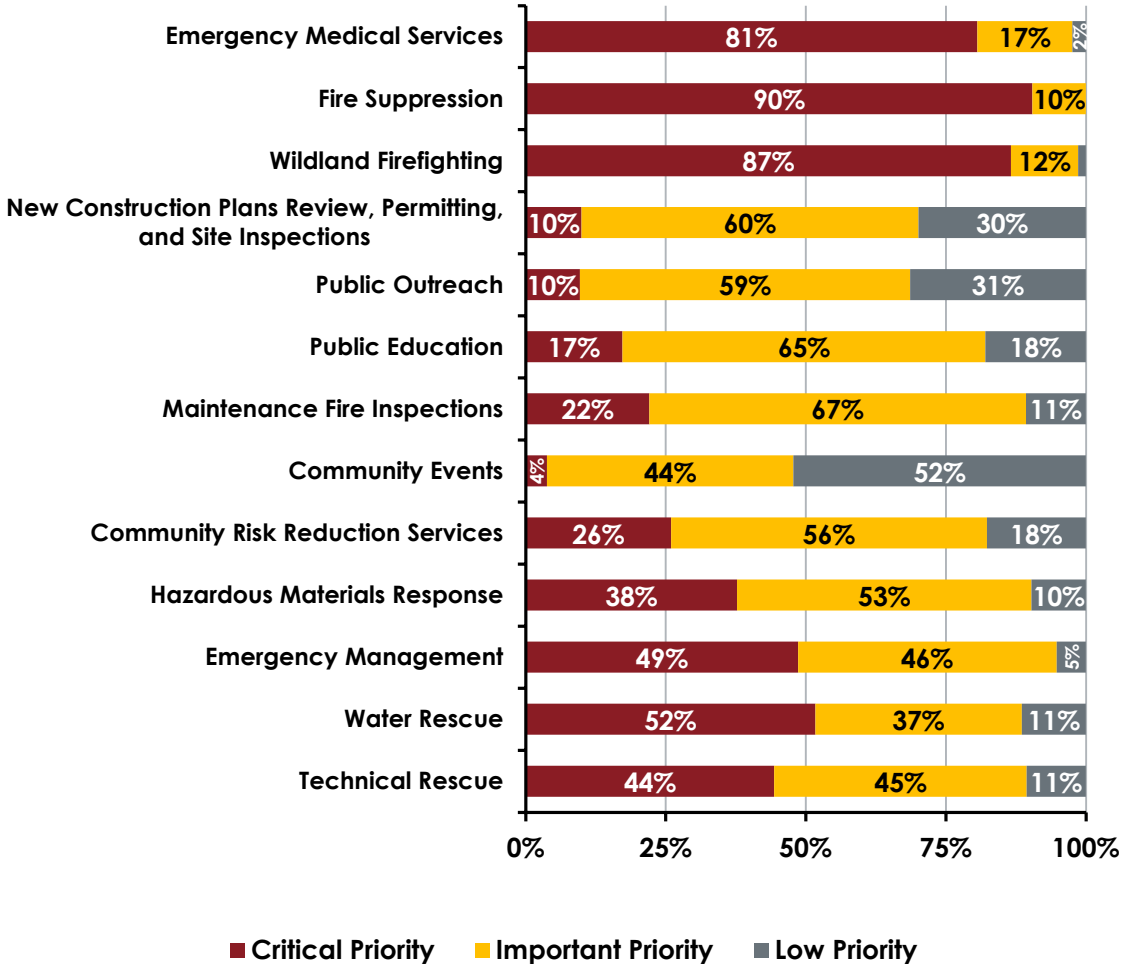
The vast majority (94%) of respondents were residents of the CFD service area. Other responses included:

- Paid Call Firefighter
- Employee
- Former Fire Chief, Developed the District's 2004–2009 Master Plan.
- Principal of Orchard School

Service Prioritization

Respondents were asked to rate the following services provided by the CFD using a scale of critical priority, important priority, or a low priority. If they would like to see a service added, they were asked to list it in the comment field.

