Attachment 1

City of Santa Rosa
California

FIRE DEPARTMENT STAFFING NEEDS ASSESSMENT

October 2019

Emergency Services Consulting International
Providing Expertise and Guidance that Enhances Community Safety

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ACKNOWLEDGMENTS

Emergency Services Consulting International (ESCI) would like to acknowledge that without the assistance and support of the City of Santa Rosa Fire Chief, the Department's executive and administrative staff, Labor leadership, City Council members, City officials, and others, this project could not have been successfully completed.

EXECUTIVE SUMMARY

Emergency Services Consulting International (ESCI) was engaged by the City of Santa Rosa Fire Department ("SRFD" or "Department") to evaluate the service provided by the fire department. Specifically, the evaluation was to report on the level of staffing needed compared to standards and best practices. This Staffing Needs Assessment will assist SRFD in future planning and provision of comprehensive emergency services to the citizens of Santa Rosa. This report is organized as an organizational staffing needs assessment that evaluates current conditions; projects future growth, development, and service demand; and provides recommendations to enhance current services or provide an equal level of service over the next 5 to 10 years.

ESCI thanks the City of Santa Rosa Council members, City management team, Fire Chief, and staff of the Santa Rosa Fire Department for their outstanding cooperation in the preparation of this report. All involved were candid in their comments and provided a tremendous amount of essential information. The ability of the ESCI team to receive this valuable input and information was key to the development of this study.

The study begins with a review of the current service delivery provided by SRFD, including its programs, administration, management, service delivery performance, and financial projections related to staffing needs. All areas are evaluated and discussed in detail, and specific recommendations are provided where applicable.

Stakeholder Interviews

ESCI conducted 41 internal stakeholder interviews in an effort to gain feedback and input from persons involved in providing services and City management. Internal stakeholders were asked questions consistent with a strengths, weaknesses, opportunities, and threats (SWOT) analysis as well as with concepts related to alternative staffing and deployment.

Evaluation of Current Conditions

The evaluation of current conditions offers the Department a detailed assessment of existing Fire Department operations and provided the ESCI project team with a snapshot in time, the basis from which the balance of the report was developed.

Organizational Overview

The Organizational Overview component provides a summary of the Department's composition, discussing its configuration and the services it provides. Data provided by administrative and management staff, as well as by both internal and external stakeholders, was combined with information collected during ESCI's fieldwork to develop the following overview.

The SRFD has established effective managerial components addressing recordkeeping and documentation as well as maintaining proper regulatory documents. This includes fire inspection, investigation, incident reports, and service records. These guiding documents are vital for success in providing services at all levels and in meeting the expectations of the citizens whom SRFD serves.

The Department has established processes and procedures for identifying critical issues and future challenges facing the organizations. Among these critical issues are the recruitment and retention of staff members, facilities, and ongoing training and development of staff members. Outside of the ownership of its facilities, these issues are common among fire service providers across the United States.

Staffing and Personnel Management

The leadership of SRFD has established work responsibilities beyond the emergency response requirements for officer-level personnel. For example, these additional duties include vehicle maintenance and fleet management, respiratory protection compliance, and training. Other personnel have been given the opportunity to take on additional duties within the Department based upon a desire to learn and grow. Beyond ensuring the Department achieves compliance with performance and industry standards, these additional duties serve to prepare individuals for future promotional and advancement opportunities. However, the workload and additional demands exceed available staff time.

SRFD currently operates with several staff members assigned to administrative support. The positions assigned to administration include one Senior Administrative Assistant, one Administrative Secretary, one Administrative Technician, one Research & Program Coordinator, and one Department Application Specialist. These five positions provide critical support to all of the Department's administrative functions. In addition, during extreme emergencies, this administrative team is called upon to staff numerous duties in support of operations and logistics. The value of administrative support cannot be overstated as these staff members free up administrative staff to concentrate on other areas of operation. The level of administrative support is marginal for an organization the size of SRFD.

Fire Prevention and Public Education

SRFD operates an active fire and life safety program, which supports industry-recognized fire prevention program components and each of their associated elements. Interviews conducted during the site visit established that SRFD has a healthy appreciation of fire prevention within the community it serves. The Fire Chief clearly understands the significance of having a quality program that is both valid and credible in order for the Department to truly serve its constituents. As currently configured, fire prevention and life safety functions are understaffed.

Service Delivery and Performance

Response performance criteria and actual service delivery performance are analyzed in detail, providing information with which the Department can develop future deployment methodologies and identify desired levels of response performance and staffing.

Of all incidents to which the Department responded emergent in 2018, it responded to 90 percent in 6 minutes, 5 seconds or less.

Population History and Growth Projections

The City provided a population forecast, which projects population growth for Santa Rosa to average 0.79 percent per year through 2050. Using this estimate, the city's population could reach 222,228 by 2050.

Development activity has increased as a result of the recovery from the 2008 recession. Development projects stalled due to lack of demand are beginning to be implemented and new projects proposed.

Numerous vacant land pockets exist throughout the city. Though some, particularly in the city's southwest area, are constrained by environmental concerns, a fair amount of vacant land is available for development. In-fill and redevelopment opportunities exist as well.

The city has additional territory both within and outside its current boundary that it could annex in the future. An area south of Station 8 is currently being considered for annexation.

Service Demand Projections

The current fire department services utilization rate is 161 incidents per 1,000 population. This is higher than typical for similar-sized communities and is reflective of the tourism influence on Department workload and other factors not yet fully understood.

The utilization of Department services is expected to grow modestly over time at a rate of about 2 percent per year. This, plus expected population growth, will increase the SRFD's workload.

Future Deployment and Staffing Models and Recommendations

The analysis is followed by deployment and staffing recommendations and options based on current service delivery and performance, coupled with projected system demands. Options for addressing current and future service demand needs are presented, and financial modeling accompanies each option. SRFD can then weigh the options presented and work to implement these options in a multitude of ways that meet the needs of the community. The report concludes with a list of key recommendations identified throughout the body of the report intended to assist SRFD and the City in planning for future service delivery to the citizens of Santa Rosa.

Recommendations

- Add 14 additional operations personnel to lower the overtime factor to a more reasonable level of total wages.
- Add 1 additional Deputy Chiefs and reclassify the Division Chief Fire Marshal to a Deputy Chief.
- Recommendation—Reclassify the Training and Safety Division Battalion Chief to Division Chief.
- Recommendation—Reclassify the Emergency Medical Services Battalion Chief to Division Chief.
- Add 1 additional Training Captain.
- Add an additional Battalion Chief per shift.
- Add Response Units such as quick attack squads/rescues during periods of high incident workload.
- Hire a Vegetation Management Specialist to concentrate on the at-risk population who live in homes within and bordering the Wildland Urban Interface.
- Hire a Public Education Specialist to better educate the public about fire prevention.
- Hire additional code-enforcement to distribute the increasing workload more evenly.
- Review and consider updating all current fees that are intended to offset the cost of fire prevention personnel.
- Audit factors that are resulting in lost time due to injuries.
- Fill positions currently open.
- Cross-train the Department's senior officers to support the Emergency Preparedness Coordinator with those duties and responsibilities required 24/7/365, such as the emergency notification system.
- Incorporate staff from other City departments to participate in the development and operation of the City's Emergency Management Program.

EVALUATION OF CURRENT CONDITIONS

The beginning is the most important part of the work.

Emergency Services Consulting International (ESCI) completed a Standards of Coverage and Deployment Plan for the City of Santa Rosa Fire Department in early 2017. The Department has now engaged ESCI to provide an agency Fire Department Staffing Needs Assessment. This report serves as the culmination of the project and is configured as an agency evaluation that assesses current conditions; projects future growth, development, and service demands; and provides recommendations to enhance current services or provide an equal level of service for the future.

Using organizational, operational, staffing, and geographic information system (GIS) models, this phase of the study provides an evaluation of existing fire and rescue operations and recommendations for improvement in current services delivered to the community.

Each section in the following report provides the reader with general information about that element, as well as observations and analyses of any significant issues or conditions that are pertinent. Data provided by SRFD supports these observations collected as part of the review and interview process. Finally, specific recommendations are included to address identified issues or to take advantage of opportunities that may exist.

It proves important to note that these were the current conditions at the time of the data collection and on-site visit. The agency is continuing to change and improve over the time required to write the report; therefore, not every current condition remains as stated here.

City of Santa Rosa

The City of Santa Rosa is the county seat for Sonoma County. It is the largest city in the North Coast wine country, with a total population of 174,170 and an area of 42 square miles. Including the Roseland Fire Protection District and county islands, the service area population totals 181,900 and the total service area equals 44.4 square miles.

The Santa Rosa area was long inhabited by Pomo natives known as the Bitakomtara. The first European settlement in the Santa Rosa area was a homestead established in the early 1800s. Spanish and Mexican settlers also raised livestock in the area.

Sonoma County recognized Santa Rosa as an incorporated city in 1867, with state confirmation in 1868. The city's population grew steadily but not rapidly. The 1906 San Francisco earthquake devastated the downtown area, slowing population growth.

Starting about 1950, the city's population began to grow rapidly, gaining about 1,000 new residents each year. That rate of growth increased following the City's adoption of its first comprehensive General Plan in 1991.

Major employers in the city include the County of Sonoma, Kaiser Permanente, Sutter Medical Center, and the St. Joseph Health System. As the Northwestern gateway to the Napa and Sonoma wine country, Santa Rosa also enjoys a strong tourism economy.

Santa Rosa boasts an historic downtown area consisting of shops, restaurants, theaters, and other businesses and professional offices. City hall, along with state and federal offices, is also located in downtown. The balance of the city includes a mix of residential neighborhoods, commercial corridors, and some industrial development.

The city also features many parks and other recreational attractions and has been the filming location for a number of movies including Alfred Hitchcock's *Shadow of a Doubt.*

The City of Santa Rosa Fire Department

Governance and Lines of Authority

SRFD has existed as a fire protection agency within the state of California since 1894. The City of Santa Rosa was incorporated in March 1868. The City is provided the authority to levy taxes and raise revenue to operate an organized fire department.

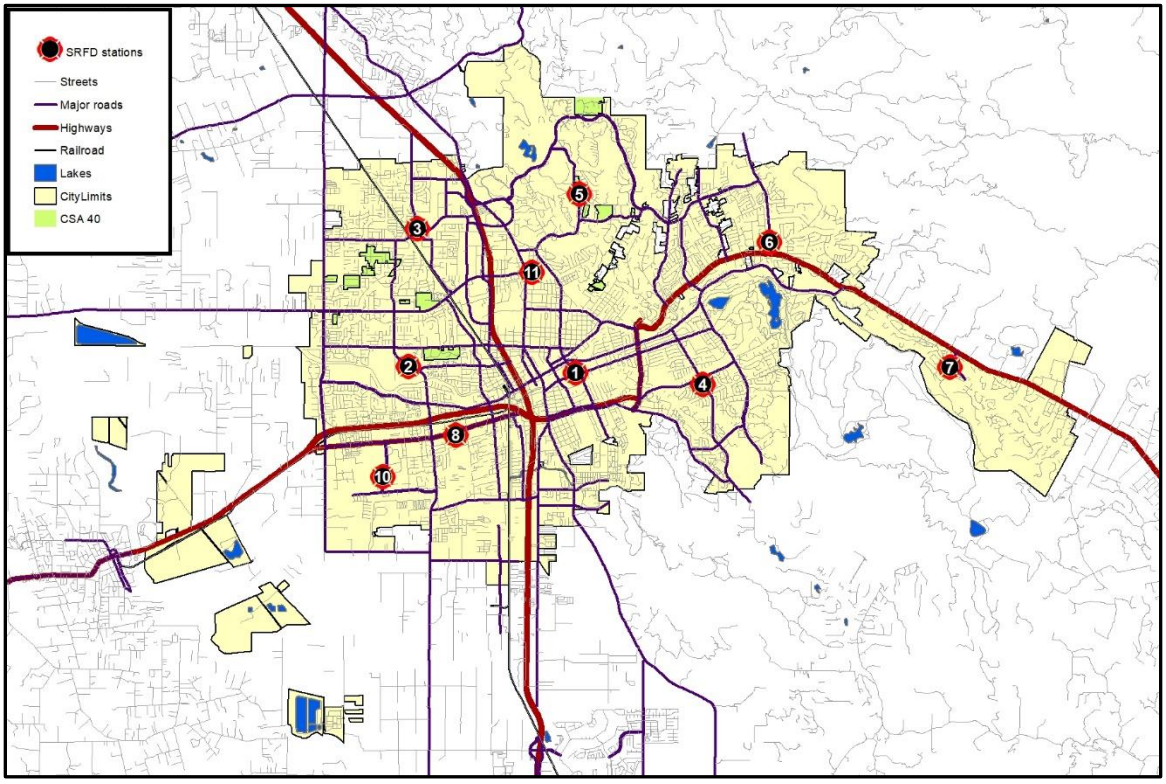
Policy direction for SRFD is provided by a Mayor, a Vice Mayor, and five City Council members (Council). The Council is provided the necessary power and authority to govern the provision of fire protection and emergency services. The Council appoints a City Manager who is responsible for implementing Council policy and overseeing the operation of the Department. The City Manager appoints the Fire Chief.

Organizational Overview

The Organizational Overview component provides a summary of the agency's composition, discussing its configuration and the services it provides. Data provided by administrative and management staff, as well as by both internal and external stakeholders, was combined with information collected during ESCI's fieldwork to develop the following overview.

The SRFD service area is depicted in the following figure:

Figure 1: Santa Rosa Fire Department Service Area



Design

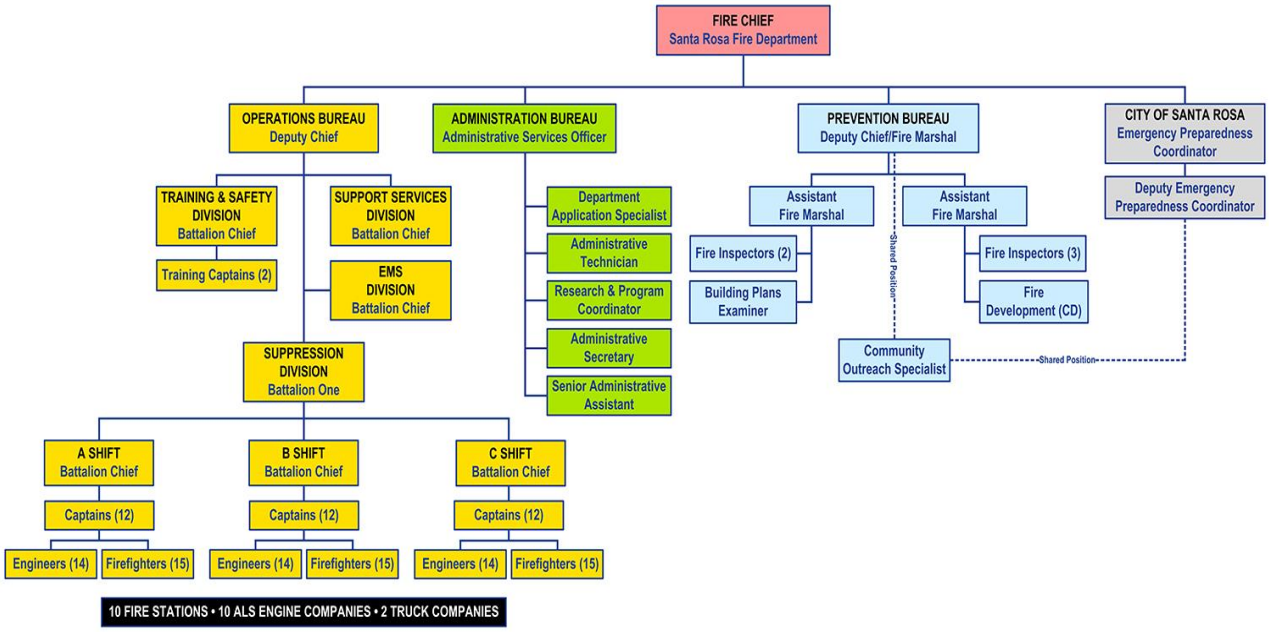
The organizational design of SRFD mimics a paramilitary organization, which is a common design among first responder and emergency services agencies. SRFD is an all career agency.

Organizational Structure

To operate effectively, a fire department needs an organizational chart that clearly defines its structure. The chart institutionalizes the agency's hierarchy, identifies roles, and, most importantly, clarifies reporting authority. It also helps to ensure that communication flows appropriately and limits opportunities to circumvent the reporting structure.

SRFD has a well-defined organizational chart that achieves this purpose and operates under a traditional top-down approach. Lines of authority are clear and depicted. The following figure illustrates the organizational chart for SRFD:

Figure 2: SRFD Organizational Chart



Governance and Decision Making

From a governance and decision-making standpoint, the organization appears to have clear direction and ability to operate. Lines of authority and the ability to carry out decisions appear to flow appropriately. The administrative staff understands the process to accomplish their mission. The chain of command is well identified and clear on responsibilities. The span of control, however, is currently inadequate, resulting in the need for one additional Battalion Chief as was recommended in the 2016 revised Standards of Coverage and Deployment Analysis. Moving forward, this span of control will most definitely need to be addressed.

Service Area and Infrastructure

The size and composition of a fire department's service area affect the type and number of personnel, fire stations, and vehicles that are needed to provide services efficiently. Sometimes complex decisions need to be made regarding deployment strategies to properly position resources based on land area, geography, risk, and similar factors. The following offers a summary of SRFD's service area and service infrastructure resources:

Figure 3: Service Area and Apparatus Resources

Service Area and Apparatus	Santa Rosa Fire Department Observations
AGENCY DESCRIPTION	
Agency type (district, municipality, etc.)	City
Area in square miles	42
Headquarters location (physical address)	2373 Circadian Way, Santa Rosa, CA
Number of fire stations	10 (at time of study)
Engine	10
Engine, reserve	4
Ladder truck	2
Ladder, reserve	1
Duty BC Command Response Vehicle	1

Prior to 2017, SRFD was able to deploy people and apparatus from 10 strategically located facilities. During the 2017 Tubbs Fire, Santa Rosa Fire Station 5 was completely destroyed and has yet to be rebuilt. In December 2018, the Department placed a temporary station in service, located at 3480 Parker Hill Road; however, this location is not advantageous to the Department's coverage objectives. Until such time as the station can be replaced, the ability to balance the needs of providing effective coverage will continue to challenge the Department.

Decisions on deployment define the Department's response capability. These decisions need to weigh multiple considerations including risk exposure, response times, access challenges, deployment, community expectations, personnel safety, and fire department capacity. Furthermore, these decisions not only need to balance the financial considerations but are strategic and in the purview of the elected officials and City Manager, in consultation with the Fire Chief. Ultimately, these individuals are responsible to the public to provide the level of service that the citizens desire and for which they are willing to pay.

FINANCIAL MANAGEMENT AND ANALYSIS

Historical Revenue and Expense

City of Santa Rosa

Critical to the success and operation of any business, private or public, is a consistent and reliable funding stream. In the instance of public agencies, this funding is usually provided by the assessment and collection of various forms of taxation such as ad valorem (real estate) taxes, sales taxes, or special assessments. Recognizing the limits of public funding, public safety agencies, including fire departments, are limited in the level of service they may provide to their communities by the amount of property tax revenue or special assessments that the authority having jurisdiction (AHJ) is either willing to assess or is limited by the legislative process to assess. California's legislative process created Proposition 13 in 1978, restricting the growth of tax levels to municipal and other government agencies. Public agencies also may charge fees for services and/or are under contractual arrangements to areas outside of their political boundaries.

The City of Santa Rosa is allowed by statute to assess and collect a variety of taxes. The City receives an allocation of general sales tax combined with amounts from the State Education Revenue Augmentation Fund property tax revenues, equal to 1 percent of taxable sales. In addition, Santa Rosa voters approved a ¼ of 1 percent tax for general city services and a ¼ of 1 percent special tax for public safety services. In fiscal 2017, the allocation of general property taxes from the County to the City amounted to 12 percent of the 1 percent of the property tax levied within the boundaries of Sonoma County. The ¼ percent Public Safety Special Tax is set to expire in fiscal year 2025. The ¼ percent general City services tax was extended in November 2016 and will expire in fiscal year 2027.[1]

The City of Santa Rosa records its financial transactions using the modified accrual basis of fund accounting method, which is typical of most state and local government entities. Under the modified accrual basis, revenues are recognized when they become susceptible to accrual (i.e., when they become both measurable and available). "Measurable" means the amount can be determined, and "available" means collectable within the current period or soon enough thereafter, to be used to pay liabilities of the current period. Expenditures are recorded when the related fund liability is incurred.

[1] *City of Santa Rosa – Comprehensive Annual Financial Report – Fiscal Year Ended June 30, 2018, pg. 58. vi.*

Funds of the City can be identified in one of the three following categories: governmental funds, proprietary funds, or fiduciary funds. Governmental funds are used to report the governmental activities of the City and are usually associated with the day-to-day activities of providing government services. Proprietary funds are used to account for services for which the City charges its customers. These funds may be identified as enterprise funds or internal service funds. Enterprise funds are associated with business-type activities such as water and sewer charges, utility charges, stormwater, parking, transit, and golf activities. Internal service funds account for a broad variety of costs that are allocated to the various departments, such as insurance, technology, and equipment maintenance and replacement. Fiduciary funds account for resources held by the City for others outside the City's own programs.