Figure 185: Service Prioritization

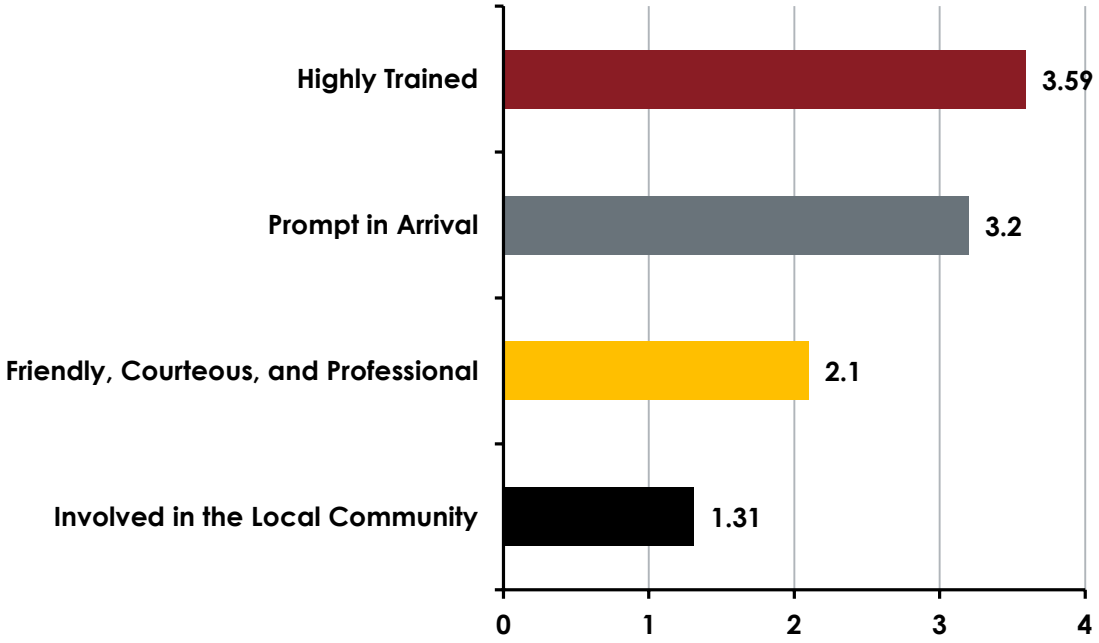


Emergency Medical Services, Fire Suppression, and Wildland Firefighting were overwhelming the most critical of priorities. The lowest-ranked service priorities were Community Events, New Construction Plans Review, permitting, and Site Inspections, and Public Outreach. These results are typical of most communities located throughout the United States. No additional services were listed.

First Responder Qualities

When asked to rank first responder qualities in the order of importance, respondents responded as follows:

Figure 186: First Responder Qualities



The community wants to see highly trained first responders first and foremost. This was followed by prompt arrivals, being friendly, courteous, and professional, and lastly involvement in the local community. Select additional qualities were listed as follows:

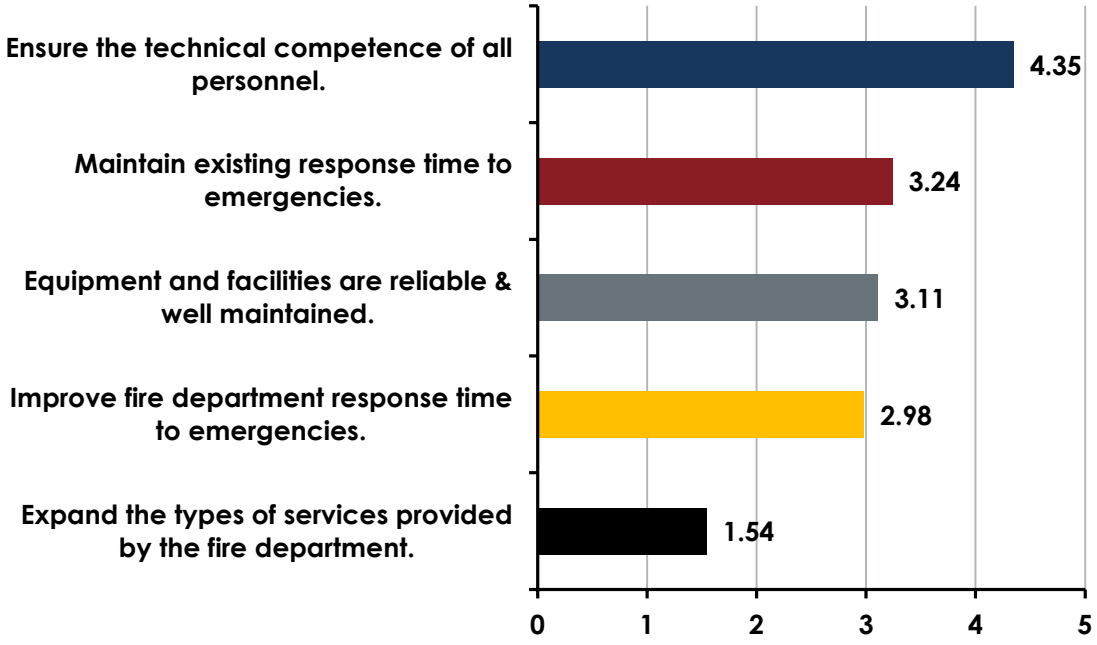
- Accessibility. Designated first responders that reside in Santa Cruz mountains available and equipped (AED, etc.) to respond to non-fire emergency events (myocardial infarctions, ischemic strokes, embolisms, etc.).
- Advocacy with the County to prioritize bringing County-"maintained" roads up to code so they are passable in an emergency. I live where full-lane washouts have remained unattended for more than 5 years.
- Approachable especially when not on calls. Prompt Public Information especially when responding to incidents. Pulse Point is very helpful.
- Bilingual (English and Spanish), more ethnic and gender diversity.
- Combination of highly trained, prompt arrival, and a nice person.
- Compassionate

- Culturally sensitive—respecting cultural and gender diversity.
- Empathetic—These may be everyday events to the professionals, but to the people involved these may be the most stressful event of a lifetime—a once-in-a-lifetime event.
- Excellent communicator and good listener.
- In good health overall, mentally and physically.
- Increased knowledge of how to prepare homes and property for wildfire danger so that it can be used for fire insurance adjustments.
- Locally established (employees reside in Santa Cruz County).
- More importantly RESPECTFUL—to all. Respect is much more important to patients, homeowners & businesses than friendliness.
- Open to change.
- Proactive.
- State-of-the-art equipment.
- These qualities are all important. I think if responders are highly involved in the community and well-trained, they have more buy-in to protecting the community in a professional manner.
- Triage the right/appropriate skilled person for the task. A pet emergency might require someone w/more people skills than a car crash victim.
- You are the best! I appreciate your support and service.

Planning Considerations

Respondents were then asked to compare each of the following elements to the others and rank the planning considerations in the order of importance. The results are displayed in the following figure:

Figure 187: Planning Considerations

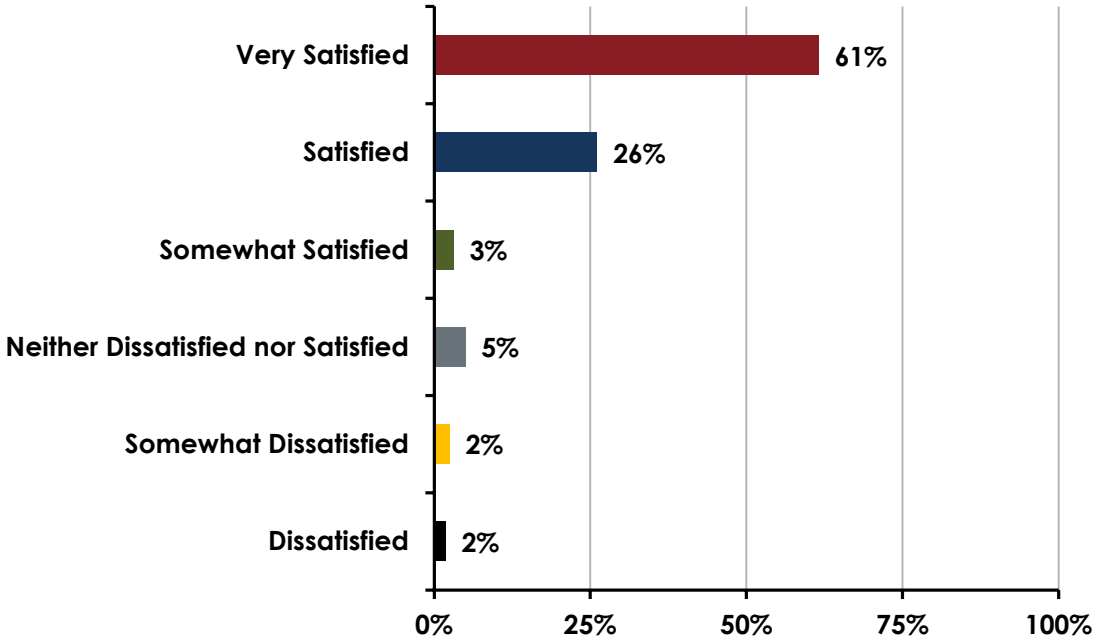


The technical competence of personnel received, by far, a rating of the highest importance. Maintaining response times, reliable and well-maintained equipment and apparatus, and improving response times ran middle-of-the-pack; and expanding the services provided by the District were considered the least important.

Satisfaction of Services

When asked, approximately half of all respondents (51%) had received services from CFD. Of those that had received services, overwhelmingly, respondents expressed great appreciation for the services their district provides. Nearly 87% of all respondents were either satisfied or very satisfied with the CFD's services. Only 4% of respondents replied as somewhat dissatisfied or dissatisfied.