Government activities and business activities are the largest of the City's reporting units. Each of these activities are comprised of numerous funds that account for the operation of a department or components of a department.

The City of Santa Rosa and its fire department operate on a July 1 to June 30 fiscal year. Financial analysis and projections will utilize annual periods with a June 30 ending date for each period.

Considerable financial information and background data was provided to ESCI by staff of the City of Santa Rosa and the Santa Rosa Fire Department. This information was reviewed in detail and in conjunction with Comprehensive Annual Financial Reports (CAFRs) and the City's FY 2019 annual budget presentation. The Department operates as a component unit of the City of Santa Rosa and is funded through the General Fund Budget. The City uses a modified accrual basis to account for its annual revenues and expenses.

The City of Santa Rosa Finance Department maintains a 10-Year, Long-Range Financial Forecast for the General Fund. This Forecast provides a planning tool for monitoring ongoing General Fund revenues and expenditures, forecasting structural deficits and fund balance levels and implementing organizational and budget strategies. The Finance Department updates the Forecast at the beginning of the budget process in January, as well as when the budget is adopted.

On October 9, 2017, the City of Santa Rosa and the surrounding area in Sonoma County were devastated by the Tubbs Fire wildfire incident. This incident has and will continue to have a significant financial impact on the City's operations and the surrounding area into the future. The impact is evident in the City's financial presentation for FY 2018 and in the City Council's direction to the City staff, relative to the budget preparation for FY 2019.

The City Manager and City staff prepare an annual budget for presentation to the City Council for their review. The City Charter requires the City Council to provide the public with the location where the proposed budget may be reviewed and to solicit input from constituents and stakeholders regarding the proposed budget by March 31 of each year. The budget must be adopted by June 30 of each year.

City departments are given guidelines for preparing their budget in January. These guidelines factor in the current condition of the General Fund and the strength of the local economy and provide direction for developing operational budgets. As a result of the financial impact from the 2017 wildfires on General Fund operations, the direction for FY 2018-19 was to develop operating budgets with flat controllable costs, including overtime and all services and supplies. General Fund operations were directed not to propose supplemental requests; however, departments and operations funded outside the General Fund were allowed to submit budgets based on their ability to pay for these services without raising rates.

Revenue

Revenues are classified in two categories: recurring and non-recurring. Recurring revenues include proceeds from property taxes, sales taxes, special taxes, billings for service if the amounts are predictable, and other amounts that have historically occurred with quantifiable amounts. Non-recurring revenues are those items in which the amount and frequency cannot be determined. These would include sales of capital assets and loan or capital lease proceeds. ESCI reviews these categories in concert with a similar categorization of expenditures to evaluate the agency's ability to remain current on its obligations to its customers, both internal and external.

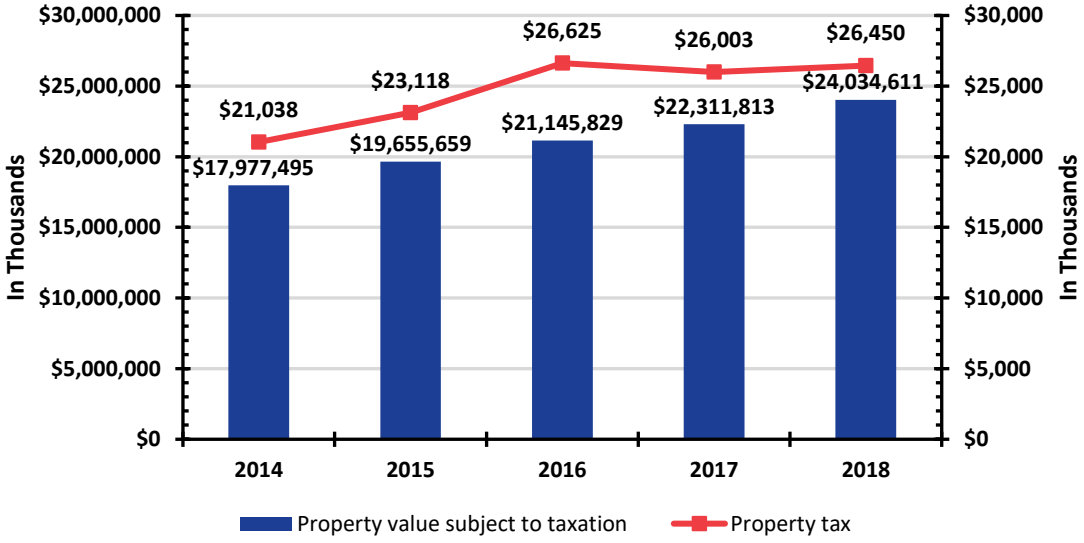
Property tax valuations have increased significantly during the evaluation period. The amount of the increases has decreased annually, but the tax base has continued to show robust growth. The following figure indicates the historic property valuation growth and related property tax revenues from FY 2014 through FY 2018:

Figure 4: City of Santa Rosa Historic Property Valuations & Property Tax Revenue, FY 2014–FY 2018

Description	FYE June 30,				
	2014	2015	2016	2017	2018
Property Valuation (000)	$17,977,495	$19,655,659	$21,145,829	$22,311,813	$24,034,611
Property Tax Revenue (000)	$21,038	$23,118	$26,625	$26,003	$26,450

The following figure provides a graphical presentation of the above information:

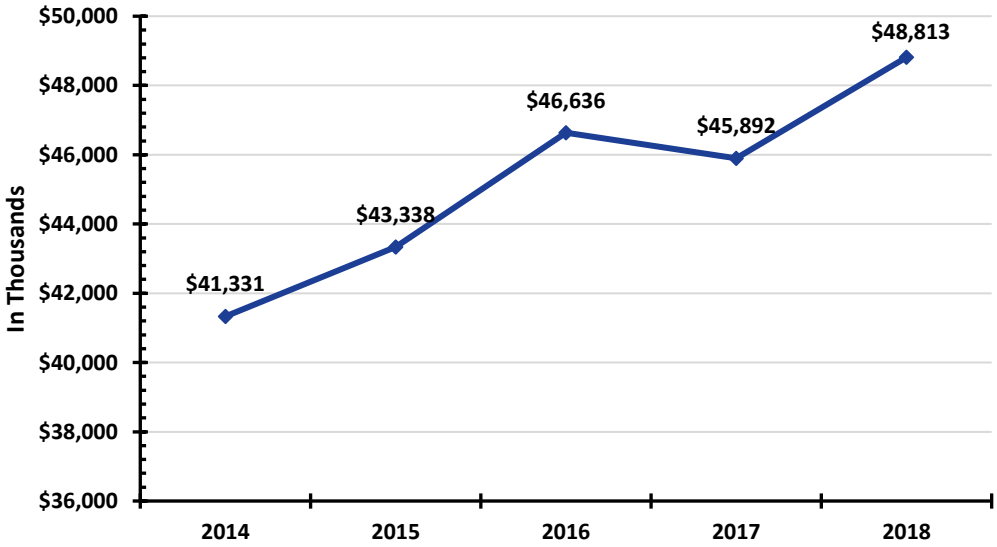
Figure 5: Graphic Presentation of Santa Rosa Property Valuations & Property Tax, FY 2014–FY 2018



Sales tax on retail sales is the largest single contributor to revenue for the City of Santa Rosa. Sales tax trended upward almost 10 percent annually between FY 2014 and FY 2016 but leveled off between FY 2016 and FY 2017. A portion of the sales tax receipts is identified as Measure O, which is a 1/4 cent sales tax to provide funding for the restoration and construction of fire stations and to provide funding for the paramedic program and other public safety measures. The temporary sales tax will expire March 31, 2025. The City has enjoyed strong economic growth, with increased property tax revenue generated due to the tourism industry. Santa Rosa also serves as a retail and commercial hub for a five-county area.

The following graph provides a view of the historic sales tax revenue for the City of Santa Rosa from FY 2014 through FY 2018:

Figure 6: Santa Rosa General Fund Sales Tax Revenue, FY 2014–FY 2018



The City collects other types of taxes as a normal part of its operations. These include utility user fees, motor vehicle taxes, business taxes, real estate transfer taxes, occupancy taxes, and other miscellaneous taxes.

Figure 7: Other Tax Collections (in thousands) by the City of Santa Rosa, FY 2014–FY 2018

Description	FYE June 30,				
	2014	2015	2016	2017	2018
Utility User's Tax	9,645	9,778	9,955	10,628	9,724
Motor Vehicle In-lieu Fees	10,577	11,554	12,416	13,105	13,715
Business Tax	3,652	3,973	4,194	4,198	4,557
Real Property Transfer Tax	2,673	2,966	3,482	3,788	3,850
Occupancy Tax	4,559	5,208	5,525	6,095	6,506
Other Taxes	6,555	7,728	8,227	8,590	8,557
Total Other Tax Collections	**$37,661**	**$41,207**	**$43,799**	**$46,404**	**$46,909**

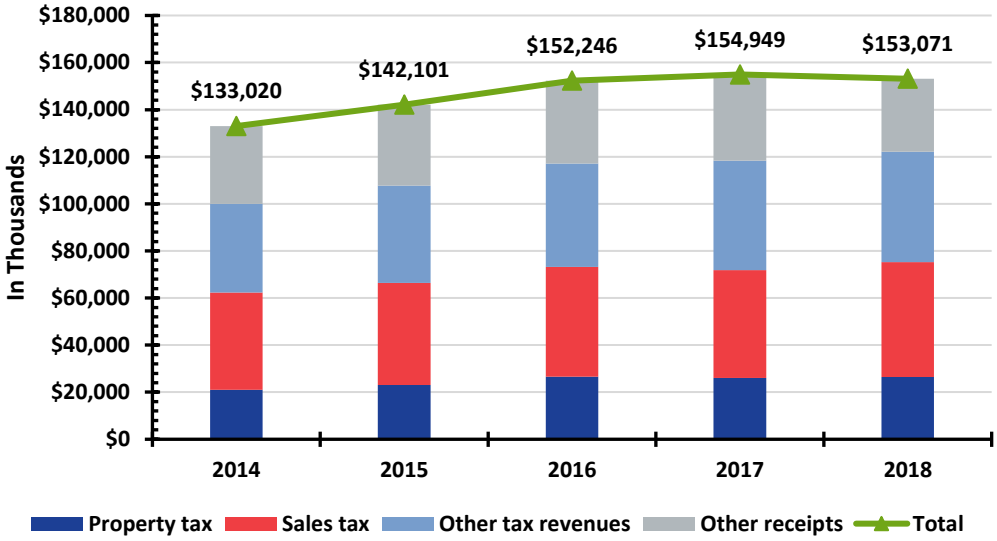
The City also charges fees to its customers, both internal and external, for the services it provides. Among others, these fees include building and development plan review services as well as inspection and technology fees.

Figure 8: Other City of Santa Rosa General Fund Receipts (in Thousands), FY 2014–FY 2018

Description	FYE June 30,				
	2014	2015	2016	2017	2018
Charges for Services	21,346	22,333	23,741	26,502	25,180
Intergovernmental	2,576	3,584	4,562	1,582	700
Other Collections	9,068	8,521	6,883	8,566	5,019
Total Other Receipts	**$32,990**	**$34,438**	**$35,186**	**$36,650**	**$30,899**

The property, sales, and other taxes, as well as other receipts, combine as the recurring General Fund Revenue for the City of Santa Rosa.

Figure 9: Total General Fund Revenues for the City of Santa Rosa, FY 2014–FY 2018



The General Fund of the City of Santa Rosa is used to report the day-to-day activities of the operations of the City's government. These operations include general government, public safety, public works, recreation and parks, other expenditures, certain capital purchases, and payment of debt service. The following figure provides a historical perspective to the expenditures from the General Fund from FY 2014–FY 2018.

Figure 10: Total General Fund Expenses for the City of Santa Rosa, FY 2014–FY 2018

Description (000)	FYE June 30,				
	2014	2015	2016	2017	2018
General Government	14,654	15,089	16,816	19,264	19,796
Public Safety	71,803	75,524	79,268	83,766	92,391
Public Works	12,702	13,207	13,197	17,273	20,045
Recreation & Parks	13,562	14,474	16,197	12,963	15,377
Other	3,914	4,312	7,347	11,256	11,704
Capital Outlay	3,591	3,981	3,817	3,792	(4,971)
Total Expenditures	**$120,226**	**$126,587**	**$136,642**	**$148,314**	**$154,342**

The following figure shows the relationship of recurring revenues to recurring expenses. This relationship provides a view of the municipality's ability to continue to provide services, to expand services, and to continue to meet its obligations to its employees and citizens.

Figure 11: Recurring Revenues to Recurring Expenses, 2014–2018

Description (000)	FYE June 30,				
	2014	2015	2016	2017	2018
Total Recurring Receipts	133,020	142,101	152,246	154,949	153,071
Total Recurring Expenditures	120,226	126,587	136,642	148,314	154,342
Revenues Over (Under) Expenditures	**$12,794**	**$15,514**	**$15,604**	**$6,635**	**$(1,271)**

Adequate reserves are necessary to provide for stability in emergencies or economic downturns. This is especially important in institutions such as municipalities that do not have an unlimited source of revenue streams that may be immediately implemented without voters' approval. The City of Santa Rosa City Council has established a General Fund Reserve target of 15 to 17 percent of annual General Fund expenditures. The 2017 Tubbs wildfire incident destroyed several downtown buildings, city infrastructure, and over 3,000 residential units. Significant funds were expended to restore essential services and provide relief efforts to affected businesses and residents. A significant portion of these funds may be recovered through the Presidential Disaster Declaration, but the timing and precise amount of the recovery is uncertain. Commencing in FY 2017 and continuing through the actual results of FY 2018, General Fund revenues were not sufficient to provide for the General Fund expenditures. General Fund reserves have decreased from approximately $30,400,000 at the end of FY 2016 to approximately $20,500,000 at the end of FY 2018. Applying the City Council's 15 percent of annual expenditures reserve fund requirement to the FY 2018 expenditures indicates the reserve amount should be approximately $30,800,000.

Santa Rosa Fire Department

The Santa Rosa Fire Department is a career-based system staffed with full-time personnel who provide traditional fire, rescue, hazardous materials, training and community outreach, fire prevention services, other technical services, and paramedic emergency medical care. These services are provided from 10 strategically placed stations.

For analysis and forecast purposes, all funds through which the Department operates will be combined in the presentation.

The Santa Rosa Fire Department does not directly contribute significant funds to the General Fund operations of the City. However, the Santa Rosa Fire Department Prevention Bureau program collects fees for delivering various services to the residents of Santa Rosa and the Roseland Annexation area. These fees include plan and development review, weed and fuel management, annual business inspections, and hazardous materials inspections. Suppression permits/inspections have been included in the Engineering development plans category beginning in 2017. The following figure identifies revenues attributable to the activities of the Fire Prevention Division that are included in the General Fund revenues of the City.

Figure 12: Santa Rosa Fire Department Prevention Division Service Fees, FY 2014–FY 2018

Description	FYE June 30,				
	2014	2015	2016	2017	2018
FIRS Permit Program	129,352	462,188	231,823	523,568	532,059
Suppression Permits/Inspections	352,229	1,423	282,765	756	-
Engineering Development Plans	671,840	614,643	648,142	722,034	948,755
Weed and Fuel Management	79,931	65,546	68,294	54,772	3,708
CUPA Program	764,208	786,290	817,957	825,526	788,668
CUPA Fees	134,095	138,757	73,158	114,277	198,789
Technology/Micrographics	86,372	83,837	85,714	88,583	100,312
Roseland Fire Fees	24,156	21,859	21,138	19,930	20,291
Total Recurring Revenues	**$2,242,183**	**$2,174,543**	**$2,228,991**	**$2,349,446**	**$2,592,582**

The Department is eligible for various federal and state grants and reimbursements. The proceeds from any of these grants, indicated as "reimbursements" in the accounting for the Department expenses, will be treated as revenues attributable to the Department. Additionally, the Department receives reimbursement from other departments and projects for fire department employee time expended.

The following figure provides amounts of reimbursements and grants received by the Santa Rosa Fire Department. Additionally, the Department has successfully applied for **additional** grants to fund needed equipment.

Figure 13: Salary, Benefit, and Equipment Grants & Reimbursements, FY 2014–FY 2018

Description	FYE June 30,				
	2014	2015	2016	2017	2018
SAFER Grant	1,186,665	992,190	452,546	-	-
SAFER Grant (2013)	132,942	393,400	304,318	-	-
AFG Sim & FF Safety Grant	-	382,473	-	-	-
AFG Fire Prev Grant, WUIFA	-	12,332	16,648	-	-
FEMA Grant (SCBA Replacement)	-	-	-	-	726,189
Cal EPA Grant	9,503	-	-	-	-
EOC Cal EMA Grant	145,284	171,373	-	-	-
Cal EMA Grant/Windows & Computers	15,264	65	77	-	-
Total Reimbursements	**$1,489,658**	**$1,951,833**	**$773,589**	**$0**	**$726,189**

Expense

Similar to revenues, expenditures are classified as either recurring or non-recurring in nature. Recurring expenditures are those generally expected to continue on a year-to-year basis, such as salaries and related employee costs, supplies, services, and recurring debt service. Non-recurring expenditures are for items that include major capital assets such as fire station construction, acquisition of fire trucks, replacement of equipment, and other equipment acquisition with a cost over $25,000 or an expected operational life in excess of seven years.

The following figure shows the combined Department historic expenditures, indicating to policy makers the total impact of the fire department on the City's budget. The Department operates through numerous divisions such as Administration (060100), Operations (060200), Prevention (060300), and Measure O (060400) funds. Also included in Department Operations are funds that account for, among other functions, individual fire station operations, weed abatement, a certified unified program agency, training program, and hazardous materials response team. Capital projects are funded through appropriated General Fund revenues and Capital Improvement Funds as well as FEMA grants.

Figure 14: Santa Rosa Fire Department Expenditures, FY 2014–FY 2018

Expenditure	FYE June 30,				
	2014	2015	2016	2017	2018
Personnel Services	27,873,020	28,756,035	30,741,493	33,775,802	34,087,336
Wages	14,084,343	14,198,228	15,077,182	16,387,624	15,500,110
Overtime	3,734,744	4,096,181	4,173,452	4,702,618	6,097,633
Benefits	10,053,933	10,461,626	11,490,859	12,685,560	12,489,593
Supplies	475,828	421,717	493,726	446,743	431,356
Services	2,727,648	2,686,050	3,021,146	3,335,728	5,496,724
Capital—Recurring	582,722	-	164,020	8,629	-
Recurring Expenses	31,659,218	31,863,802	34,420,385	37,566,902	40,015,416
Capital Exp—General Fund	420,733	401,558	535,493	471,303	2,599,921
Capital improvements	1,434,570	5,031,378	1,872,700	201,343	710,336
Grant funded employees	1,319,607	1,385,590	756,864	-	-
Grant funded equipment	170,051	566,243	16,725	-	726,189
Non-Recurring Expenditures	**3,344,962**	**7,384,769**	**3,181,782**	**672,646**	**4,036,446**
Total Expenditures	**$35,004,180**	**$39,248,571**	**$37,602,167**	**$38,239,548**	**$44,051,862**

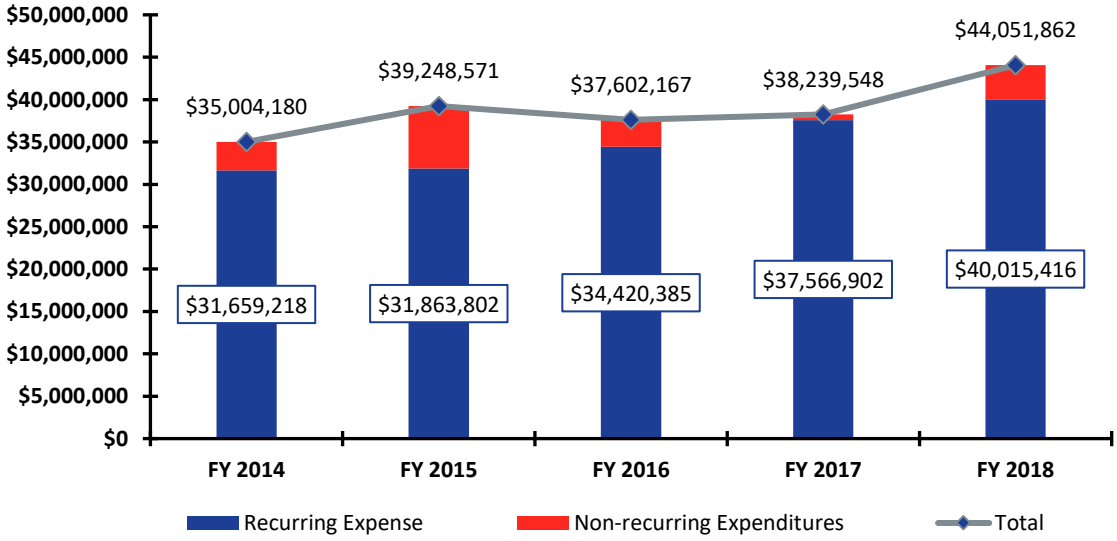
Recurring expenses have increased significantly, from $31,659,218 in FY 2014 to $40,015,416 in FY 2018. This amount represents an increase of $8,356,198, or a 26.4 percent increase over the five-year study period. This is an annual increase of approximately 6.6 percent. Of this approximately $8,400,000 increase, a little over $6,214,300 has been an increase in personnel costs. These costs will be examined in more detail later in this study.