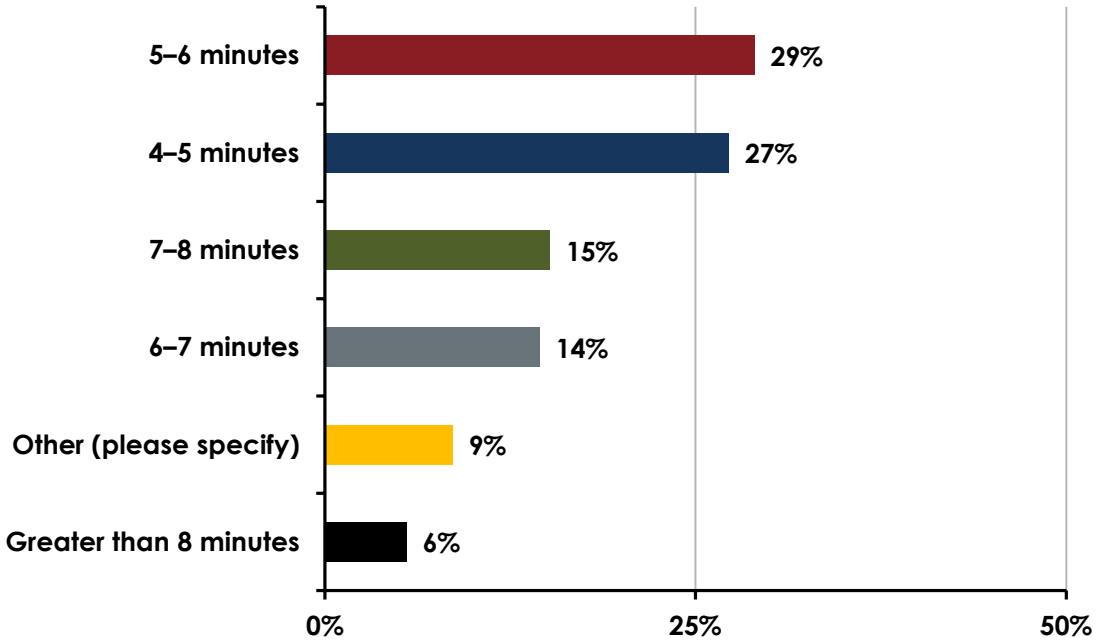
Figure 188: Satisfaction of Services



Response Time Opinions

Total response time is the amount of time a resident or business waits for resources to arrive at the scene of an emergency, beginning when they first call 911. When asked how long it should take for emergency resources to arrive after calling 911, taking into consideration call processing times, travel times, time of day, concurrent incidents, etc., over 56% of the respondents believed resources should arrive in 6 minutes or less. Twenty-nine percent expect services in 6–8 minutes, and the remaining respondents believed resources should arrive in 8 minutes or longer, or offered an "other" response.

Figure 189: Response Time Opinions



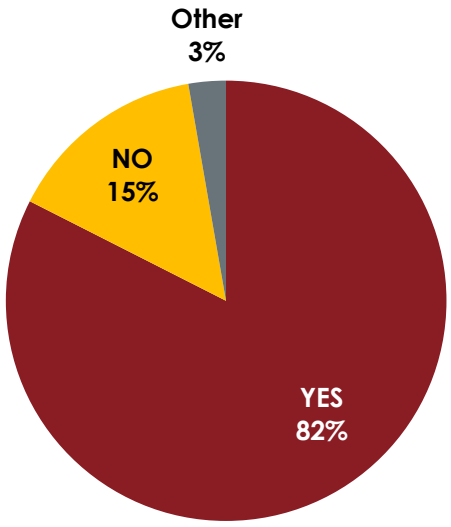
"Other" responses:

- 10 min
- 2–3 minutes
- 2–3 minutes, if possible
- 4–5 minutes seems like a long time, so I'd hope for sooner.
- 5 m =>initiate proactive community alternatives in remote locations of Santa Cruz mountains.
- 5–10 minutes, given exigencies listed above.
- Anything 10 minutes or less is an awesome response time for our community.

- Anywhere from 4–7 minutes.
- As quickly as feasible depending on level of emergency and given all mitigating factors as listed above.
- Both ambulance and fire should respond in 6–7 min. Not just the fire dept.
- Depending on the catchment zone which station, 5–10 minutes.
- Depends on nature of call—true emergency 5 min.
- depends on the nature of the emergency. Too many variable to answer the question.
- Depends on urgency of "emergency." For example, my wife often needs assistance in "getting up" after slipping down to the floor. No injuries, so urgency is minimal.
- Hard to say as a car crash victim needs help more quickly than a pet emergency might. In general, I think the public expects a response in 10 minutes or less.
- I don't know.
- I think it depends on location. Anything under 10 min I would hope.
- In a perfect world, EMS always arrive within 3 min—max 10 min but terrain, traffic, availability will all impact arrival times.
- ISO required response times for district ratings. Question is related to location of fire house to structures. Not what one wishes it could be.
- It depends on how far away you live from a fire department.
- Less than 10 minutes.
- SHOULD take? As fast as they can get to where they're going without causing an accident.
- The only realistic response is ASAP.
- This would understandably differ in varied circumstances and locations.

When asked whether the response time expectations change depending on location, respondents replied as follows:

Figure 190: Response Time Expectations



"Other" Responses:

- Absolutely
- Depends on the type of emergency.
- Remote areas will take longer.
- I'm located in Seacliff. For me, that's the only place.
- I haven't tried it anywhere but my home address.
- Yes, of course. Living out in Upper Day Valley or up off of Old San Jose Rd will take longer due to distance, narrower roads, and access issues. Part of living in a rural area.

Expectations

When asked to list the expectations the respondents have of their fire district, the majority of respondents expect prompt care from competent and well-trained professionals. In addition, there is special concern for fire prevention education and defensible spaces. They gave the following select responses:

- Proactive fire suppression by removing highly combustible human and natural (e.g., eucalyptus) sources; Site visits to provide advice on fire suppression; Well trained personnel and high-quality equipment; Rapid response; Personnel with capacity to respond to non-fire emergencies; Active advising to local governments.
- Able to respond quickly to emergencies.
- Active in promoting fire safety/preparedness and emergency planning with residents and programs like Firewise. Assist in upgrading 'grandfathered' but non-compliant infrastructure including roads, vegetation, hydrant capacity, emergency vehicle access/turnarounds/pullouts, etc.
- Active prevention, rapid response, and sufficient resources.
- Ambulance service.
- Answers to questions about building permits should be coordinated and consistent with Planning Dept rules. Published schedules of fire safety inspections and risk assessments in the rural areas. All responders should have access to Knox boxes. We have experienced a failure by your department personnel to have a key during a life threatening emergency.
- Approachable, friendly, and resourceful.
- Arriving quickly and handling emergencies efficiently.
- Availability, competence, professionalism.
- Consistent defensible space inspections. This is the only service I can recall using.
- Contain fire as quickly as possible.
- Continue to expand and grow the District through mergers of other smaller fire districts in proximity to CFD.
- Disperse personnel and equipment so that all citizens receive equally quick response time.
- District must continue to administer and promote backyard burning.