Non-recurring expenditures have averaged $4,487,000 in four of the study period's five years. FY 2017 was an anomaly, with only $675,000 in capital expenditures. As indicated in the above data, the Department has been very successful in receiving federal and state grants for both personnel costs and equipment. Capital improvement funds have been expended for major items such as retiring of station indebtedness, station construction, station modifications, and replacement of fire apparatus. Capital expenditures have included upgrades to the Emergency Operations Center, replacement of SCBA air packs, masks and bottles, incident reporting software, as well as numerous other items. Future expenditures will focus on relocating a fire station, rebuilding Fire Station 5 that was destroyed during the wildfire, and continuing efforts to upgrade systems.

Total annual expenditures attributable to the Santa Rosa Fire Department have increased by $9,000,000 over the five-year study period. This represents an annual increase of approximately 6 percent and is driven primarily by the increase in personnel and related costs. In FY 2018, the City initiated a program of allocating a portion of its administrative overhead to each department. This has added approximately $2,400,000 to the Department's recurring costs in its annual budget.

The following figure provides a comparison between recurring expenses and non-recurring expenditures.

Figure 15: Recurring Versus Non-Recurring Expenditures, FY 2014–FY 2018

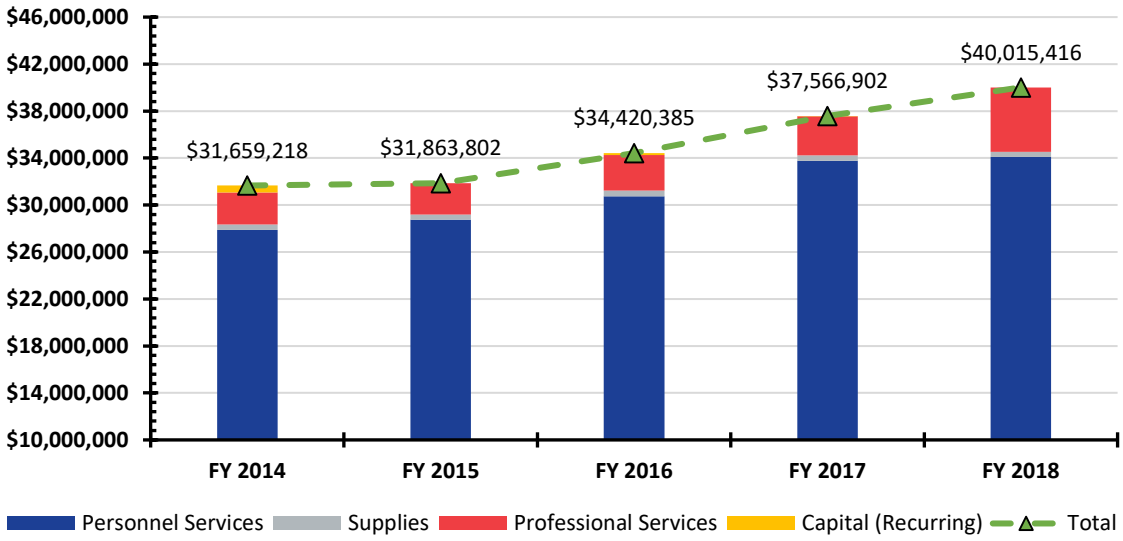


The following figure provides a more in-depth review of recurring expenditures between FY 2014 and FY 2018.

- Personnel services, shown in blue, have increased from $27,873,021 in FY 2014 to $34,087,336 in FY 2018, an increase of $6,214,315 or 22.2 percent in four years. This equals an annual increase of approximately 5.6 percent. The increase is driven primarily by increases in compensation rates from COLA adjustments, significant increases in overtime compensation, and significant increases in pension costs.

- Operating supplies, shown in green, include expenditures for fuel costs, uniforms, turnout gear, small tools, and other supplies; these costs have remained consistent during the five-year study period.
- Expenditures for various services, shown in red, have increased significantly, with a large portion of the increase allocated to outside services such as Professional Services, IT Cost recovery Services, and Other Outside Services. A new allocation of administrative costs was instituted during FY 2018 that resulted in an additional $2.1 million of expense.

Figure 16: Fire Department Recurring Expenditures by Major Category, FY 2014–FY 2018

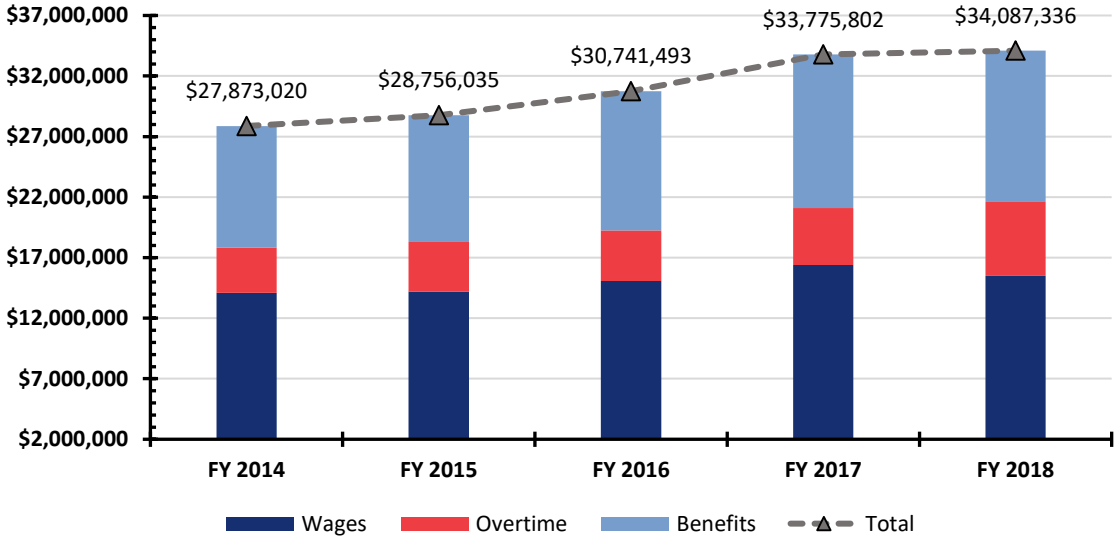


Personnel Services

An increase in personnel and related costs comprises the most significant factor in the increased Department operating costs; it proves informative to review these historical expenditures in more detail to more accurately forecast costs of various service levels.

The following figure graphically shows the increase in total personnel costs—comprised of wages for full-time and contract personnel; administrative and line positions; as well as overtime and benefits—from FY 2014 though FY 2018. Not included in these expenditures are those costs associated with grant funded firefighters.

Figure 17: Personnel Expenditures, FY 2014–FY 2018



- Total wages have increased from $14,084,343 in FY 2014 to $15,500,110 in FY 2018, an increase of approximately 10 percent, or 2.5 percent per year during the study period.
- Overtime as a percentage of wages has increased significantly from 26.5 percent in FY 2014 to 39.3 percent in FY 2018. Given a 48/96-hour work cycle of career firefighters, an overtime ratio exceeding 8 percent would be indicative of the need to hire additional staff to fill positions vacant from unfilled positions, vacation, illness, or training. This calculation is without regard to the compensation of senior Department officers who are paid as exempt employees ineligible for overtime. Overtime costs equal between 11.8 and 15.2 percent of the Department's annual budget.
- Total wages and overtime costs have increased from $17,819,087 in FY 2014 to $21,597,744, or 21.2 percent between FY 2014 and FY 2018.
- Benefits would typically follow changes in total wages as pension costs typically coincide with wages. Total benefit costs have increased from $10,053,934 in FY 2014 to $12,489,592 in FY 2018, a 24.2 percent increase.
- Benefits as a percentage of total compensation have remained relatively consistent at 56.4 percent in FY 2014 and 57.8 percent in FY 2018.

Personnel costs are expected to increase with the addition of staff; however, in the instance of Santa Rosa Fire Department, a net of two positions, from 146.5 in FY 2014 to 148.75 in FY 2018, have been added during the five-year study period. The increase in personnel expenditures has been a result of COLA adjustments of 3 percent in mid-FY 2018 (except for Unit 2 Firefighters who have been working under an expired contract) and an increase in insurance and pension costs. Personnel costs represented approximately 86 percent of the Department's total costs.

Fiscal Year 2019 Budget

The Santa Rosa Budget for FY 2019 reflects the significant impact of the wildfires that swept through the City on October 9, 2017. The City lost significant infrastructure including parks, street trees, two fire stations, sewer lift and pump stations, significant damage to the City's road, sidewalk, and water and sewer systems in the Coffey Park and Fountaingrove communities. Destroyed properties were reassessed to their current land value resulting in a loss of property tax revenue. This loss is expected to be backfilled for a portion of the loss with payments from the state in FY 2018 and FY 2019, but it is unknown if the payments will continue beyond FY 2019.[2] The City was forced to pay for much of the fire response from its reserves which resulted in General Fund reserves being drawn below Council Policy and significant Capital Improvement Program (CIP) projects for the Water Department to address water quality issues resulting from the fires. Estimates for General Fund revenues indicate a negative impact from the fire. These factors exacerbate the General Fund's existing deficit from escalating employee costs.

The FY 2019 General Fund revenues are projected at approximately $10 million less than the budgeted expenditures, not considering transfers in and out of the fund. This deficit will require a draw-down of General Fund reserves to a level below the City Council mandated 15 percent of annual expenditures. An expectation of a FEMA reimbursement of disaster-related costs may restore a significant portion of the reserve level. The General Fund budget increased by approximately 10 percent over the FY 2018 expenditures to provide for the increased costs associated with additional employee-related expenditures for COLA; health insurance coverages; increases to staffing for the Roseland Annexation and Cannabis legislation; and increased pension costs.

The Santa Rosa economy continues to post strong results, with approximately 47 percent of the City's revenue derived from property and sales tax receipts. General Fund revenues are expected to grow by approximately 4.4 percent. However, the structural deficit in the General Fund budget is forecast to continue for the foreseeable future as increases in compensation and benefits continue to outpace revenue growth.

[2] *City of Santa Rosa, Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2018, Letter of Transmittal, Pg. viii.*

The following figure shows the Santa Rosa General Fund budget for FY 2019:

Figure 18: Santa Rosa General Fund Budget, FY 2019

Tax Collections	Amount (000)
Property Tax	25,831
Sales Tax	49,609
Utility User's Tax	9,361
Other taxes	39,522
Total Tax Collections	124,323
Charges For Services	27,559
Licenses & Permits	2,112
Fines & Forfeitures	1,684
Intergovernmental	1,953
Other Collections	1,667
Investment Earnings	500
Transfers In	2,807
Total Other Receipts	38,282
Total Receipts	162,605
General Government	22,379
Public Safety	99,479
Public Works	21,869
Recreation & Parks	16,367
Other	15,678
Transfers Out	7,839
Non-Departmental	(6,079)
Total Expenditures	**$177,532**
Increase (Decrease) In General Fund Balance	**($14,927)**
Estimated Beginning General Fund Balance	**$25,500**
Estimated Ending General Fund Balance	**$10,573**

As indicated in Figure 18, the General Fund reserve balance is projected to decrease by approximately $15 million, leaving a balance of $10,600,000, or approximately 6.3 percent.

The Santa Rosa Fire Department FY 2019 budget decreased by $2,395,000, or 5.2 percent, when compared to the final FY 2018 budget. Salaries increased $389,000 with the addition of an additional Fire Inspector for the anticipated increased workload related to the new Cannabis industry within the city; and with the 3 percent cost of living adjustment approved mid-year FY 2018 that took effect for FY 2019. The increase in compensation did not apply to the portion of firefighters who have not agreed to a contract. Benefits increased $1,966,000, or 15.7 percent, primarily as a result of the increased PERS employer contribution for the firefighters. The new Unit 2, Firefighter Memorandum of Understanding, was approved by City Council on April 9 and will add approximately $1,093,000 to the operational costs of the Fire Department in FY 2019. This modification is not included in the previous budget figure.

Measure O funds allocated to the Department increased by approximately $300,000 in FY 2019 versus FY 2018. Measure O overtime increased by $182,000; equipment maintenance increased by $43,000; and the remaining $75,000 Measure O funding was utilized for an increase in PERS employer contributions.

Capital Improvement Project funding was reduced by $1.1 million of approximately 53 percent compared to FY 2018. Previously approved Station 8 relocation costs of $650,000; anticipated fire station improvements of $200,000; and training center improvements of $150,000 were included in the reduction.

The Department's portion of the City's adopted budget for FY 2019 is $43,653,248, or approximately 25.7 percent of the general fund budget. The budget includes approximately $4,080,000 for general administration of the agency; approximately $2,260,000 for the prevention division; $33,260,000 for operations; approximately $3,100,000 for Measure O expenditures; and approximately $948,500 for capital improvements. Not included in the adopted budget is the approximately $1,093,000 in additional compensation for the Unit 2 firefighters as a result of the new Memorandum of Understanding with the City.

Figure 19: Santa Rosa Fire Department Adopted Budget, FY 2019

Description	FY 2019 Adopted Budget
Wages	21,986,843
Benefits	14,455,882
Impact of Unit 2, Firefighter New Memorandum of Understanding	1,093,077
Personnel Services	37,535,802
Supplies	424,330
Services	5,837,693
Recurring Expenses	43,797,825
Capital Expenditures	948,500
Non-Recurring Expenditures	948,500
Total Expenditures	**$44,746,325**

Staffing Analysis

An organization's greatest asset lies in its people; yet its people also typically comprise its greatest financial cost. Thus, organizations must pay special attention to managing human resources in a way that achieves maximum productivity while ensuring a high level of employee job satisfaction. Consistent management practices combined with a safe working environment, equitable treatment, the opportunity for input, and a recognition of the workforce's commitment and sacrifice all comprise key components impacting job satisfaction.

The size and structure of an organization's staffing remain dependent upon the organization's specific needs. These needs must directly correlate with the needs of the community and the available revenue stream. A structure that works for one entity may not necessarily work for another agency. This section provides an overview of the SRFD's staffing configuration and management practices.

One can divide Department staffing into two distinctly different groups: the first is what the citizens typically recognize and is commonly known as the operations unit, generally classified as the emergency response personnel; the second group, commonly known as the administrative section, typically works behind the scenes to provide the support that the operation's personnel need to deliver effective emergency response.

In addition to providing fire suppression services, SRFD provides emergency medical response, fire investigation, fire prevention, life safety education, community risk reduction, disaster/emergency operations planning, and hazardous materials response.

Personnel Responsibilities and Activity Levels

The leadership of SRFD has established work responsibilities beyond the emergency response requirements for officer-level personnel. For example, these additional duties include vehicle maintenance and fleet management, respiratory protection compliance, and training. Other personnel have been given the opportunity to take on additional duties within the Department based upon a desire to learn and grow. Beyond ensuring the Department achieves compliance with performance and industry standards, these additional duties serve to prepare individuals for future promotional and advancement opportunities. However, the workload and additional demands exceed available staff time.

Administrative and Support Staffing

One of the primary responsibilities of a response team's administration is to ensure that the operations segment of the organization has the ability and means to respond to and mitigate emergencies in a safe and efficient manner. An effective administration and support services system proves critical to the success of a response agency.

Typical responsibilities of the administration and support staff include planning, organizing, directing, coordinating, and evaluating the various programs within the Department. This list of functions is not exhaustive, however, and other functions may be added. It is also important to understand that these functions do not occur in a linear fashion and can more often occur concurrently. This requires the Fire Chief and administrative support staff to focus on many different areas at the same time.

The following figure reviews the administration and support staffing of SRFD:

Figure 20: SRFD Administrative and Support Staffing

Position	Number
Fire Chief	1
Deputy Fire Chief	1
Division Chief/Fire Marshal	1
Assistant Fire Marshal	2
Building Plans Examiner	1
Fire Inspector	5
Administrative Services Officer	1
Research and Program Coordinator	1
Senior Administrative Assistant	1
Community Development Technician	1
Emergency Preparedness Coordinator	1
Administrative Technician	1
Battalion Chief—Training and Safety	1
Battalion Chief—Support Services	1
Department Application Specialist	1
Training Captains	2
Administrative Secretary	1
TOTAL	**23**

Like any other part of a municipal fire department, administration and support need appropriate resources to function properly. By analyzing the administrative and support positions within an organization, we can create a common understanding of the relative resources committed to this function compared to industry best practices and similar organizations. The appropriate balance of administration and support compared to operational resources and service levels is a key factor in ensuring the Department can accomplish its mission.

Administration

The administrative function within the Department is currently established with the position of Fire Chief, Deputy Fire Chief, Division Chief Fire Marshal, an Administrative Services Officer and two Administrative Battalion Chiefs. Some of the typical responsibilities of the Fire Chief include planning, organizing, directing, and budgeting for all aspects of the Department's operations. The current number of positions assigned to this activity appears to be insufficient to meet supervisory expectations; additionally, daily operational needs can detract from the ability to focus on administrative needs.

Fire Prevention

The Fire Prevention Bureau for SRFD includes dedicated staff assigned to the typical fire prevention functions including building plan reviews, building inspections, weed abatement, vegetation management, community outreach, and vegetation management. In addition to those functions typically found in the Fire Prevention Bureau, the SRFD has also assumed responsibility as the City's Certified Unified Program Agency (CUPA), the regulatory authority for the storage and use of hazardous materials within the city. The Fire Prevention Bureau's workload is more than the staff can perform, especially with the rebuilding efforts taking place after the North Bay fires. Much of this work has been contracted out to a private vendor, and many of the business inspections are performed by emergency response companies. Despite those arrangements, the department is currently unable to staff their weed abatement and vegetation management programs. The Bureau could still benefit from additional staffing in code enforcement, public education, weed abatement, and vegetation management. The current fee schedule within the Bureau is adequate to reimburse the division for its assigned personnel; additional staff would require additional funding.

Figure 21: Projected Recurring Revenue & Recurring Expenses for the Prevention Division, Adopted Budget FY 2019–FY 2024

Description	FYE June 30					
	Adopted Budget 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Recurring Revenue	2,168,310	2,276,726	2,390,562	2,510,090	2,635,594	2,767,374
Recurring Expenses	2,191,555	2,204,512	2,269,331	2,336,069	2,404,782	2,475,529
Net Revenue Prevention	**($23,245)**	**$72,214**	**$121,231**	**$174,021**	**$230,812**	**$291,845**

Training

SRFD has assigned one of its two Administrative Battalion Chiefs to serve as the Training Chief for the Department. The Training Chief is responsible to serve as the single point of responsibility for conducting all needs assessments relative to training, as well as program design, coordination, and evaluation. The value in this arrangement is that the training of all personnel is delivered in a consistent manner. This utilization of a single training officer is common among departments across the United States. The current structure of the Training & Safety Division is minimally staffed given the size of SRFD, responsibilities, and workload of the Division. Consideration should be given to reclassifying the Training Battalion Chief to a Division-level officer and adding an additional Training Captain for a total of three. This configuration will provide for enhanced accountability and the time and focus necessary for each training captain to increase training program delivery.

Emergency Management

Emergency Management for SRFD is assigned to an Emergency Preparedness Coordinator. The coordinator currently provides for overall management and delivery of emergency management activities for the City of Santa Rosa but works within the Fire Department. This is a typical arrangement within fire departments across the United States, as the emergency management function does not specifically fall under the "fire discipline" and quite often involves other aspects of a community's risk exposure (i.e., public works, law enforcement, economic exposure). ESCI reviewed the "City of Santa Rosa Emergency Operation Center Response to the 2017 Fire Storm" After-Action Review, as well as interviewed the Emergency Preparedness Coordinator as part to the site visit, to determine the current performance of the emergency management activities within the City of Santa Rosa. The current Emergency Preparedness Coordinator Indicated (and ESCI agrees) that additional staff are needed to adequately prepare for and respond to the natural and manmade disasters that threaten the city. This opinion is consistent with the After-Action Review.

Administrative Support

SRFD currently operates with a limited number of administrative support. The positions assigned to administration include: one Sr. Administrative Assistant, one Administrative Secretary, one Administrative Technician, one Community Development Technician, one Research & Program Coordinator, and one Department Application Specialist. These six positions provide critical support to all of the Department's administrative functions. In addition, during extreme emergency situations, administrative staff are called upon to staff numerous duties in support of operations and logistics. One cannot overstate the value of administrative support as these staff members free up administrative staff to concentrate on other areas of operation. The level of administrative support is marginal for an organization the size of SRFD.

Emergency Response Staffing

It takes an adequate and properly trained staff of emergency responders to put the appropriate emergency apparatus and equipment to its best use in mitigating incidents. Insufficient staffing at an operational scene decreases the effectiveness of the response and increases the risk of injury to all individuals involved.

One can break down critical tasks performed at a fire into two key components—life safety and fire flow. Life safety tasks are based on the number of building occupants and their location, status, and ability to take self-preservation action. Life safety-related tasks involve search, rescue, and evacuation of victims. The fire flow component involves delivering sufficient water to extinguish the fire and to create an environment within the building that allows firefighters' entry.

The number and types of tasks needing simultaneous action will dictate the minimum number of firefighters required to combat different types of fires. In the absence of adequate personnel to perform concurrent action, the Command Officer must prioritize the tasks and complete some in chronological order, rather than concurrently. These tasks include:

- Command
- Scene safety
- Search and rescue
- Fire attack
- Water supply
- Pump operation
- Ventilation
- Back-up/rapid intervention

The first 10 minutes are the most crucial period in the suppression of a fire. The timing of this 10-minute period does not start when the firefighters arrive at the scene but begins when the fire initially starts. How effectively and efficiently firefighters perform during this period has a significant impact on the overall outcome of the event. This general concept is applicable to fire, rescue, and medical situations. Critical tasks must be conducted in a timely manner in order to control a fire or to treat a patient. SRFD is responsible for ensuring that responding companies are capable of performing all of the described tasks in a prompt, efficient, and safe manner.

Setting the staffing levels is a determination made at the community level based on risk, capability, and citizen expectations and is guided by national recommendations such as those found in National Fire Protection Association Standard 1710.

The following figure illustrates the recommended staffing levels for various types and levels of emergencies.

Figure 22: Staffing Recommendations Based on Risk

Incident Type	High Risk	Moderate Risk	Low Risk
Structure Fire	29	15	6
Emergency Medical Service	12	4	2
Rescue	15	8	3
Hazardous Materials	39	20	3
Wildland Fire	41 (Red Flag level)	20	7

When a fire escalates beyond what the initial assignment can handle, or if the fire has unusual characteristics such as a wind-driven fire or has been accelerated with a highly flammable compound, additional personnel are needed. Other types of scenarios may not include fires but rather mass casualty incidents, explosions, tornadoes, etc., that may need additional staffing. It proves difficult or impossible to staff for these worst-case incidents; they require a strong mutual aid or automatic aid plan for assistance.

The staffing level that SRFD provides is a decision based on a risk assessment and community expectations. A funding level must be established that matches the fire department's deployment capability to mitigate the risk to a level that meets the community's expectations. This funding level is developed through the political process of citizens meeting with local legislators and expressing approval of the level of service being received or indicating improvements need to be made and the level of additional financial support they are willing to bear to obtain satisfaction with the services. This additional financial support is usually in the form of assessing property or other taxes to generate the necessary revenue. No mandated requirement fits all possible situations although NFPA 1710 provides guidance regarding the number of personnel and apparatus required for typical scenarios. Incidents may escalate beyond the capability of the initial assignment of units and staff, resulting in additional apparatus and personnel required. It may prove difficult or financially impossible to staff for those worst-case incidents. In those instances, a strong mutual or automatic aid system is required.

On a typical day in Santa Rosa, as in most jurisdictions, the full authorized staffing is not available due to vacations, scheduled training, sick time, or other types of leave. SRFD has determined that the minimum acceptable department staffing is 42 operations personnel required on each shift.

The following figure depicts SRFD's emergency staffing—with all authorized positions filled for the combined three shifts that SRFD employs.

Figure 23: SRFD Emergency Response Staffing

Position	Number
Battalion Chief	3
Fire Captain	33
Engineer	39
Firefighter	42
General Fund total	117
Measure O Captains	3
Measure O Engineers	3
Measure O Firefighters	3
Measure O total	9
TOTAL	**126**

SRFD is authorized at 117 emergency response personnel for EMS, rescue, and fire suppression activities funded from the City's General Fund and another nine under the Measure O system, for a total of 126 response personnel. At the end of FY 2018, eight of the authorized 123 firefighters in the Fire Operations Division were vacant. This means 6 percent of the response force positions, primarily in the firefighter rank, are vacant. No less than 42 operations personnel are on-duty at all times. The resident population of the SRFD service area is 181,900. SRFD provides its community with 0.73 career firefighters per 1,000 population. This compares to an average of .99 firefighters per 1,000 population for cities of comparable size in Western states.[3]

The suppression personnel are assigned to one of three shifts, each working a nominal 48-hours on/96-hours off and working a total of 2,920 hours each year.

The Department operates from 10 stations, each staffed with full-time personnel. The following figure shows the staffing configuration at full utilization of authorized personnel and the minimum staffing levels for each station. In an e-mail exchange between Chief Gossner and ESCI, the Chief indicated nine extra positions existed when considering the authorized levels of 123 positions in Operations as well as an additional nine operations positions plus a Training Captain funded from Measure O. Three of those extra positions were assigned to ME06 to run as a four-person engine to mitigate the long second-due apparatus times in their district and the loss of Station 5, and to provide for the two-in/two-out structure fire-fighting requirement.

[3] *NFPA Research—Career Firefighters per 1,000 population for All Career Fire Departments, 2013–2015.*

Figure 24: Station Units and Staffing Levels

Station	Apparatus	Personnel		
		Rank	Fully Staffed	Minimally Staffed
1	Command	Battalion Chief	1	1
	Engine 1	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
		Extra Firefighters	2	
	Truck 1	Captain	1	1
		Engineer	2	2
		Firefighter	1	1
	Rescue 1—cross-staffed			
	Water Tender 1—cross-staffed			
2	Engine 2	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
	Truck 2	Captain	1	1
		Engineer	2	2
		Firefighter	1	1
3	Engine 3	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
4	Engine 4	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
5	Engine 5	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
6	Engine 6	Captain	1	1
		Engineer	1	1
		Firefighter	2	2
7	Engine 7	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
8	Engine 8	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
10	Engine 10	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
	Haz-Mat 10—cross-staffed			
11	Engine 11	Captain	1	1
		Engineer	1	1
		Firefighter	1	1
Total On-Duty Personnel—Operations and Measure O Positions			**42**	**40**

Base Compensation

The Santa Rosa Fire Department provides a compensation system for each job classification in the Operations Division of the organization, from the new recruit to the Captain. The Santa Rosa Fire Department Unit 2 (Operations) fire personnel have been operating without a contract; however, the terms of the prior agreement remain in effect. Each pay range within each rank is based on experience and other factors.

A new Memorandum of Understanding (MOU) between the City of Santa Rosa and its Unit 2 Firefighting employees was adopted by the City Council on April 9, 2019. The MOU is effective July 1, 2017, and expires June 30, 2020. Terms of the agreement provide for a 3.5 percent salary increase in each of the first two years and a 2.5 percent increase in the third year. The salary increases are effective March 31, 2019, and are not retroactive. In lieu of the retroactive application of the salary increase, one-time payments will be made but are not to be included in the employee's pension calculations. The agreement also results in a net increase in annual benefits costs of approximately $425,000.

The MOU addresses premium payments for certain achievements or participation in certain activities. Included in these premiums are incentives for bilingual abilities, education, longevity pay, SCBA Program Manager pay, Telestaff Hiring Captain, voluntary response payments, Acting Duty Chief Assignment, Call Back, and a variety of other position-specific incentives.

Education and Certification Pay

In addition to the base compensation provided to the employees of all divisions of the fire department, incentive pay is awarded for specific education, certification, and other attributes valued by the Department and the City. All incentive premiums are calculated as a percentage of base pay. The new MOU removed the six-year waiting period to receive premiums. The Department noted that it is transitioning to a FF/PM rank through attrition but that there were still six captains and eight engineers that continued to receive the paramedic incentive pay.

Figure 25: Education and Certification Pay for SRFD

Criteria	Amount
Bilingual Incentive Pay	3%
Education Incentive Pay with six years of employment AA/AS or 60 semester units BA/BS or 120 semester units	 3% 6%
Hazardous Material Specialists or Technicians	3%
Paramedic Premium Pay, Firefighter Rank only	10%
Longevity pay	2%

Policies and Types of Leave

Eligibility of Overtime

The City of Santa Rosa has elected a 24-day work period to comply with FLSA for Recruit Firefighters, Firefighters, Fire Engineers, and Fire Captains. Employees covered under the expired Labor Agreement are designated as members of Unit 2. Unit 2 employees assigned to fire stations work a 48/96 work cycle, with the workweek defined as 56 hours. Overtime shall be paid at one and one-half times the base rate of pay.

Vacation Pay

Operations Division Firefighters, Engineers, and Captains working 48/96 work cycles are awarded vacation time based on hours of service. The following figure indicates vacation hours according to years of service.

Figure 26: Vacation Earned by Years of Service by SRFD Employees Assigned to Fire Stations

Classification	Years of Service	Hours Earned Monthly	Maximum Earned Annually	Maximum Hours of Accumulation
Fire Captain Fire Engineer Firefighter	1–4	10	120	360
	5–10	16	192	576
	11–14	20	240	720
	15–19	22	264	792
	20–24	24	288	864
	25 or more	25	300	900

Sick Leave

Each full-time employee assigned to fire stations shall earn 12 hours of sick time on a monthly basis with no maximum limit of accrued sick time.

Holiday Pay

The City of Santa Rosa observes 12 holidays. Operations Division employees assigned to fire stations required to work on holidays will be compensated at the overtime rate for hours worked. The previous policy on holiday pay allowed that Firefighters, Engineers, and Captains may, in lieu of observing holidays, receive compensation for designated holidays without regard for when the holidays occur or whether the employee actually works on the holiday. This payment shall be made as a lump sum payment of 168 hours multiplied by the employee's regular hourly rate of pay. This payment shall be included with the first paycheck in December. A Fair Labors Standards Act lawsuit successfully challenged this methodology and was settled in May 2019. The revised policy resulting from the FLSA lawsuit eliminates the lump sum payments and replaces those payments with an additional 5.8% increase in each Unit 2 employee's base pay.

Funeral and Bereavement Leave

Employees in the Operations Division assigned to fire stations my use up to 56 hours of bereavement time for the death of an immediate family member.

Relief Scheduling and Overtime

SRFD has determined that minimum staffing for the Department's operations is 42 personnel per shift. The employees are assigned to one of three shifts and work a 56-hour workweek schedule, for a total of 2,912 hours annually. In addition, SRFD employees receive an average of 240 hours of vacation annually; vacation leaves are scheduled, must be approved by the City, and are allowed with due regard for the employee's needs and the City's need to provide services.

Upon the occurrence of a vacancy on a shift for any reason, any available on-duty shift personnel above the required minimum staffing level of 42 may be utilized to provide coverage. Should there be no personnel above the minimum staffing level of 42, off-duty employees may be held over to cover the shift or called back to provide coverage. All hours worked in these situations receive compensation at a minimum of one and one-half times the employee's base pay rate. Use of vacation leave of 240 hours per employee per year has the net effect of reducing an employee's time on shift from 2,912 hours to 2,672 actual hours worked; the 240 vacation hours must be backfilled by other employees.

Compounding this problem is the incidences of unscheduled absences for sick leave, military leave, bereavement, jury duty, and time off for training, all of which create an additional physical burden on the remaining employees and a financial burden for the City to provide the funding for the added overtime costs. For SRFD, the eight unfilled operations positions create a situation with no solution other than to backfill them with off-duty firefighters, using overtime payments to meet the required minimum staffing level. The result is an overtime expenditure that has averaged approximately 28 percent of salaries for a position working the minimum required amount of 2,912 hours the past three years but escalated to approximately 39 percent in FY 2018.

Financial Impact of Current Deployment Model

With authorized employees totaling only six persons above the minimum staffing of 126 (three shifts of 42 each), SRFD does not have sufficient emergency operations personnel to cover virtually any time off, scheduled or unscheduled, without incurring overtime costs.

Each hour of overtime creates an average premium of $17.20 in premium costs. This premium increases the average hourly rate to approximately $51.60 per hour worked by the SRFD firefighters. Within the average Operations Division, a firefighter's hourly rate of approximately $34.40 and the same employee's overtime rate of $51.60 means that a 48-hour shift at regular time would be paid at approximately $1,651 but cost the City $2,477 at overtime rates. An additional consideration is the added cost of pension and future healthcare benefits based on compensation amounts.

Information provided by the SRFD discloses Operations Division overtime totaled 54,288 hours in FY 2018. Further analysis indicates 25,022 hours, or 46.09 percent, were required for scheduled vacation hours; 10,647 hours, or 19.61 percent, were for sick-time coverage; and 14,995 hours, or 27.62 percent, were required due to employee injury coverage. A review of the analysis for prior years indicates FY 2018 was approximately 6,419 hours higher than the previous four years' averages.

Financial Projections

The City of Santa Rosa Finance Department prepares a long-range financial forecast in conjunction with the annual budget presentation. The forecast serves as a financial planning tool to provide information for future decision making. The forecast is updated annually. ESCI has reviewed the forecast included with the FY 2019 budget and incorporated that information into its financial projections. These projections assume a "status quo" scenario with minimal changes in services provided by the City. The forecast recognizes a structural deficit for the foreseeable future.

Revenue

Sales tax revenues were estimated by the City's revenue consultant, MuniServices, using a "most likely" scenario. The information was based on local sales tax data to which a 3 percent annual growth factor was applied. Measure P is the special sales for primary City services and increases in conjunction with the local sales tax. Similar to sales tax, property tax is projected by MuniServices to increase 3 percent in FY 2020 and 2 percent annually thereafter. A utility user's tax is forecast to grow 1 percent annually.

Expenditures

Most City employees are working under approved Memorandum of Understanding contracts with expiration dates through June 30, 2020. FY 2019 budgeted salaries include a 3 percent cost of living adjustment, and the FY 2020 projected salaries include a 2.5 percent cost of living adjustment. There is no cost of living adjustments projected beyond FY 2020, but future years include a 1 percent growth rate for merit increases. Benefit costs include health insurance, dental/vision insurance, retirement costs, including the 4 percent contribution to the Pension Obligation Bond and the 1 percent contribution to the Unfunded CalPERS Liability. Benefits also include payments for Medicare, unemployment insurance, and life & disability insurance. Health insurance costs are projected to increase 6 percent annually throughout the five-year projection period. Dental/vision insurance is projected to increase at a 3 percent annual rate. Retirement costs were projected using rates provided by CalPERS, and the growth rate was held flat for years beyond those included in the CalPERS actuarial reports. The other benefits are projected to grow at 1 percent annually. The Unit 2 Firefighters reached an agreement with the City on a new Memorandum of Understanding. The agreement became effective March 31, 2019, and included an annual 3.5 percent salary increase for the first two years: July 1, 2017, and July 1, 2018. This is effectively a 7.1225 percent increase effective March 31, 2019. An additional 2.5 percent increase will begin July 1, 2019, and the contract expires June 30, 2020. There will be no "backpay" for the period from July 1, 2017, through March 31, 2019, but rather lump-sum payments of between $5,000 and $6,500, depending on rank, will be awarded. Negotiated benefit offsets include increased employee CalPERS contributions of 1.5 percent and reduced health insurance costs to move all employees to a more cost-effective program.

Services and supplies are projected to increase 2 percent annually, with exceptions including IT costs increasing at 3 percent and insurance costs increasing 5 percent annually. General Fund capital projects assume no growth in future years.

General Fund transfers in from other funds are not expected to change during the projection period. General Fund transfers out were projected dependent upon the nature of the transfer with debt-service related transfers dependent on the payment schedule. Those transfers based on salaries and benefits were anticipated to increase 2 percent annually.

It remains prudent for any business to maintain adequate reserves to be prepared for changes in the operating environment. This proves more important in a government environment, where revenue sources are not readily available to offset the impact of revenue losses or unexpected expenditure requirements. The City Council has established a goal of 15 percent of annual expenditures as a reserve balance.

The following figure shows the General Fund projected cash flows and ending fund balance through FY 2024.

Figure 27: City of Santa Rosa General Fund Projected Cash Flows, Adopted FY 2019 Budget–FY 2024

Description (000)	FY June 30,					
	Budget 2019	2020	2021	2022	2023	2024
Property Tax	25,831	26,600	27,100	27,900	28,700	29,600
Sales Tax	49,609	41,700	42,900	44,200	45,500	46,900
Utility User's Tax	9,361	9,500	9,500	9,600	9,700	9,800
Other Taxes	39,522	49,700	50,700	51,800	52,900	54,000
Total Tax Collections	**124,323**	**127,500**	**130,200**	**133,500**	**136,800**	**140,300**
Charges for Services	27,559	25,600	26,100	26,700	27,300	27,800
Licenses & Permits	2,112	1,800	1,800	1,800	1,900	1,900
Fines & Forfeitures	1,684	1,700	1,800	1,800	1,800	1,900
Intergovernmental	1,953	2,000	2,000	2,000	2,000	2,000
Other Collections	1,667	3,000	3,000	3,000	3,000	3,000
Investment Earnings	500	500	500	500	500	500
Transfers In	2,807	2,800	2,700	2,600	2,600	2,600
Total Other Receipts	**38,282**	**37,400**	**37,900**	**38,400**	**39,100**	**39,700**
Total General Fund Receipts	**162,605**	**164,900**	**168,100**	**171,900**	**175,900**	**180,000**
Salaries	85,500	87,200	88,000	88,800	89,600	90,400
Retirement	28,000	31,300	34,800	37,900	40,500	42,400
Healthcare	14,200	15,000	15,900	16,900	17,900	19,000
Other Benefits	6,800	6,900	7,000	7,200	7,300	7,400
IT Costs	4,800	4,900	5,000	5,200	5,300	5,500
Insurance	1,600	1,700	1,800	1,900	2,000	2,100
Services and Supplies	24,400	25,000	25,600	26,100	26,600	27,200
O&M Projects	4,393	2,800	2,800	2,800	2,800	2,800
Transfers Out	7,839	7,400	7,500	7,600	7,600	7,700
Total Expenditures	**$177,532**	**$182,200**	**$188,400**	**$194,400**	**$199,600**	**$204,500**
Revenues Over (Under) Expenditures	**(14,927)**	**(17,300)**	**(20,300)**	**(22,500)**	**(23,700)**	**(24,500)**
Est. Beginning General Fund Balance	25,500	10,573	(6,727)	(27,027)	(49,527)	(73,227)
Ending General Fund Balance	**10,573**	**(6,727)**	**(27,027)**	**(49,527)**	**(73,227)**	**(97,727)**

Santa Rosa Fire Department Financial Projections

The criteria for developing the fire department forecast are identical to those used in the City of Santa Rosa financial forecast. As such, recognizing that the financial projections for the City's General Fund produce a negative cash flow, separate financial projections for the Department are not relative.

Salaries and Benefits

The City Council approval of the Unit 2, Firefighting Memorandum of Understanding, will have a significant impact on the SRFD operating budget beginning in FY 2019 and continuing forward. The impact in the current FY 2019 adopted budget is projected to mark an increase in personnel costs of approximately $1,093,000. The estimated increase each year forward stands at $2,187,000. Both amounts include reductions in City expenditures for health insurance programs and a reduced City share of contributions to employee retirement programs through CalPERS. Under the new MOU, Workers Compensation is projected to increase as well as Retiree Pension Liability.

Services and Supplies

For projection purposes, services and supplies are anticipated to increase 2 percent annually through FY 2024.

Capital Expenditures

The City of Santa Rosa is experiencing a structural deficit in its General Fund budget, making it inappropriate for ESCI to include capital expenditures in the fire department's budget in the projection period.

The following figure projects the operating expenses of SRFD from the FY 2019 budget, revised for the new Unit 2, Firefighting MOU, through the end of the five-year projection period.

Figure 28: Projected Status Quo Operating Costs for the SRFD, Revised FY 2019–FY 2024

Description	FYE June 30,					
	Revised 2019	2020	2021	2022	2023	2024
Administration	618,148	590,764	608,487	626,742	645,544	664,910
Operations, Administration	793,101	816,894	841,401	866,643	892,643	919,422
Operations, Line Positions	13,454,341	14,725,485	15,167,249	15,622,267	16,090,935	16,573,663
Prevention	1,240,449	1,250,788	1,288,312	1,326,961	1,366,770	1,407,773
Measure O	1,295,023	1,424,896	1,467,643	1,511,672	1,557,022	1,603,733
Subtotal Salaries	17,401,062	18,808,827	19,373,092	19,954,285	20,552,913	21,169,501
Overtime	3,204,300	3,500,000	3,605,000	3,713,150	3,824,545	3,939,281
Other Compensation	1,381,481	1,100,000	1,133,000	1,166,990	1,202,000	1,238,060
Total Salaries	21,986,843	23,408,827	24,111,092	24,834,425	25,579,458	26,346,841
Medicare	259,077	339,428	349,611	360,099	370,902	382,029
Workers' Compensation	1,324,197	1,513,441	1,558,844	1,605,610	1,653,778	1,703,391
Health Insurance	3,590,054	3,266,351	3,364,341	3,465,271	3,569,230	3,676,306
Retirement	3,434,731	2,912,910	3,000,297	3,090,306	3,183,015	3,278,506
Retiree Health Benefits	1,008,969	846,955	872,364	898,535	925,491	953,256
Other Benefits	348,589	366,443	377,436	388,759	400,422	412,435
Risk & Health Administration	288,178	138,000	138,000	138,000	138,000	138,000
Retirement Liability ARC	4,202,087	4,543,845	4,622,640	5,184,960	5,666,320	5,973,440
Benefits	14,455,882	13,927,373	14,283,534	15,131,541	15,907,158	16,517,363
Unit 2, Firefighters Contract	1,093,077					
Salaries and Benefits	37,535,802	37,336,200	38,394,626	39,965,965	41,486,616	42,864,204
Services	5,837,693	5,875,299	5,992,805	6,112,661	6,234,914	6,359,613
Supplies	424,330	511,965	522,204	532,648	543,301	554,167
Services & Supplies	6,262,023	6,387,263	6,515,009	6,645,309	6,778,215	6,913,779
Capital	948,500	-	-	-		
Total Fire Department	**44,746,325**	**43,723,464**	**44,909,635**	**46,611,274**	**48,264,831**	**49,777,984**

On a status quo basis for the SRFD, total costs are projected to increase by approximately 11.25 percent between the FY 2019 revised budget and the FY 2024 projected amounts.