- Fire prevention in addition to suppression. More vegetation management and fuel load reduction. More education and enforcement of creating and maintaining defensible spaces (public and private). Add equipment necessary for early detection of wildfires (more cameras) and equipment/resources needed to suppress them quickly.
- I can't really expect much more from this great district, I would just say more publication, and an increase in resources/services, so we don't have to rely on other departments to help when it could be done by us. For example, lifeguard vehicles so we don't use Santa Cruz's vehicles.
- I expect them to respond in the shortest time possible to fire and medical emergencies, and to be competent in addressing whatever emergency they encounter. I also expect them to be culturally competent (trained in intercultural communication and culturally sensitive to all those they come in contact with.) and to reflect the ethnic diversity of the District.
- Prevent catastrophic, area-wide fire event and render life-saving help at scene of public accidents.
- Preventative maintenance of apparatus by crews. Keeping the engines clean. Flushing systems to ensure longevity of use (i.e., pumps and foam tanks).
- Transparent disclosure of response times in all areas.

Unmet Expectations

When asked which expectations were not met by the District, the vast majority of the respondents replied that all expectations were met and expressed general praise to the CFD for a job well done. Overall, increased fire prevention efforts are desired among community members. The following are select responses.

- A few years ago, a fire inspector came to inspect our property and told me if there was a fire, to shelter in place. We are at the top of a private road with no way out, and after yelling obscenities at him, I cried. WE NEED AN ESCAPE PLAN.
- Allowing neighborhoods to understand the Firewise grant process for fire mitigation, which is particularly helpful when the neighborhood FireWire leader is ineffective.
- Ambulances have too slow a response time, we need more ambulances for the whole county.
- Bury all the power lines, suggest ways to fireproof my home.
- Business education and facilitation to meet the long list of NFPA standards. How to guides to start business, upgrade systems, different fire systems considerations. Push it out via social media.
- Chipping service.
- Christmas tree dumpster.
- Could have more Spanish-speaking members—maybe add educational incentives to employees willing to learn it?
- Ensuring that the gulches have been cleared of vegetation and debris. The fire stations in Soquel and Capitola Villages need to be consolidated out of the flood plain.
- Expanding access regarding residential prevention concerns.
- Fire mitigation efforts.
- Fuel reduction programs.
- I don't know what proactive fire suppression efforts are being made. I would hope this is a priority.
- I don't see a lot of involvement in the community, e.g., visibility in the community, knowing their neighbors.
- I feel that my neighborhood is in need of more education and enforcement of defensible space to prepare for a possible wildland/urban interface incident.

- Lifeguard services for beaches without lifeguards. Transport services for patients.
- Local community education.
- Low or no cost EMS transport.
- Mental health.
- Our local firefighters are the best. They are professional, highly trained, friendly, and helpful. I only hope our community continues to meet THEIR needs so they can continue to protect us.
- Santa Cruz is a tight community and I hope our Fire Department still embraces this and doesn't try to create some corporate Fire Company that checks all the boxes for corporate clout and seminar bravado.
- Occupying Soquel-San Jose/Olive Springs station all year.
- Proactive meetings, BEFORE JULY–OCTOBER, regarding prevention and actions-to-take if egress is inaccessible, with maps specific to each critical area within Santa Cruz mountains (e.g., quarry question above, or "hot-footing it" via Olive Springs entrance into Nisene Marks).
- The department does a great job of serving the community. There are not any obvious expectations that are not being met.
- The inspections of local properties.
- There are large groves of eucalyptus trees in our district which pose a serious fire risk. The fire district could greatly contribute to reducing fire risk by promoting the removal of these trees. This would be expensive but by publicizing their risk and helping to organize a program to raise money for their removal, a community effort might accomplish this needed abatement.
- Too many vacant lots with weeds on highways and corner lots, etc.
- Urban wildfire issues for homeowners.
- Younger employees need more experience interacting with the community. Improving social skills.

Met Expectations

Again, CFD received accolades for the quality of services provided, community outreach, and its prompt, compassionate, and professional care.