Alarm Assignments

To ensure sufficient personnel and apparatus are dispatched to an emergency event, the following first alarm response assignments have been established. "Total Staffing Needed" is the number identified in the Critical Tasking Analysis as shown in the 2016 Standards of cover and Deployment Study. The number of personnel and apparatus required to mitigate an active and complex working incident will require additional resources, both above and beyond the numbers listed in the following figure.

Figure 29: Alarm Assignments

Structure Fire, Hydranted

Unit Type	Number of Units	Total Personnel
Engine	3	9
Truck	1	4
Battalion Chief	1	1
Total Staffing Provided		**14**
Total Staffing Needed		**14**

Structure Fire, Non-Hydranted

Unit Type	Number of Units	Total Personnel
Engine	3	9
Tender	1	2
Truck	1	4
Battalion Chief	1	1
Total Staffing Provided		**16**
Total Staffing Needed		**16**

Wildland Fire, High Risk

Unit Type	Number of Units	Total Personnel
Engine	2	6
Battalion Chief	1	1
Total Staffing Provided		**7**
Total Staffing Needed		**7**

Wildland Fire, Low Risk

Unit Type	Number of Units	Total Personnel
Engine	2	6
Battalion Chief	1	1
Total Staffing Provided		**7**
Total Staffing Needed		**7**

Aircraft Emergency

Unit Type	Number of Units	Total Personnel
Engine	3	9
Truck	1	4
ARRF	0	0
Battalion Chief	1	1
Total Staffing Provided		**14**
Total Staffing Needed		**14**

Hazardous Materials, High Risk

Unit Type	Number of Units	Total Personnel
Engine	3	9
Truck	1	4
Battalion Chief	2	2
Hazardous Materials Unit	1	Cross Staffed
Total Staffing Provided		**15**
Total Staffing Needed		**15**

Hazardous Materials, Low Risk

Unit Type	Number of Units	Total Personnel
Engine	3	9
Truck	1	4
Battalion Chief	2	2
Hazardous Materials Unit	1	Cross Staffed
Total Staffing Provided		**15**
Total Staffing Needed		**15**

Emergency Medical Service

Unit Type	Number of Units	Total Personnel
Engine or Truck	1	3–4
Total Staffing Provided		**3–4**
Total Staffing Needed		**3**

Major Medical Response, 10+ Patients

Unit Type	Number of Units	Total Personnel
Engine	2	6
Truck	1	4
Battalion Chief	2	2
Total Staffing Provided		**12**
Total Staffing Needed		**12**

Motor Vehicle Accident, Non-Trapped

Unit Type	Number of Units	Total Personnel
Engine or Truck	1	3–4
Total Staffing Provided		**3–4**
Total Staffing Needed		**3**

Motor Vehicle Accident, Trapped

Unit Type	Number of Units	Total Personnel
Engine	2	6
Truck	1	4
Battalion Chief	1	1
Total Staffing Provided		**11**
Total Staffing Needed		**11**

Technical Rescue, Water

Unit Type	Number of Units	Total Personnel
Engine with Boat	3	9
Truck	1	4
Battalion Chief	1	1
Total Staffing Provided		**14**
Total Staffing Needed		**14**

Technical Rescue, Rope

Unit Type	Number of Units	Total Personnel
Engine	3	9
Truck	1	4
Heavy Rescue	1	3
Battalion Chief	1	1
Total Staffing Provided		**17**
Total Staffing Needed		**14**

Technical Rescue, Confined Space

Unit Type	Number of Units	Total Personnel
Engine	3	9
Truck	1	4
Heavy Rescue	1	3
Battalion Chief	1	1
Total Staffing Provided		**17**
Total Staffing Needed		**14**

Technical Rescue, Trench

Unit Type	Number of Units	Total Personnel
Engine	3	9
Truck	1	4
Heavy Rescue	1	3
Battalion Chief	1	1
Total Staffing Provided		**17**
Total Staffing Needed		**14**

Staff Scheduling Methodology

SRFD utilizes a traditional three platoon system operating on a 48-hour shift rotation to achieve this minimum staffing of 40 and two float for a total of 42 FTEs per day. The total number of positions required per jurisdiction becomes a policy decision based on the jurisdiction's needs. The jurisdiction also then establishes the number of employees needed above the minimum to allow for vacancies due to vacation, sick, and other types of leave, yielding an overall number of full-time employees required to ensure that necessary staffing, according to policy, is available daily. This staffing methodology is very common across the Western United States for firefighters to work a 24- or 48-hour shift cycle. Studies have been undertaken and remain ongoing in an attempt to better understand the impact of this work cycle on the physiological process.[4] The science indicates that sleep is important and that going without sleep for too long or interrupting the sleep rhythm leads to physical and cognitive problems including: hypertension, cancer, ulcers, heart attack, and stroke. That said, no easy answer to the problem exists. Intuitively, the problems would be exacerbated in a busy station and lessened in a less busy station.

All personnel are trained as firefighters, with most trained at a minimum of Emergency Medical Technician (EMT) level. Fifty-four firefighters have been trained to the Paramedic level. The Department provides Advanced Life Support (ALS) services utilizing Engine and Truck Companies. Ambulance response and patient transport are currently assigned to a private contractor.

[4] *Is the firefighter 48/96 shift a health hazard? Sara Jahnke, downloaded from FireRescue1, https://www.firerescue1/fire-rehab/articles/223601018-Is-the-firefighter-48-96-shift-a-health-hazard/*

Service Demand and Incident Staffing Performance

Service delivery is the foundation of any service-oriented organization. Without an understanding of how services are organized, deployed, and managed, one cannot quantify efficiency and effectiveness. This section of the report will analyze multiple facets of the current delivery of fire services for Santa Rosa, including the identification of incidents by type and frequency, deployment analysis, system reliability, and a summary of performance. By understanding current performance and how the system functions, goals and objectives for future performance improvements can be established and implemented.

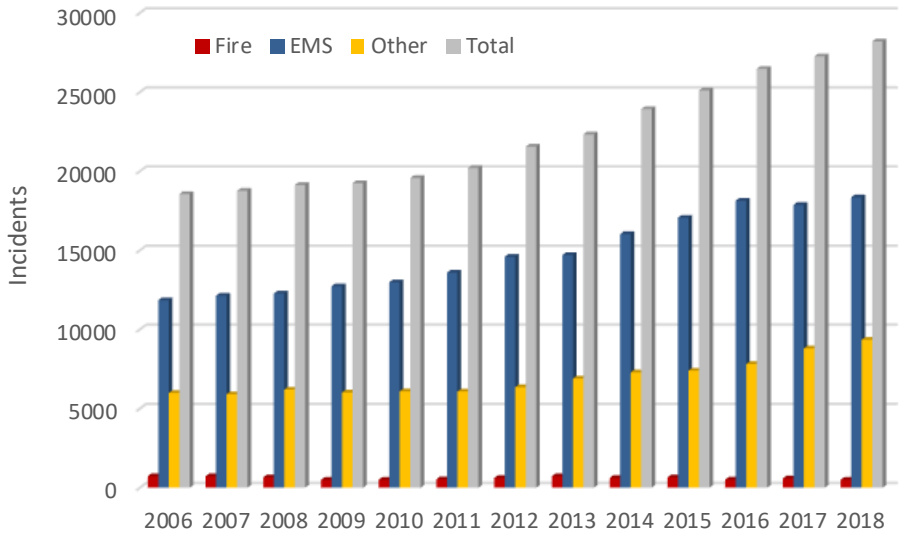
Demand Study

Incidents by Type and Frequency

The ways in which demands for service occur can follow predictable patterns over time. To identify those patterns occurring in Santa Rosa, ESCI conducted an analysis and geographic display of current service demand by incident type and temporal variation using data obtained from SRFD. Incident types were selected based on the classification system established by the National Fire Incident Reporting System (NFIRS); temporal variation, or the way service demand changes over time, analyzed was by month, by day, and by the hour.

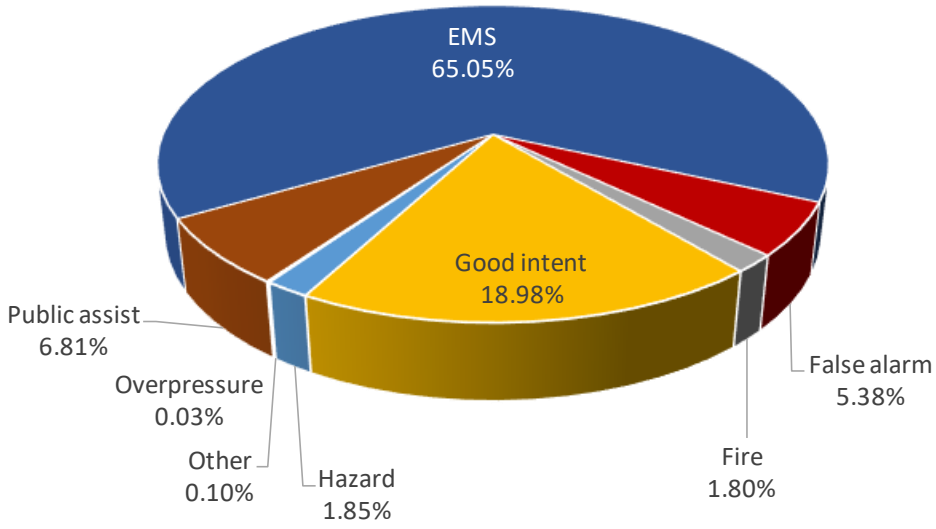
The following figure provides an historical view of service types and frequency for the past 10 years. Total incidents increased from 18,557 in 2006 to 28,202 in 2018, a 52 percent increase (an average of 4 percent per year).

Figure 30: Service Demand by Year and Type, 2006–2018



The following figure shows incidents by type for calendar year 2018, providing an illustration of service demand by type of incident.

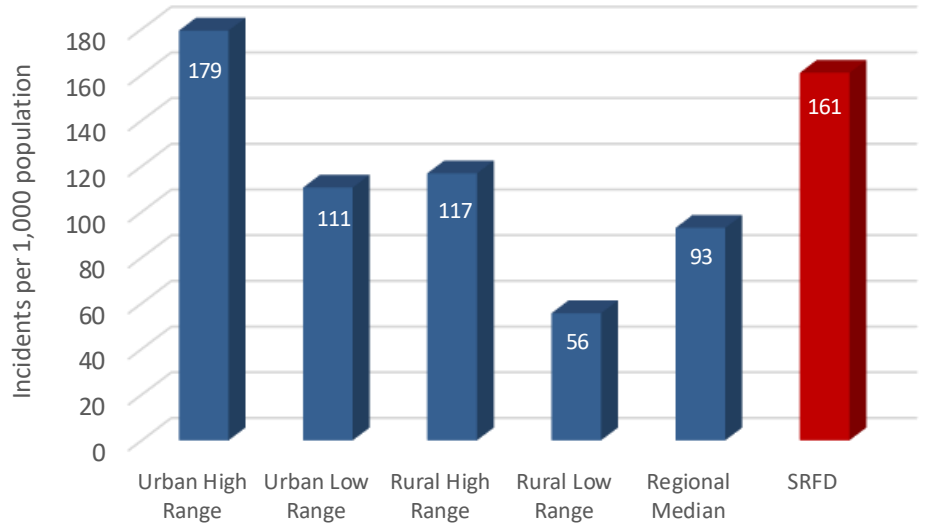
Figure 31: Service Demand by Type, 2018



As illustrated in Figure 31, EMS represents the greatest impact to service demand at 65 percent, followed by good intent calls (cancelled prior to arrival, steam mistaken for smoke, etc.), which accounted for 19.05 percent of incidents.

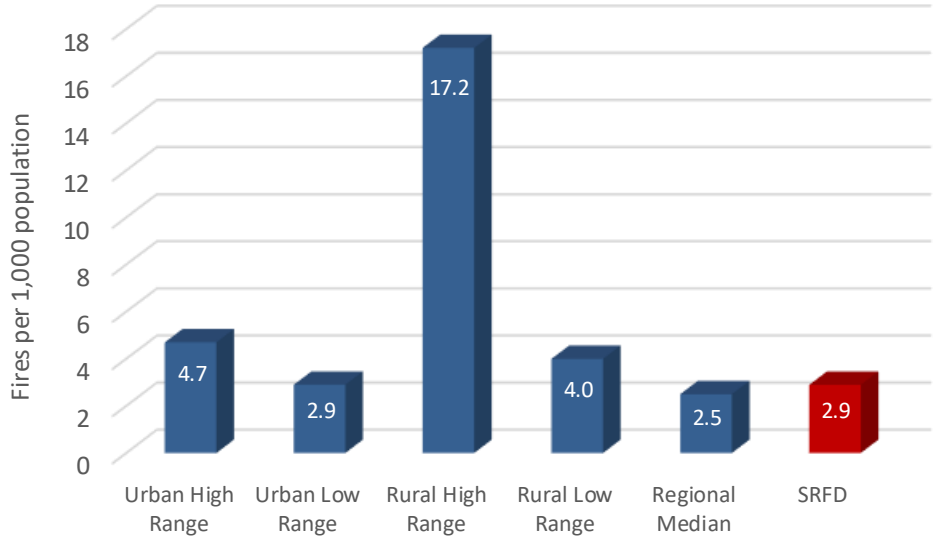
The following figure is a comparison of the total number of incidents in Santa Rosa as compared to other similar-sized urban fire departments around the country. This figure uses only incidents within the City of Santa Rosa (28,202 during 2018). SRFD has a higher than regional median number of calls per 1,000 population but lower than the urban high range.

Figure 32: Incidents per 1,000 Population, 2018



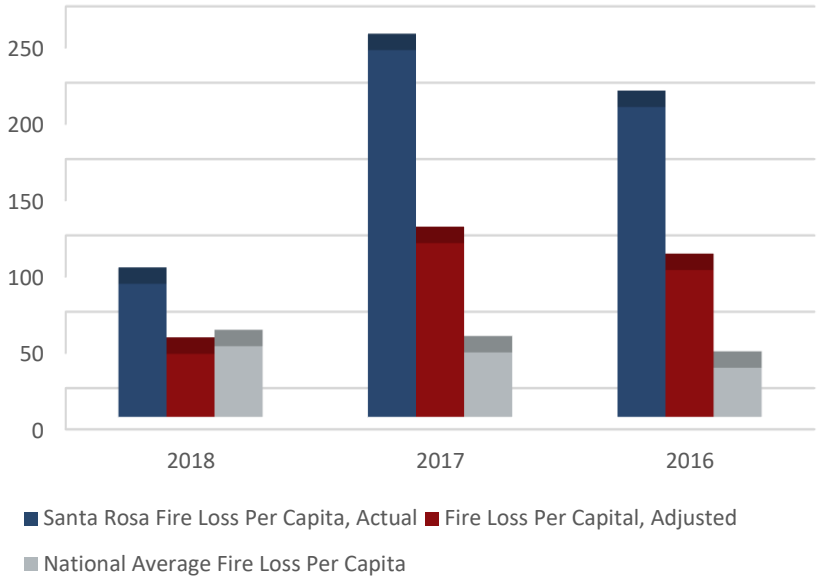
The number of fire incidents per 1,000 population in Santa Rosa is compared to national and regional comparable-sized departments in the following figure. SRFD's fires per 1,000 population is just above the regional median experience at 2.9 fires per 1,000 population. It is lower than most other urban and rural departments.

Figure 33: Fire Incidents per 1,000 Population, 2018



The next figure is fire loss per capita compared with other national departments. SRFD's fire loss is demonstrated two ways: 1) the actual fire loss and 2) an adjusted fire loss with consideration to the high property value in Santa Rosa.

Figure 34: Fire Loss per Capita, 2016-2018[5]



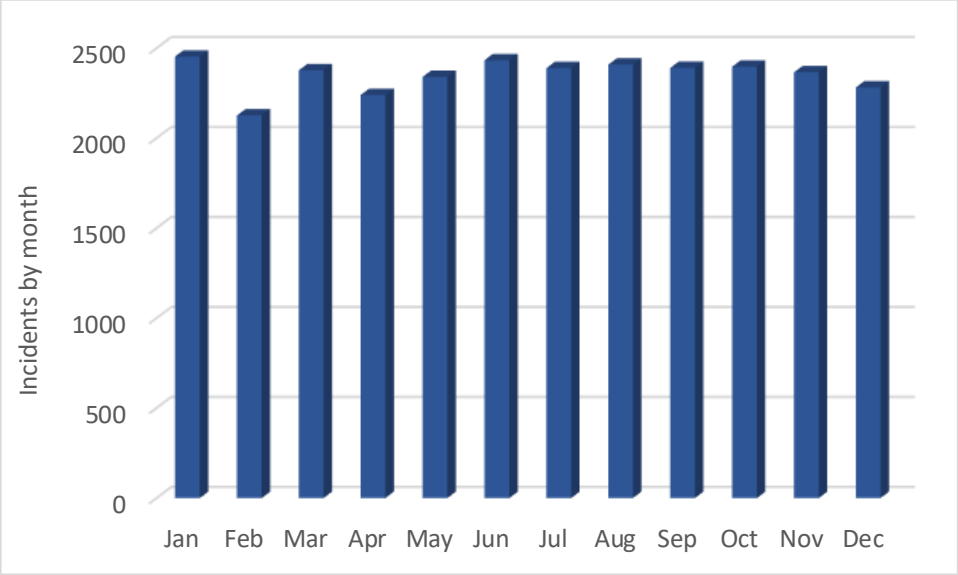
Temporal Analysis

In addition to understanding the types and frequency of service demand, an understanding of when these events occur is critical to the understanding of when system demand will most likely reach its peak. Knowing when high demand periods occur will assist administrators in determining whether staffing levels are sufficient for the demand and also in scheduling additional duties such as training, fire safety inspections, and vehicle maintenance.

The following figure shows the temporal variation of SRFD's service demand by month during 2018. There is only minor variation in workload by month.

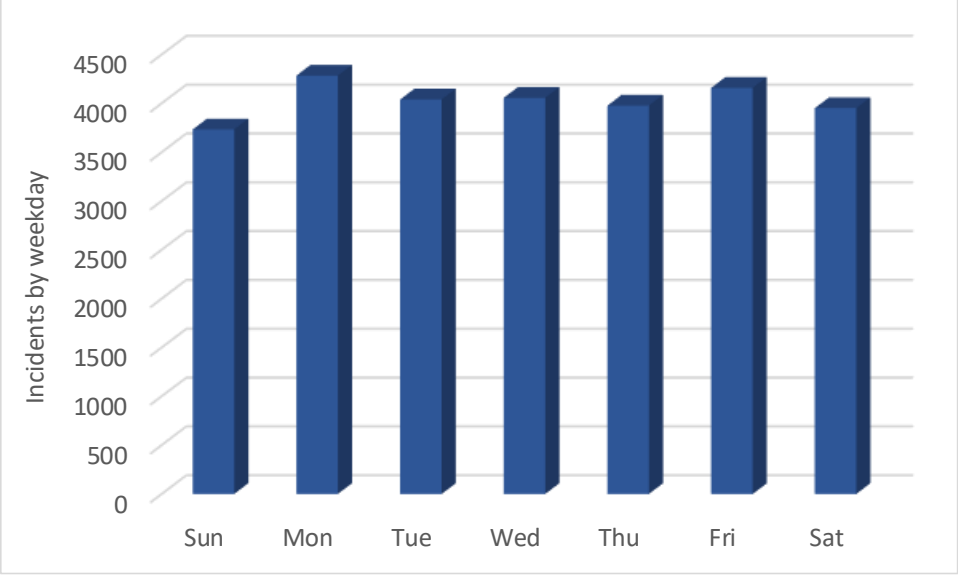
[5] Santa Rosa property value is 2.11 higher than the national average. To calculate the adjusted fire loss the actual fire loss was divided by 2.11. In this manner, SRFD and national fire loss are more comparable. Per capita for this chart is using the actual population figures for that year from the US Census.

Figure 35: Service Demand by Month, 2018



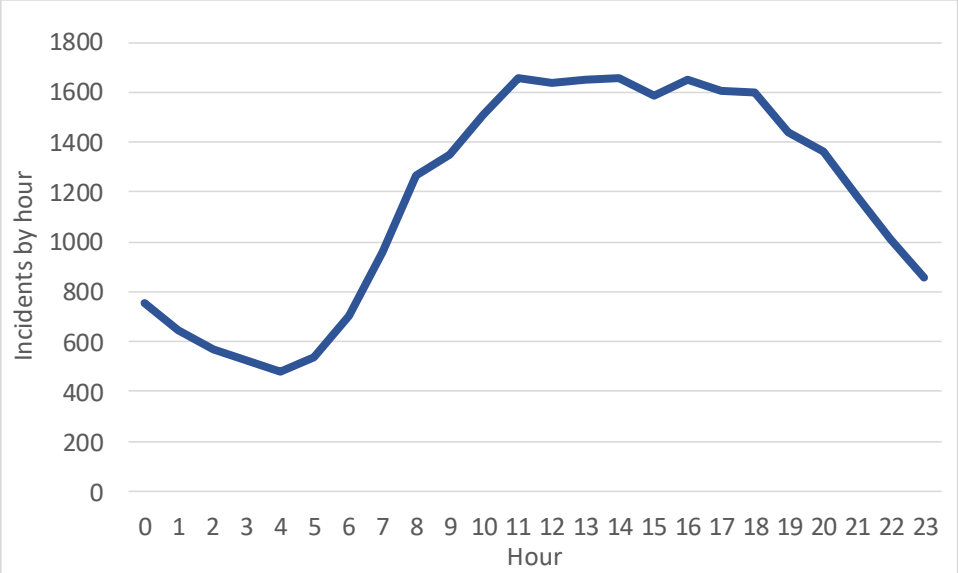
The next figure illustrates service demand by day of the week. Only minor variations in workload exist by day of week.

Figure 36: Service Demand by Weekday, 2018



Finally, the following figure shows service demand by hour. Workload increases significantly during daytime hours as compared to nighttime hours. Peak workload is between 10:00 a.m. and 8:00 p.m.

Figure 37: Service Demand by Hour, 2016



Spatial Analysis

In addition to the temporal analysis of the current service demand, it is useful to examine the geographic distribution of service demand. The following figures indicate the distribution of emergency incidents in SRFD during 2018.

The first figure displays the number of incidents per square mile within various parts of the city. The area of greatest service demand is the city's southern half.

Figure 38: Service Demand Density

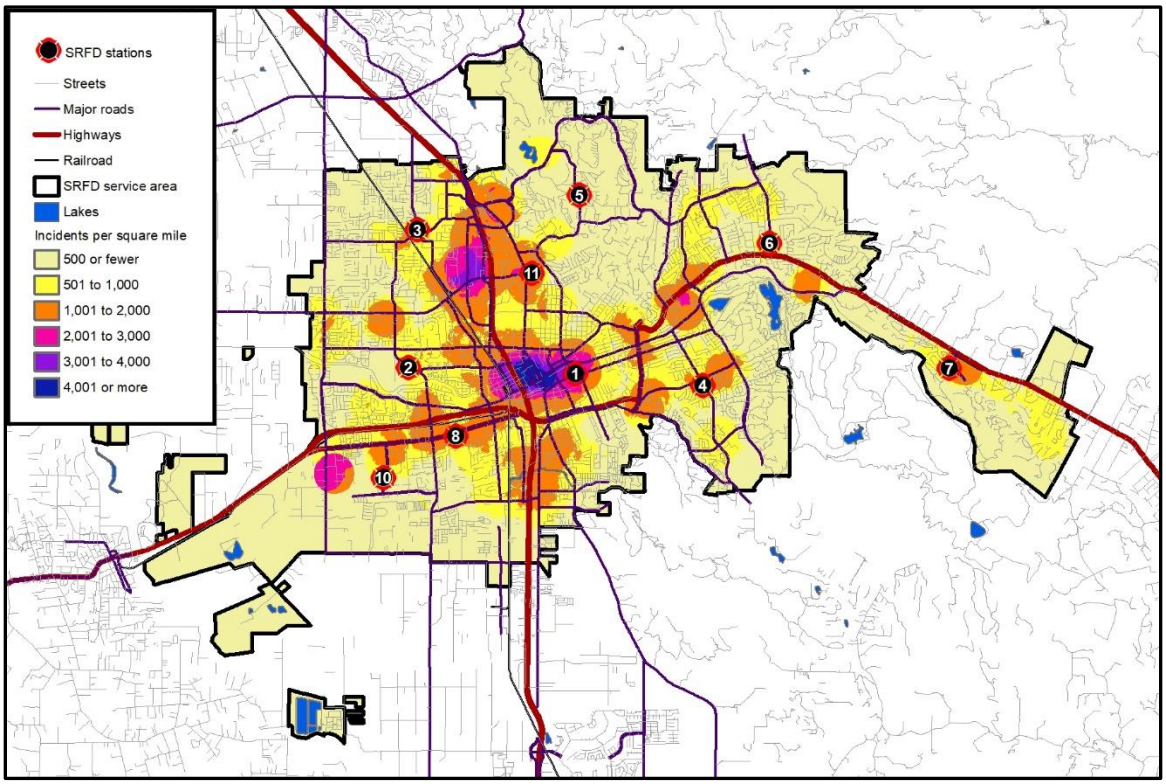
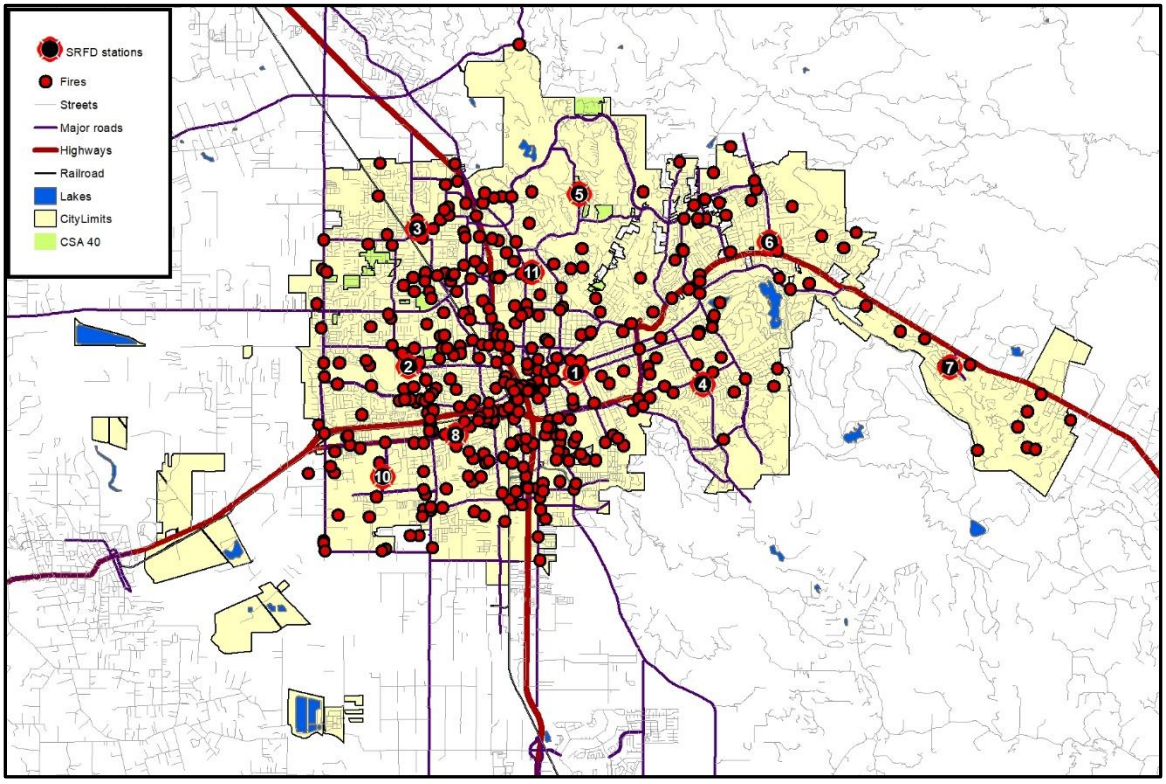


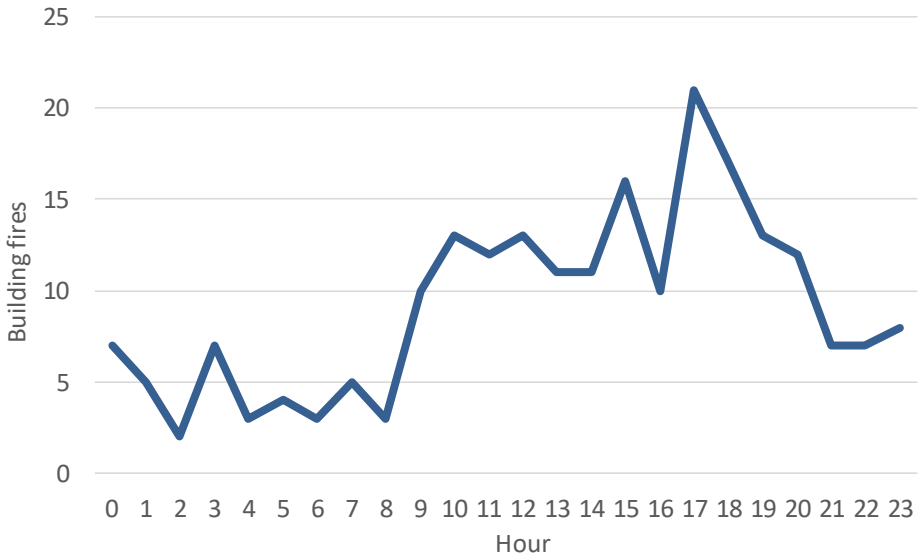
Figure 38 reflects all calls served by SRFD. Service demand can vary by area, based on incident type. The following figure displays the location of fires occurring within the SRFD service area during 2018. This illustrates that fire incidents are distributed mostly in the service area's western half.

Figure 39: Fires, 2018



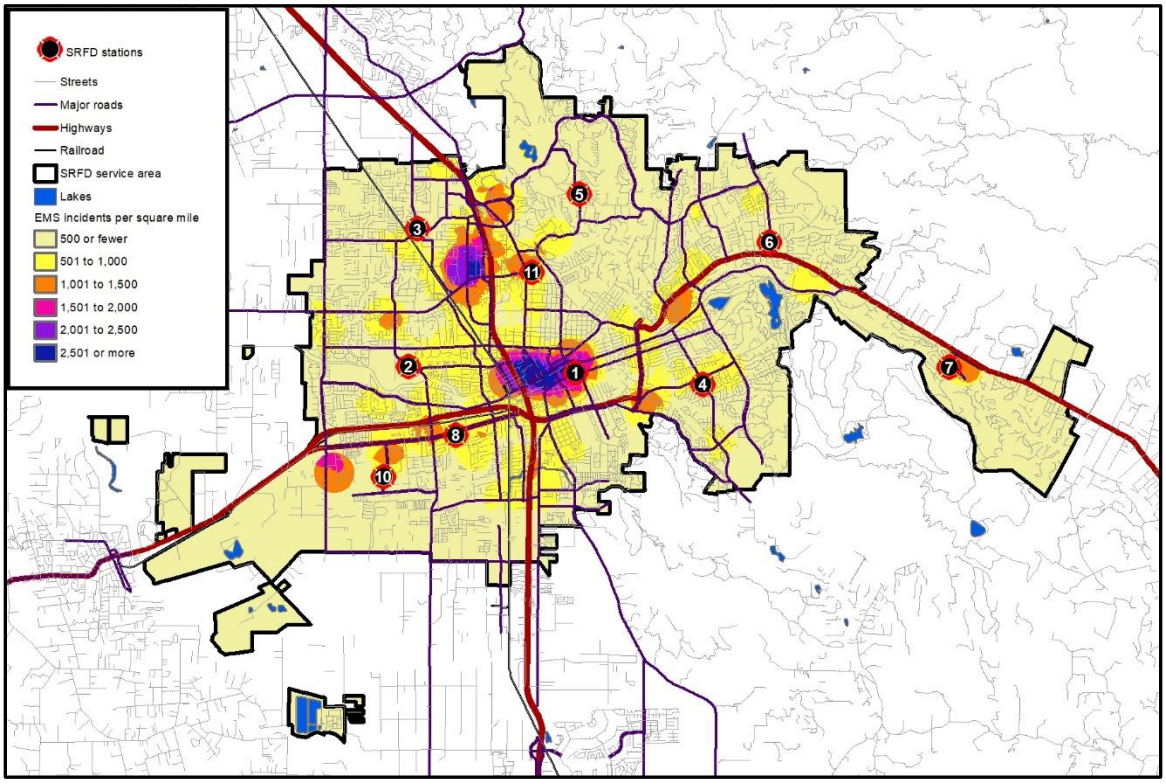
The following figure illustrates building fires by hour of day during 2018. Building fires occur more frequently during the late afternoon and evening hours.

Figure 40: Building Fires by Hour of Day, 2018



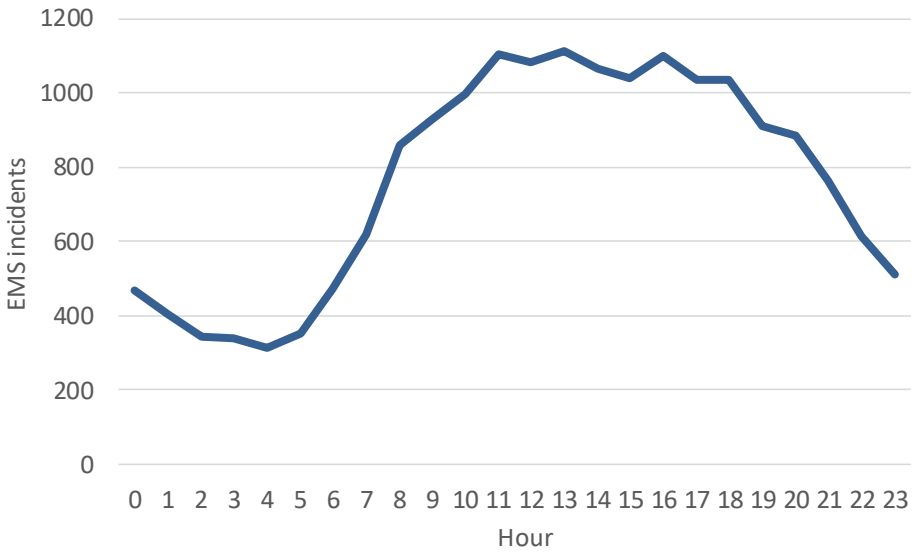
Similarly, emergency medical incidents also occur in greater concentration in areas of higher population density. The following figure displays emergency medical incidents per square mile during 2018.

Figure 41: Emergency Medical Incidents per Square Mile, 2018



EMS response workload also varies by hour of day. The following figure illustrates EMS incidents by hour during 2018. It closely follows total workload by hour of day.

Figure 42: EMS Responses by Hour of Day



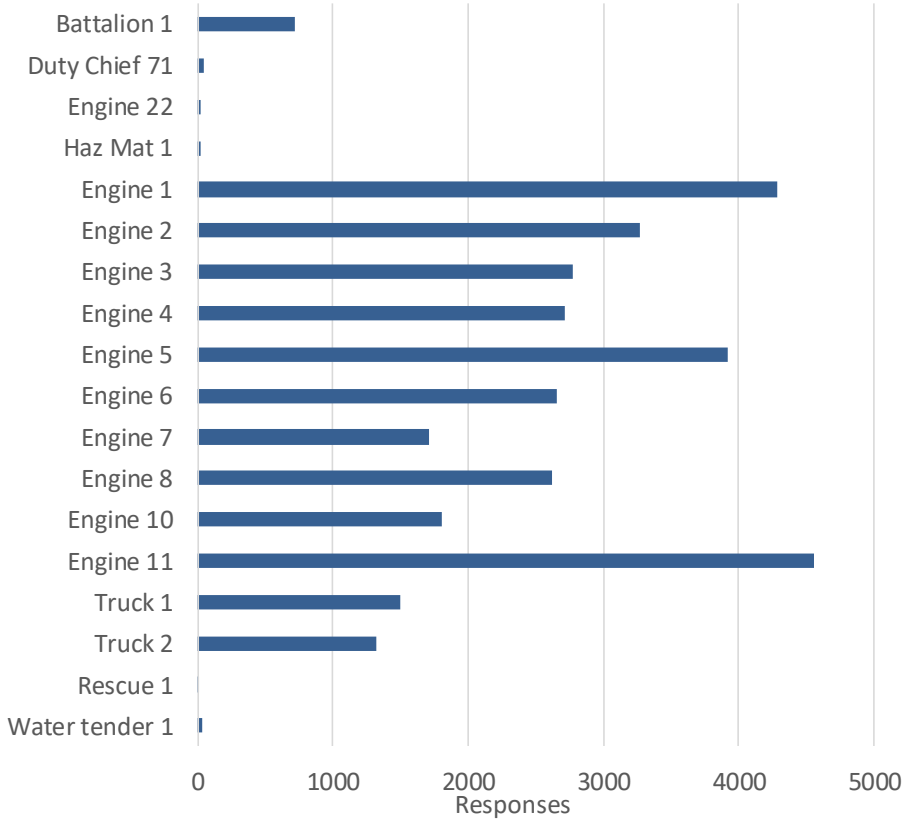
Unit Workload Analysis

A review of workload by response unit can reveal much about response time performance. Although fire stations and response units may be distributed in a manner to provide quick response, that level of performance can only be obtained when the response unit is available in its primary service area. If a response unit is already on an incident and a concurrent request for service is received, a more distant response unit will need to be dispatched. This will increase response times.

Response Unit Workload

The workload on individual response units during the study period is shown in the following figure. Individual response unit workload can be greater than the workload in its home station area. Many incidents, such as structure fires, require more than one response unit. Note that during 2018, Engine 5 was based at Station 1. Engine 5 responded to incidents in place of Engine 1 on numerous occasions. Now that Engine 5 has been moved to its new location, Engine 1 and Truck 1's response workload has increased.

Figure 43: Response Unit Workload



The amount of time a given unit is committed to an incident is also an important workload factor. The following figure illustrates the average time each unit was committed to an incident, from initial dispatch until it was available for another incident.

Figure 44: Average Time Committed to an Incident by Unit

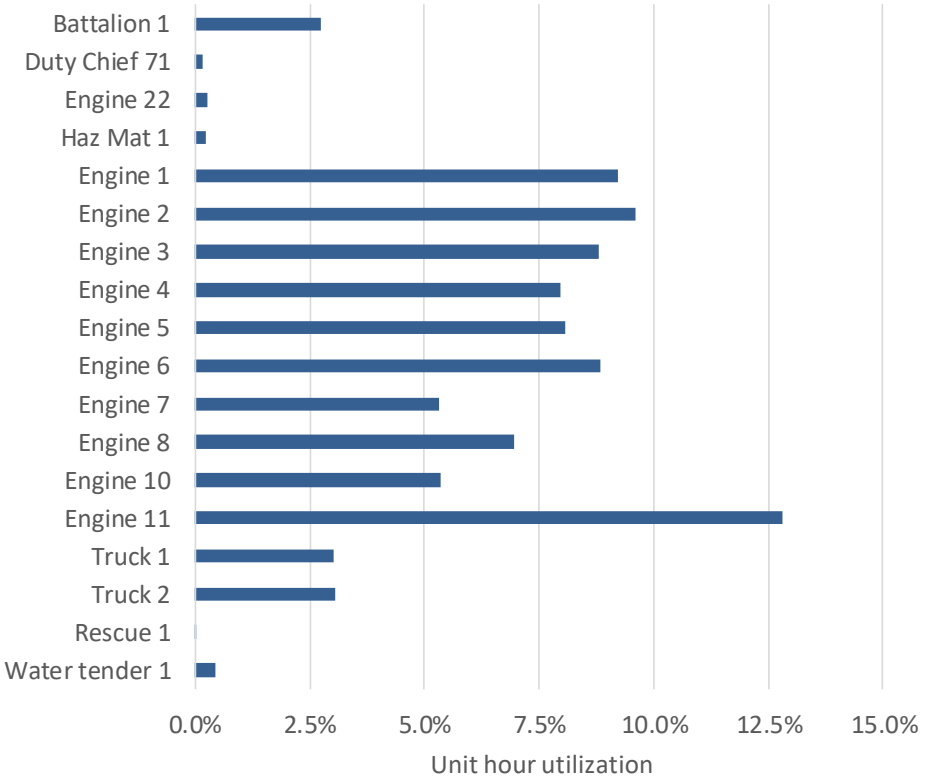
Unit	Responses	Average Minutes per Response
Battalion 1	722	20.07
Duty Chief 71	49	19.04
Engine 22	14	94.98
Haz Mat 1	14	90.37
Engine 1	4,286	11.30
Engine 2	3,271	15.40
Engine 3	2,773	16.69
Engine 4	2,717	15.39
Engine 5	3,916	10.85
Engine 6	2,651	17.55
Engine 7	1,711	16.29
Engine 8	2,616	14.00
Engine 10	1,808	15.55
Engine 11	4,563	14.75
Truck 1	1,491	10.70
Truck 2	1,314	12.23
Rescue 1	3	58.77
Water Tender 1	33	71.51

Unit hour utilization is an important workload indicator. It is calculated by dividing the total time a unit is committed to all incidents during a year divided by the total time in a year. Expressed as a percentage, it describes the amount of time a unit is not available for response since it is already committed to an incident. The larger the percentage, the greater a unit's utilization and the less available it is for assignment to an incident.