- All employees seem very competent, including those on the phone.
- ALS services.
- Always out and seen in the community.
- Appears to be quick response to incidents in their first due areas. Courteous to the public.
- Being firefighters, wearing masks on calls.
- Being professional and nice to public.
- Besides medical response and fire response, I am very happy with the Fire Safe program, and feel it will help reduce fires outside the urban area. Every ounce of prevention will save money to our district, and reduce stress on our fire service employees.
- Communication and the wildfire maintenance checks.
- Community awareness is the best example I have. Perhaps it's just the advent of 24/7 access to information at our fingertips, or my age that's heightened my awareness, but I appreciate my local fire district's commitment to inform the community on existing or new safety protocols and current events. It's become even more imperative these days to stay conscious and present. I believe Central Fire does well in that effort.
- Consolation. Great move.
- Conventional firefighting and emergency needs.
- Defensible space around our house.
- Doing a yearly assessment of properties to make sure they are in compliance with clearances in case of a wildfire.
- Everything! Thanks for your service!
- Exceptional response time, kind courteous care, attention to detail, excellent communication skills.
- Fire suppression, response time, community outreach.
- Firewise support has been excellent but could be expanded with additional personnel.

- Friendly, professional, well-trained, and prompt.
- Good response times, excellent transparency, well-trained personnel, and community involvement.
- I am especially impressed with the water rescuers I have observed.
- I have luckily never had to call them but it is nice to see them engage with the community doing fill the boot type events. They always appear professional and personable. Their social media is also really well done—engaging and fun while still being professional and informative. I look forward to their posts and it's nice to see the faces of the firefighters in our community.
- I think that by putting out this survey the Fire District is doing a great thing! My hope is that it will give you the information to improve the District.
- Knowledge of the area—details of terrain, weird roads, etc.
- My elderly mother needed emergency medical services several times. The crew arrived quickly, did what needed to be done, and treated her with kindness and respect. Even when it was a false alarm, they didn't make her feel like she was bothering them.
- My experience has been positive and extremely effective.
- My experience with the Soquel team has been outstanding. They provided quick response times, demonstrated a high level of expertise, and treated community members with respect and kindness.
- My limited experience with Central Fire has been very positive. They responded to a call last year when my mother took a fall. They were very kind, courteous, and helped us enormously.
- Offering community education, suppressing fires near homes, and demonstrating expertise.
- Overall, I have been pleased with my fire district. This survey is a nice way to involve the community.
- Planning for the future, emergency response.
- Providing paramedic services in a county where ambulance time of arrival to a medical emergency may be delayed due to traffic and or not enough on a busy day.
- Respond times are very impressive.
- They are highly trained professionals that respond rapidly to any and all community needs with compassion, grace, and mercy. They are much appreciated!

Concerns About the Fire District

Concerns about CFD centered around one major factor: having a diverse and representative district. Other concerns include whether the District is appropriately funded and staffed, fiscal responsibility, issues regarding homelessness, community growth and keeping up with increasing service demand, and concerns related to wildfires and defensible areas.

- After the merger it seems like the District went on a spending spree with new vehicles.
- As a resident of La Selva Beach, after the recent merger of the fire districts, I am most concerned that the La Selva Beach station will be ignored, or worse, closed.
- Being able to meet retirement pensions. My retired firefighter friends make more in retirement than I have ever made working. It is the biggest gripe I hear from my GOP-y family members.
- Better vetting process for neighborhood Firewise leaders.
- Career Development
- Community Risk or Fire Prevention services could be improved. They don't seem to be aligned with a similarly high level of expertise and customer service that the suppression/first responders.
- Does it have access to newer technologies as they're developed for new challenges? Drought, climate change.
- Gathering in one place and not serving their zones.
- Having a Knox box key and checking all doors to see if there are Knox boxes at each door.
- Hiring firefighters who cannot fulfill physical requirements of the job.
- Hoping you do not close any stations with the recent merger to redeploy resources. I enjoy good coverage between Capitola and Soquel stations and selfishly do not want that to change!
- How has consolidation improved or hindered response times?
- How they will be able to cope with worsening conditions.
- I hope they have the money, resources, and training required to remain top-notch firefighters.
- I read that there are fewer and fewer people who want to become firefighters. In my opinion, we can't pay them enough for what they do. I hope their salaries are high enough to be an attractive career choice.

- I want to be sure they are pursuing, and motivating other government agencies to engage in, proactive fire suppression efforts.
- I would like to see the crews get more medical training and also take better care of people who need help. Allowing someone to refuse medical attention is not ok when friends, neighbors, and bystanders have notified the crew that the person is in need of care.
- I'd like more inspection and communication regarding rural fire reduction safety.
- I'm sure it would not be easy, but improvement of ambulance services in this district is needed. Primarily lowering costs.
- Individual neighborhood respond plans not available.
- Inspections should be done more to raise awareness of fire hazards, demand weed and brush control, and prohibit smoking in areas of high concern, such as in mobile home parks, especially for senior parks where reaction time might be delayed.
- Is there enough coverage with the growing population (with summer) and increased wildfire threat?
- Make sure your personnel get enough sleep and rest prior to their shifts.
- More public education about wildfires.
- My concern is that the agency can be pulled into many directions quickly, from hitting the beach on a water rescue, to a veg fire in the north portion of the District and supporting other agencies with mural and auto aid, you need more staffing. With one structure fire needing 15 firefighters on the first alarm. The need for two shift BCs on duty every day. This allows the 40-hr chief to do their day job, the second chief can support the first BC at scene, the 40-hr chief can be third out and support to keep the day-to-day operation running with back fill and staffing additional equipment.
- None. But I am concerned about what the fire department employees, managers, etc., need? I don't interact with them and I'm sure they know what equipment needs replacing, what training they think they need, what services they would like to add to our community.
- Only that our local firefighters may be assisting with fires outside the county at a time when we'd need them most. It's a Catch-22 situation.
- Prompt notification of best escape route during fire emergency.
- Readiness for large event like a large scale, fast wildfire or earthquake
- Responding large fire vehicles on runs that could be handled with smaller vehicles.