Unit Hour Utilization is an important statistic to monitor for those fire agencies using percentile-based performance standards, as does SRFD. In SRFD's case, where performance is measured at the 90th percentile, unit hour utilization greater than 10 percent means that the response unit will not be able to provide on-time response to its 90 percent target, even if response is its only activity. Note that during 2018, Engine 5 was based at Station 1. Engine 5 responded to incidents in place of Engine 1 on numerous occasions. Now that Engine 5 has been moved to its new location, Engine 1 and Truck 1's unit hour utilization has increased.

Engine 11 exceeds 10 percent unit hour utilization. It is expected that Engine 1 will exceed the 10 percent unit hour utilization now that Engine 5 has moved from Station 1. Several others are approaching that level of workload.

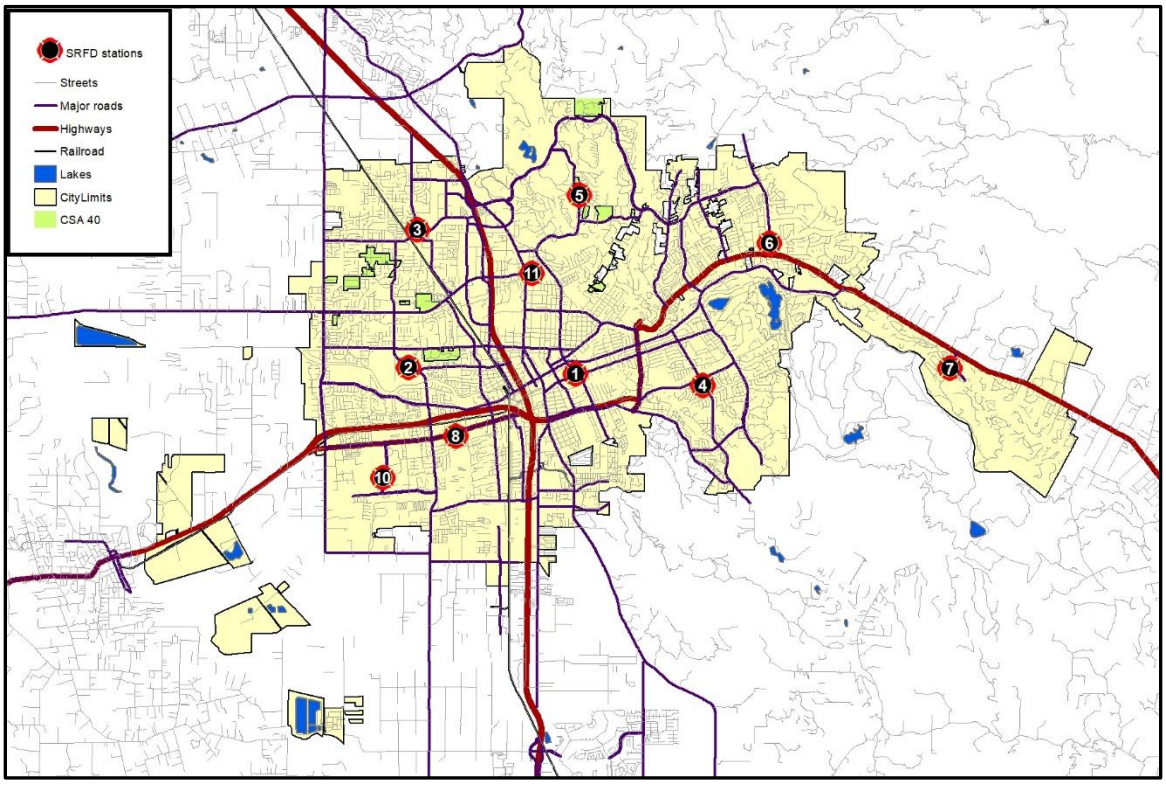
Figure 45: Unit Hour Utilization



Distribution Study

Next, an overview of the current deployment strategy, which includes facility and apparatus locations, was analyzed using Geographical Information Systems (GIS) software to identify potential service gaps and redundancies of resources. The following figure is an overview of the SRFD service area. SRFD stations and nearby adjacent agency stations are also shown.

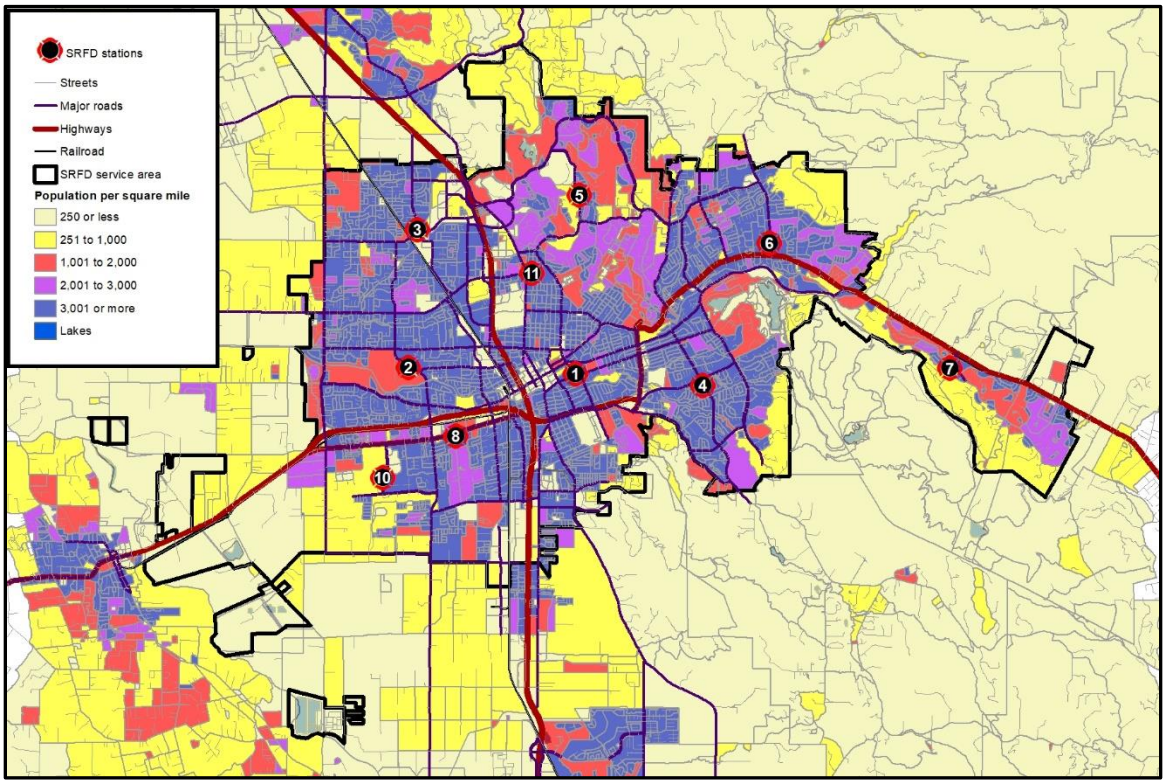
Figure 46: SRFD Service Area



The City of Santa Rosa encompasses approximately 42.7 square miles. The SRFD provides service to the city. It also provides service to the former Roseland Fire District area and county service area islands through its automatic aid agreement. SRFD staffs ten fire stations located within the city.

An important consideration for fire departments and other service delivery organizations is to understand where people are located and the population concentrations. If the majority of people live in a concentrated area, it is intuitive to anticipate that that area will also request the highest levels of service demand as calls for service are generally initiated by people. The following figure presents Santa Rosa's population by census block, based on the 2010 census. The total population used in this study was 175,269.

Figure 47: Population per Square Mile, 2010



Much of the service area has populations classified as urban densities.

Next, the distribution of SRFD resources will be examined and compared to the Insurance Services Office (ISO) and National Fire Protection Association (NFPA) criteria. These standards provide baseline criteria for comparison of SRFD's deployment strategy. These are important standards for comparison because, while ISO criteria focuses on fire suppression capabilities for insurance purposes, NFPA standards establish a foundation for overall system benchmarking for fire suppression, rescue, and other activities fire departments may be required to perform.

SRFD lost a fire station, Station 5, to a Wildland Urban Interface fire. Engine 5 operated out of Station 1 for nearly all of 2018. It is now located in a temporary station on Parker Hill Rd. SRFD plans to locate the replacement station near Stagecoach Road and Fountaingrove Parkway. The following analysis includes the replacement station at its proposed location.

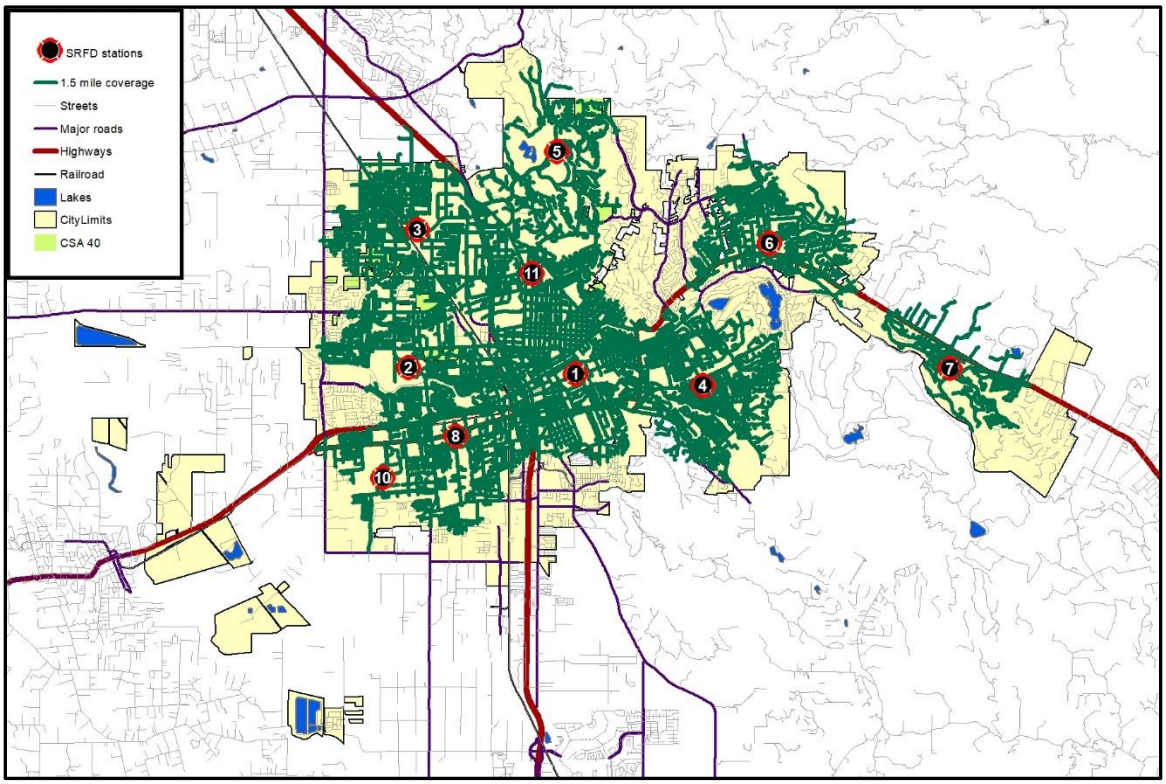
ISO Distribution

The ISO Public Protection Classification (PPC®) score was developed for communities to provide recommendations for key areas of improvement. The PPC system is a national system used by the New Jersey-based advisory organization ISO to provide insurance providers with a classification rating of a local community's fire protection. The PPC score classifies communities based upon a rating scale of 1 (best protection) to 10 (no protection) and assesses all areas related to fire protection broken into four major categories, which include: emergency dispatch and communications (10 points), water system supply and distribution capabilities (40 points), the fire department (50 points), and Community Risk Reduction (5.5 points). The PPC score is developed using the Fire Suppression Rating Schedule (FSRS), which outlines sub-categories and the detailed requirements for each area of the evaluation.

The first component of ISO distribution is the ability of a fire department to arrive on the scene equipped with personnel, equipment, and water sufficient to effectively mitigate a fire. To determine if a structure is eligible to receive a PPC rating better than 10 which indicates that the fire department does not meet minimum ISO criteria for the structure to receive a rating, a service area of five road miles from the fire station is generally used. No part of Santa Rosa is beyond five miles of a fire station.

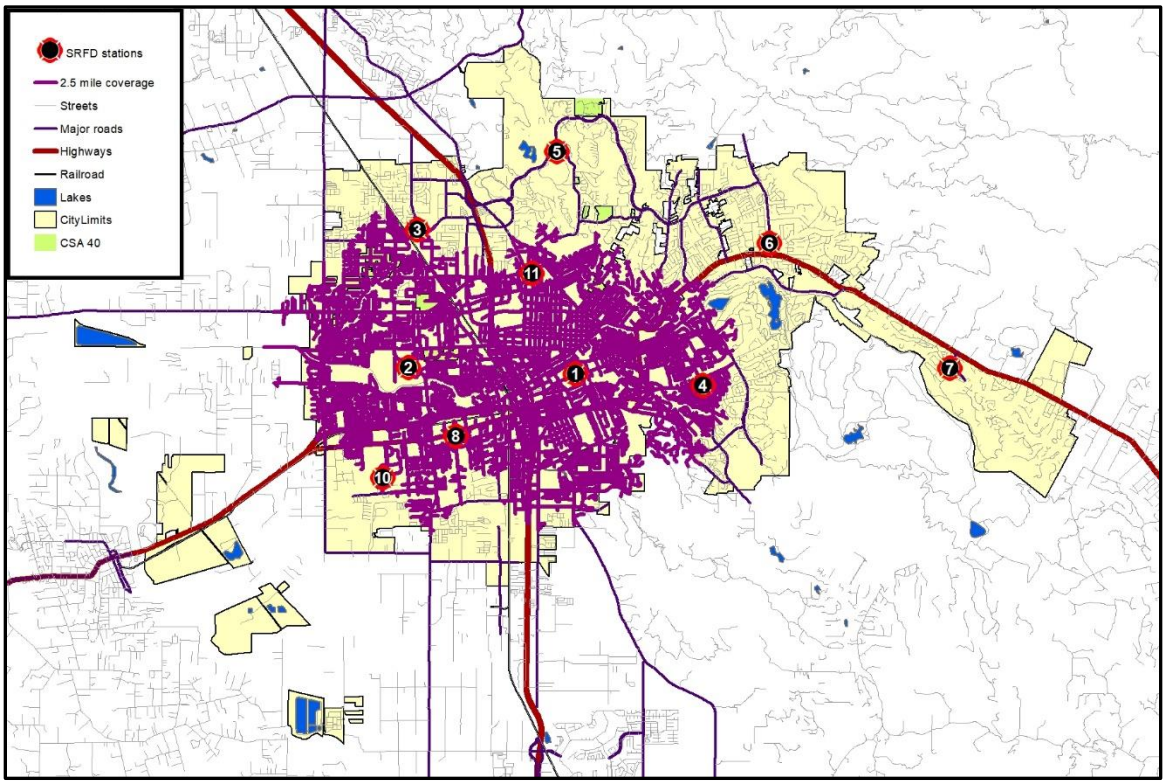
The next figure illustrates 1.5-mile coverage from SRFD stations. ISO is concerned with the provision of fire suppression services to built-upon areas, meaning that ISO is unconcerned with the protection of unpopulated regions of a service area that lack permanent structures.

Figure 48: Fire Station Distribution, 1.5 Mile ISO Criteria



Like the maximum service of engine companies shown in Figure 48, there is a maximum service area for ladder companies. The next figure illustrates the 2.5-mile maximum service area for SRFD's two ladder companies.

Figure 49: Fire Station Distribution, 2.5 Mile Ladder Company ISO Criteria

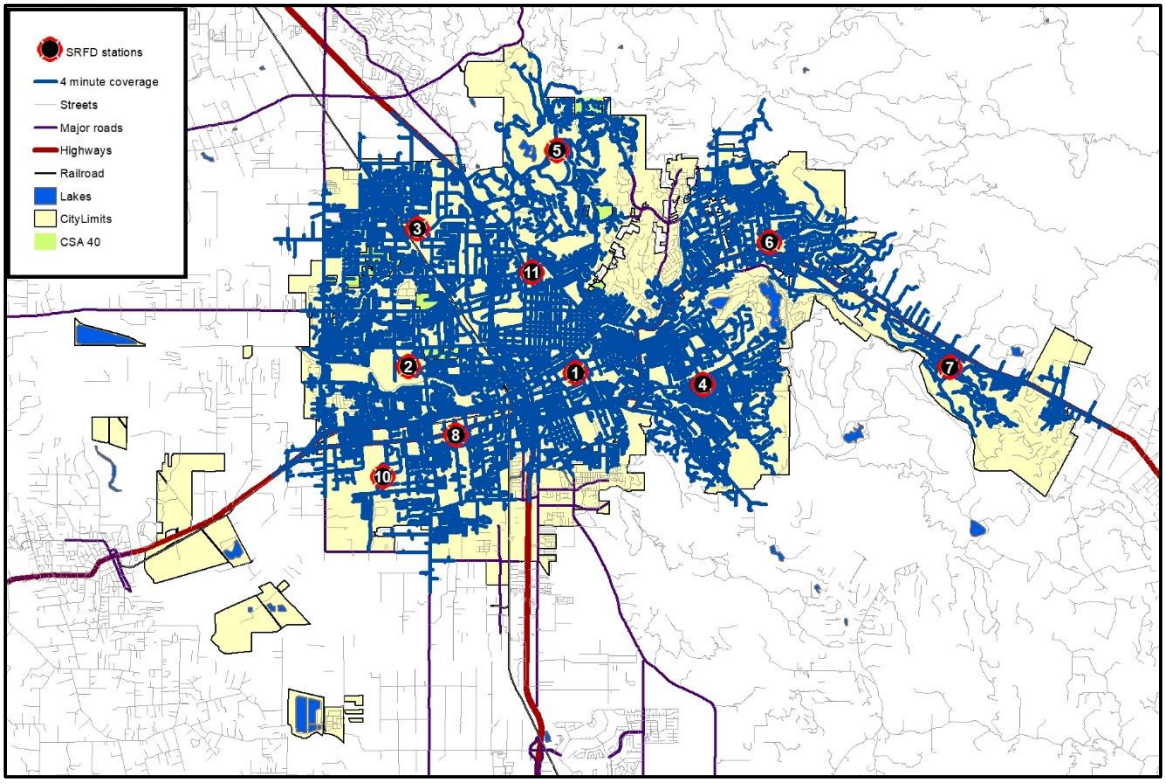


SRFD Goals Distribution

While ISO criteria is focused on fire suppression activities exclusively, SRFD's goals define expected performance for all response services. SRFD, in its Standards of Coverage and Deployment Plan (2017), established a four-minute travel time standard for the arrival of the first capable response unit. This, and SRFD's other response performance goals, are similar to national goals for urban communities as listed in National Fire Protection Association standards.

The following figure illustrates four-minute travel time coverage from SRFD fire stations.

Figure 50: Four-Minute Travel Time



Concentration and Effective Response Force Capability Analysis

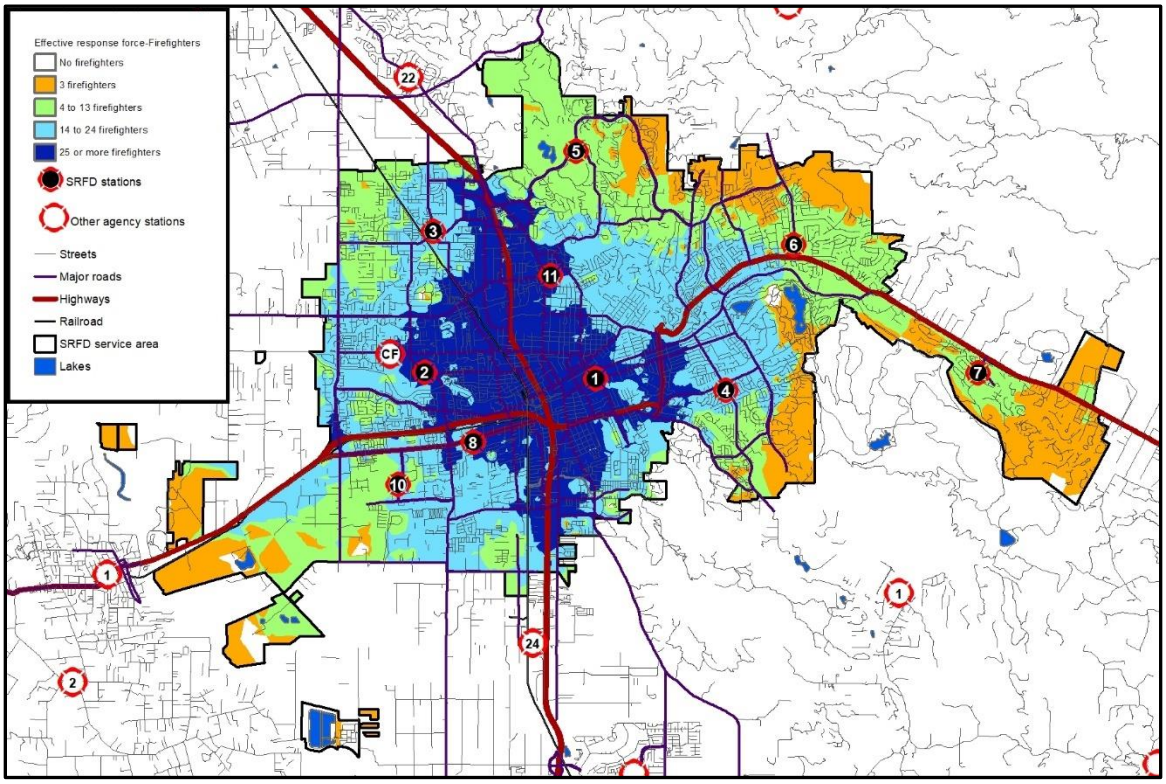
Effective Response Force (ERF) is the number of personnel and apparatus required to be present on the scene of an emergency to perform the critical tasks in a manner to effectively mitigate the incident without unnecessary loss of life and/or property. The ERF is specific to each individual type of incident and is based on the critical tasks that must be performed. In accordance with NFPA 1710, a moderate-risk building fire is modeled for this analysis.