- Response time. Understanding of our property. We are very fearful we would be forgotten/ignored because of our top-of-hill location.
- Some concerns for the personnel loving their job and district as a team; rather than personal—"its the money" and not the "love of helping people."
- That they're paid well enough to remain in the area.
- The firefighter's ability to purchase homes in this county.
- That you spend too much time and resources on things like community outreach instead of concentrating on your core roles, firefighting, and emergency response.
- The District needs more government funding.
- The number of homeless calls for EMS service, along with the fire danger associated with these individuals living in the green space and highway areas.
- To effectively maintain quality services given the population and call increases.
- Traffic delays slow down responders.
- Turnover of personnel, budget, and lack of public knowledge.
- Until I spoke with a fire district employee, I thought they were doing nothing about a nearby fire risk, but they were working on it—so perhaps they need better communications.
- We hope that our community values our fire department as much as we do and continues to support it in whatever ways we can!!!
- Wish we had more cleared wild areas, i.e., fire breaks, roadsides, especially focus on clearing of Scotch Broom shrub.
- You guys are the best!
- You need to hire quality staff. You know how many firemen do not apply because they know volunteers and locals will get picked first. You need to hire the best-qualified candidate. Not the candidate that scores number 1 on a written.

Positive Feedback

- In 2015, CFD responded to a fire at a family member's home at 40 Zils Rd., Watsonville. Firemen were very accommodating, and professional and took the time to save precious artwork in the home.
- Again, thank you for your careful attention to making the CFDSCC work as efficiently as possible, and for your willingness to get input from your constituents.
- Again, the department has money good equipment and gold people.
- All firefighters and the support staff are appreciated in this community for the safety, emergency, and public services provided. Thank you.
- All my interactions have been positive; love how they always seem to have time for kids.
- Always friendly, courteous, and professional, go above and beyond to help the public.
- Being the daughter of a volunteer fireman (NH) I'm just pleased to have a station around the corner that is fully manned.
- Best fire district out there!
- Came to help a neighbor who fell, and appreciated the kindness and compassion shown during a very scary time.
- CDF does an amazing job, day-in, and day-out. Always pleasant, always professional. Thank you for showing up in so many ways, from fire and medical response to holiday toy drives. Our community is so much better because of you.
- Central Fire is AMAZING! Best department in the county!
- CFD has continued to show very positive growth over the years, and a commitment to meeting the needs of our population and changing environment.
- Community involvement in CERT.
- Emergency response teams have been outstanding! Marco Mack has been very helpful in supporting our Firewise efforts.
- Firewise promotion and assistance has been outstanding to date.
- Encourage goat use in neighborhoods surrounded by open space to help you.
- Every single time I have had contact with anyone from Central Fire, it has ALWAYS been a positive experience.
- Excellent response time when a fire/accident is reported in the mountains.

- Fine, professional, dedicated staff.
- Had a wonderful experience two years ago with lots of help in fire-hardening the property I am caretaker of.
- Having a neighborhood fire station is key to quick response times. Our local fire station has an excellent reputation for quick responses.
- I admire the firefighters' bravery.
- I am appreciative of the quick response, expertise, and kindness they have provided my neighbors and my immediate family.
- I am grateful for the personnel experience last year of a fall with a broken hip. The response was excellent in every respect. Thank You!! (Aptos area)
- I am happy about the fire district response time for a medical emergency and the politeness and professionalism displayed by all.
- I am thankful for the firemen and firewomen and the work they do protecting people and property We are indebted to them.
- I appreciate all that they do. The department's Transparency is refreshing in today's government.
- I appreciate Central Fire's willingness to visit properties in the wildland/urban interface and advise about fire prevention methods.
- I appreciate the service and work you provide us, and the community involvement. I give a wave when I happen to see you folks passing by when I am at the street.
- I appreciate their professionalism and service to our community.
- I appreciate this chance to give feedback. I think you are all trying very hard to do a good job in all respects. Thank you.
- I appreciated that a couple of employees with the fire district walked my neighborhood (SC Gardens) and offered advice and suggestions for removing fire hazards around our house.
- I believe that we have the best fire personnel of all the Santa Cruz districts, and I'm not at all biased.
- I do think the merger that created the fire district created an even stronger department to better use our tax dollars in the most efficient and beneficial way possible.
- I feel safe here.

- I had the honor and privilege to serve as their Fire Chief from 2001 until my retirement in 2010. As a team, we created several programs that are in effect today to best serve the citizens of Central Fire for an "All Risk life Safety Service."
- I have been impressed by the calm and caring demeanor of the fire service personnel I have seen in action.
- I have lived the District for 64 years and have always—even in the days of individual volunteer departments—felt a sense of safety and security knowing they were just around the corner. Every time I have observed them on a call, sponsoring a pancake breakfast or other fundraiser, giving tours of the firehouse to school groups and even grocery shopping I feel a sense of pride and gratitude for who these devoted professionals are an integral part of our mid-county community. Thank you all so very much. You are the BEST!
- I have nothing but good experiences with the fire district to this point. Timely response and friendly responders. Good representation of the profession in the public. Stations and Engines always look good.
- I live in a senior mobile home park in the county. The fire district people are totally reliable about immediately responding to emergencies here.
- I think CFD employees are brave unsung heroes.
- I think our fire district is exemplary. They have so many challenges. I feel they do the very best they can to keep everyone safe.
- I think they are awesome!
- I think they do a great job serving our community.
- I very much appreciate the District and its community services
- I was concerned about overgrown weeds (over waist high) on a property down the street (17th Avenue). Cars were parking back into the weeds. I was able to speak with someone on the phone. They said they just noticed the issue that day. Not sure what they did, but the weeds were gone by the weekend.
- I was happy to see the consolidation of Aptos/La Selva and Central Fire. I see the benefit of the larger agency for emergency operations and the workforce. I am also happy to see an agency be so happy with their new Fire Chief. I think the current fire board is doing a good job and I look forward to seeing what the future of Central Fire District looks like as they evolve to serve the community.
- Many love their job and helping the District and community. Volunteers are plentiful and eager to work.

- New Chief, so far so good!
- Thank you for always being there and caring for the community.
- Thank you for being there!
- Thank you for your selfless dedication to your duties and responsibilities.
- Thank you so much for your service.
- The men and women that I have briefly met during emergency responses have been incredibly helpful and respectful. Keep up the good work!
- The one time I needed assistance, personnel was prompt, professional, competent, and respectful. And they had a sense of humor when I was scared and in pain. Very reassuring as well.
- This survey and the development of the master plan are great to see!
- They're courageous people doing the best that they can.
- Too much to list, you all are doing great!
- We just feel so fortunate to have a truly local, committed, positive, forward-thinking fire department!
- We love seeing the firefighters practicing their swims and water rescues. We loved being able to report properties that are a fire risk & CFD inspects, tags and forces clean up. Safer for everyone—some neighbors impossible to approach or speak with—the uniform and badge and financial penalty help encourage compliance. Strong work!
- You're already awesome, keep up the good work and thank you for your dedication to the community and saving lives.

Additional Comments

- Very positive interactions with personnel. Keep it up!
- A concerned citizen feeling thankful we have Central Fire working for us.
- All in all, they are doing a good job. Community education re: their duties is important. I have called twice due to car accidents on/near my property—one involving a car on fire—I live 3/4 mile from the nearest fire station, but both times it took over 20 minutes for them to arrive. I don't think most people in the community understands what needs to happen before they can respond.
- Don't close stations. Continue a community-based volunteer/paid-call firefighter program. Consider rotating district commissioner meetings between 17th Avenue, Capitola City Hall, Aptos fire station or new library, and La Selva's Clubhouse.
- Fire danger in mobile home parks seems particularly high, and more should be done to prohibit smoking in those types of close environments where units are extra flammable.
- Have not had prompt response to requests for home inspections.
- I appreciate you taking the time to listen to the input of the community you serve.
- I appreciate your time to have these community meetings.
- I think it's a good move to ask for public input from the community, thanks for asking us.
- Look for more areas to consolidate fire/rescue services so that saved infrastructure/logistics dollars can be redirected into better faster services. Santa Cruz County is small, and many departments rely on each other for mutual aid for routine business as it stands. Consolidating administrative functions and streamlining training and other logistics functions seems like it could lead to efficiencies that could be returned to the taxpayer in the form of greater staffing, reduced response times, and perhaps additional services (ambulance transport? Etc.).
- Maybe more fire safety checks of homes and property, businesses (CO, smoke alarms, etc.)
- My brother was a forest fire incident commander. I have nothing but respect for our district men and women who keep us safe. So brave.
- Provide clear, measurable and attainable goals to the employees of the District.
- Stay community connected and proud of those you serve.

- Suggestion: maintain a list of fire prevention/suppression products for the homeowner, that Central Fire considers useful. We'll do our part; you do yours.
- Thank YOU for all you do!
- Thank you for allowing our opinions, I hope you take this information and use it to the best of your ability. Politics have the public very insecure about what the actual agenda is. Please make this count for the right reasons!! Thank You Again!
- Thank you for the opportunity to provide our opinions and ideas.
- Thank you for the opportunity to respond to the survey—have no computer.
- Thank you for this opportunity and all your efforts.
- Thanks for soliciting feedback. It's another meaningful way of demonstrating how deeply you're invested in the community.
- We appreciate the efforts of Central Fire... Thank You!!
- We need more ambulances, we need shorter response times on ambulances. We don't need a firehouse full or Paramedics, EMTs are perfect and have one medic per engine. Too many engineers that became medics just to get a fire job, and shoot past firefighting just to be an engineer. The county can save money that way and so can the cities.

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