The SRFD response time goal for the delivery of the full ERF to a moderate-risk building fire is within eight minutes, 90 percent of the time (seven minutes travel time). SRFD has defined the minimum full effective response force for moderate-risk building fires as three fire engines, one truck, and one Battalion Chief with a total of 14 firefighters.

Concentration analysis reviews the physical capability of SRFD's resources to achieve its target ERF travel time to its service area. The following figures depict the physical capability of SRFD to assemble apparatus and firefighters by area within seven minutes of travel time. The modeled analysis shown assumes that all response units are available.

The first figure shows the area that can be reached by the number of firefighters that make up the target ERF of 14, based on the SRFD performance goal. Seven minutes of travel time is allowed to assemble the defined, full effective response force on the scene. This figure includes the resources of three adjacent automatic aid stations.

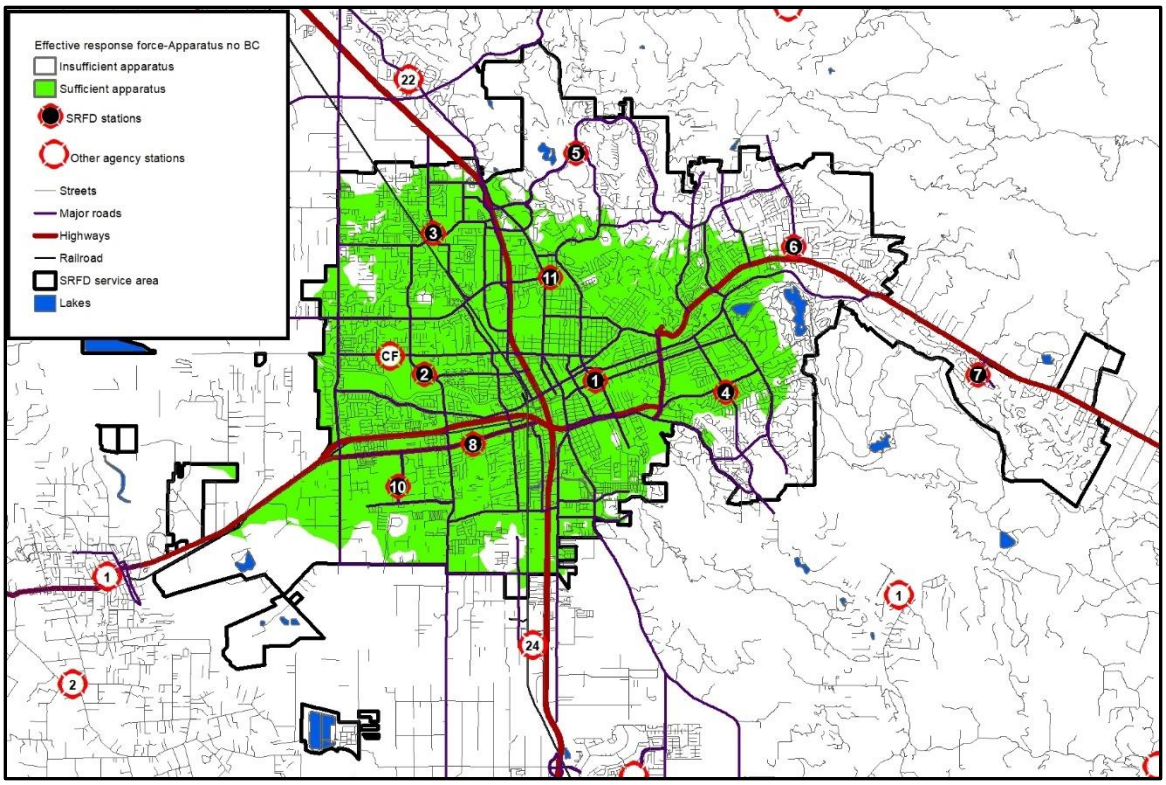
Figure 51: Effective Response Force—Firefighters



Fifty-two percent of the SRFD service area can be served with the minimum 14 firefighters needed for a moderate-risk building fire within the target response time. Areas to the north, west, and east lie beyond this capability.

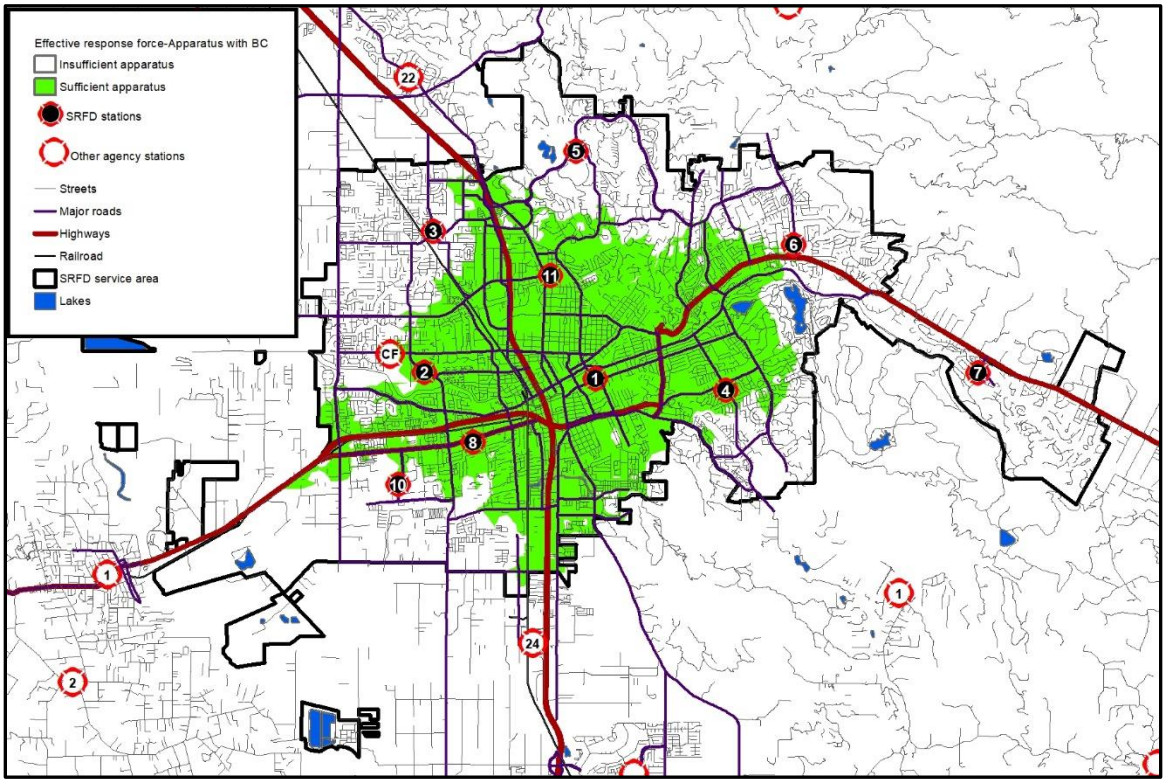
The next figure shows the area to which three fire engines and one ladder truck can respond within the seven minutes travel time allowed by the SRFD performance goal. The Battalion Chief was excluded from this analysis since there is only one available in the system. The model indicates these resources can be delivered within seven minutes of travel only to 57 percent of the city, primarily in the central area. The greatest limitation is ladder trucks since only two are available.

Figure 52: Effective Response Force—Apparatus



When the Battalion Chief is also included, coverage is reduced to 41 percent of the city. The reduction is primarily in the city's west side. The following figure illustrates this reduction.

Figure 53: Effective Response Force—Apparatus Including the Battalion Chief



Concurrency

One way to look at resource workload is to examine the number of times multiple incidents happen within the same timeframe in each station area. 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 extend response times.

The following figure shows the number of times during the study period that one or more incidents occurred concurrently. This shows that in most cases (10,786) only one incident was in progress at a time. However, 9,751 times there were two incidents in progress at the same time; 5,007 times there were three incidents in progress at the same time; and once there were 12 incidents in progress at the same time. This is a marked increase in the frequency of concurrent incidents since 2015.

Figure 54: Incident Concurrency, 2018

Concurrent Incidents	Count
1	10,786
2	9,751
3	5,007
4	1,803
5	550
6	151
7	31
8	5
9	2
10	2
11	2
12	1

It is also useful to review the number of times one or more response units are committed to incidents at the same time. The following figure shows the number of times one or more SRFD response units were committed to incidents. It is more common than not for multiple response units to be simultaneously committed to incidents. This also is a marked increase from 2015.

Figure 55: Unit Concurrency, 2018

Concurrent Units	Count
1	11,362
2	10,827
3	6,221
4	2,843
5	1,317
6	648
7	315
8	136
9	91
10	37
11	11
12	4
13	3
14	1

Figure 56: Incidents by Station and by Period of Day, 2018

Station	Incidents 9:00 a.m.–8:59 p.m.	Incidents 9:00 p.m.–8:59 a.m.	Incidents per hour 9:00 a.m.–8:59 p.m.	Incidents per hour 9:00 p.m.–8:59 a.m.
1	4,359	1,798	1.00	0.41
2	2,204	907	0.50	0.21
3	1,586	671	0.36	0.15
4	1,741	739	0.40	0.17
5	438	193	0.10	0.04
6	1,812	733	0.41	0.17
7	917	501	0.21	0.11
8	1,384	599	0.32	0.14
10	1,298	486	0.30	0.11
11	2,781	1,106	0.63	0.25

A process called "queuing analysis" has been used to determine the number of units needed in each station area by time of day. This process utilizes probability analysis to determine the number of units needed in each station area to reduce the likelihood that a response unit would not be available to serve an incident to 10 percent or less. It uses the variables of incidents per hour, number of available response units, and the average time committed per incident.

Though very useful to this effort, queuing analysis includes some limitations. It assumes that customers (incidents) arrive at a constant rate. This is not always true in emergency services. It also assumes that each customer requires an equal amount of time from servers (response units). While the average time committed to an incident was used for service time, some incidents require less or substantially more than the average.

The following figure illustrates the current deployment and proposed deployment plan for both daytime (9:00 a.m. to 8:59 p.m.) and nighttime (9:00 p.m. to 8:59 a.m.) based on current station locations. The figure includes individual station workload based on incidents and the current and proposed probability of wait analysis based on the current number of stations. Three stations exceed 10 percent probability of wait during the day.

Figure 57: Current and Proposed Response Units

Station	Current Units Day	Current Units Night	Current Probability of Wait— Day	Current Probability of Wait— Night	Proposed Units Day	Proposed Units Night	Proposed Probability of Wait— Day	Proposed Probability of Wait— Night
1	2	2	3.4%	0.6%	2	2	3.4%	0.6%
2	2	2	0.9%	0.2%	2	2	0.9%	0.2%
3	1	1	10.1%	4.3%	1	1	10.1%	4.3%
4	1	1	11.1%	4.7%	2	1	0.6%	4.7%
5	1	1	2.8%	1.2%	1	1	2.8%	1.2%
6	1	1	11.6%	4.7%	2	1	0.6%	4.7%
7	1	1	5.9%	3.2%	1	1	5.9%	3.2%
8	1	1	8.8%	3.8%	1	1	8.8%	3.8%
10	1	1	8.3%	3.1%	1	1	8.3%	3.1%
11	1	1	17.8%	7.1%	2	1	1.5%	7.1%
Total	**12**	**12**		**Total**	**15**	**12**		

An additional three response units are needed during the day to reduce the probability of wait to at or below 10 percent. No additional units are needed at night. The recommended type of vehicle is a Type 6 (Quick Attack) engine or similar. Staffing for these units should be two personnel, one of whom is a Paramedic. These units should be used in place of engines for most medical calls. They can also be used for other minor incidents not requiring a full-sized fire engine.

Performance Summary

Incident data for the period between January 1 and December 31, 2018, was evaluated in detail to determine SRFD's current performance. Data was obtained from SRFD incident reports and the dispatch center's computer-aided dispatch system.

Only incidents occurring within the SRFD service area that were dispatched as a "priority" are included in the analysis. Priority incidents involve emergencies to which the fire department initiated a "code 3" (using warning lights and sirens) response (20,541 incidents during 2018). Incidents initially dispatched as non-emergency responses were excluded. Performance is reported based on the final classification of the incident, which may be different than how it was initially dispatched. For example, a person may report smoke coming from a building that turns out to be only steam. It may have been dispatched as a structure fire, but its final type would be reported as "good intent."

Each phase of the incident response sequence was evaluated to determine the current performance. This allows an analysis of each individual 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 the appropriate mitigation of the incident. The time required for each of the components varies. The policies and practices of the Department directly influence some of the steps.

SRFD's response performance was compared to its performance goals. In most cases, these goals compare to the national consensus standard for response performance found in the *National Fire Protection Association Standard 1710—Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2010 Edition. The various primary answer points and REDCOM's performance were compared to the SRFD's goals as well as standards found in *National Fire Protection Association Standard 1221—Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2013 Edition.

The following figure summarizes the performance standards found in SRFD's performance goals and, if not addressed by those, the National Fire Protection Association (NFPA) documents.

Figure 58: Summary of SRFD Performance Standards

Incident Interval	Performance Goal
9-1-1 call answer time (time from first ring to answer)	Within 15 seconds, 95% of the time Within 40 seconds, 99% of the time
Call transfer time (time from answer to acceptance at the secondary dispatch center)	Within 30 seconds, 95% of the time
Call process time (time from acceptance at the dispatch center until notification of response units)	Within 70 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
First unit travel time (time from initiation of response until arrival of the first unit at the incident)	Within 4 minutes, 90% of the time
First unit response time (time from dispatch until arrival of the first unit at the incident)	Within 5 minutes, 90% of the time
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* along with SRFD's performance goals, all response time elements are reported at a given percentile. Percentile reporting is 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 percent of times were at or less than the result. Only 10 percent were longer.

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

What follows is a detailed description and review of each phase of the response time continuum. All phases will be compared to SRFD's performance goals.

Call Processing

Most emergency incidents are reported by telephone to the 911 center. Call takers must quickly elicit accurate information about the nature and location of the incident from persons who are apt to be excited. A citizen well-trained in how to report 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. This phase begins when the 911 call is answered at the primary Public Safety Answer Point (PSAP) and ends when response personnel are notified of the emergency. This phase, which has two parts, is labeled "call processing time."

There are a number of PSAPs in Sonoma County that receive and transfer 911 calls to REDCOM. Santa Rosa Police Department dispatch center is the PSAP for the City of Santa Rosa. Those callers initially answered at a PSAP who are requesting Fire Department services are transferred to REDCOM, the regional public safety dispatch center providing dispatch services to SRFD. This first part of call processing time is known as "answer/transfer time."

National Fire Protection Association Standard 1221 recommends that 911 calls be answered within 15 seconds 95 percent of the time (within 40 seconds, 99 percent of the time) and then be transferred to the dispatch center within 30 seconds, 95 percent of the time (within 40 seconds, 99 percent of the time). None of the PSAPs are able to quantify current performance at this time. REDCOM answers a call transferred to it within 15 seconds, 99.42 percent of the time, and within 40 seconds, 100 percent of the time.

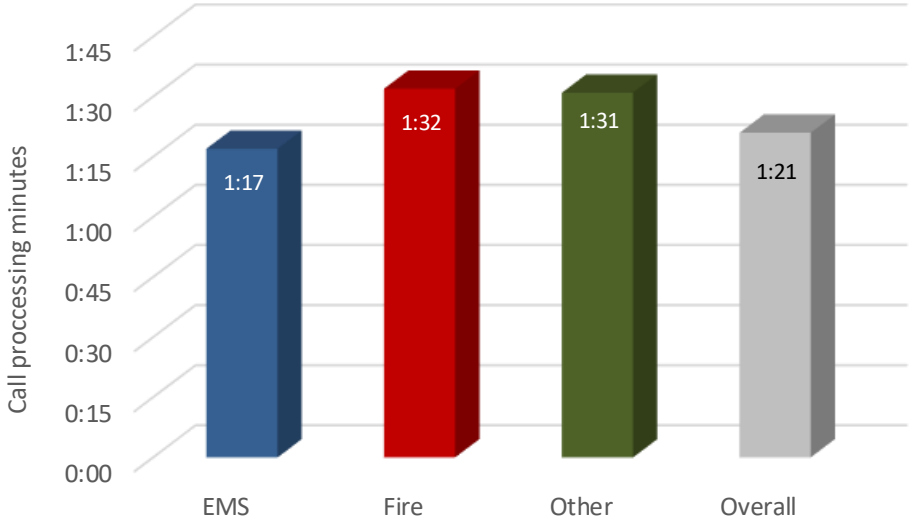
The second part of call processing time, dispatch time, begins when the call is received at the dispatch center (REDCOM) and ends when response units are notified of the incident. SRFD's goal prescribes that this phase should occur within 70 seconds, 90 percent of the time.

Several PSAPs that transfer calls to REDCOM use the same computer aided dispatch system as REDCOM. Those agencies can and do create incidents in the Computer Aided Dispatch System (CAD) prior to the transfer of the caller to REDCOM. An example would be an automobile accident. SRPD would create the incident in CAD, query the caller for law enforcement related information, and then transfer that caller to REDCOM for processing of the Department and ambulance response.

An accurate analysis of current performance for both answer/transfer time and dispatch time is not possible given current data limitations. Although the time of 911 call answer is captured in the computer aided dispatch system when a call is created by an agency other than REDCOM, that answer time is not captured if REDCOM creates the call. REDCOM does capture data that accurately describes the time REDCOM first received the transferred call.

The following figure illustrates performance by REDCOM from the time it receives the call until it notifies response units. Overall performance was within 1 minute, 21 seconds, 90 percent of the time.

Figure 59: REDCOM Dispatch Time Performance

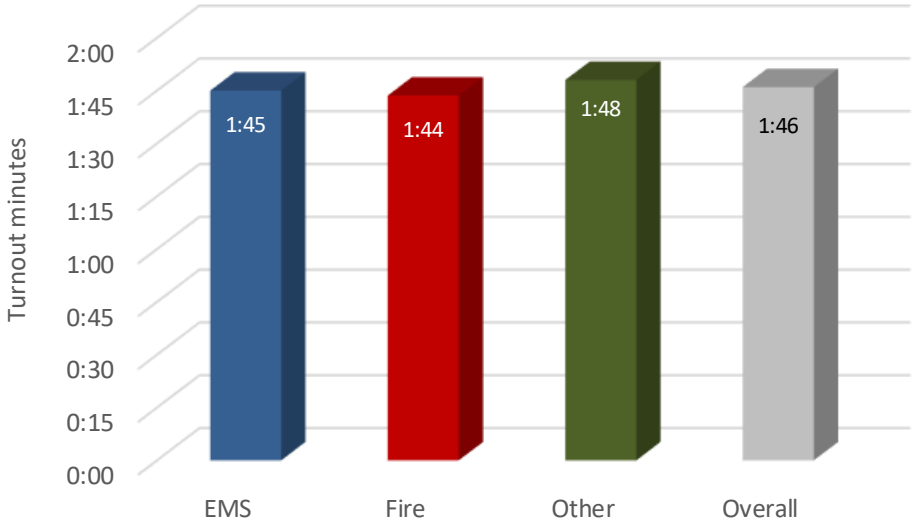


Turnout Time

Turnout time is a response phase controllable by the fire department. This phase begins at the notification of an emergency in progress by the dispatch center and ends when personnel and apparatus begin to move towards the incident location. Personnel must don appropriate equipment, assemble on the response vehicle, and begin travel to the incident. Good training and proper fire station design can minimize the time required for this step.

The SRFD performance goal for turnout time is within 60 seconds, 90 percent of the time. The following figure lists turnout time for all incidents as well as specific incident types. Turnout time for all incidents is within 1 minute, 46 seconds, 90 percent of the time.

Figure 60: Turnout Time Performance



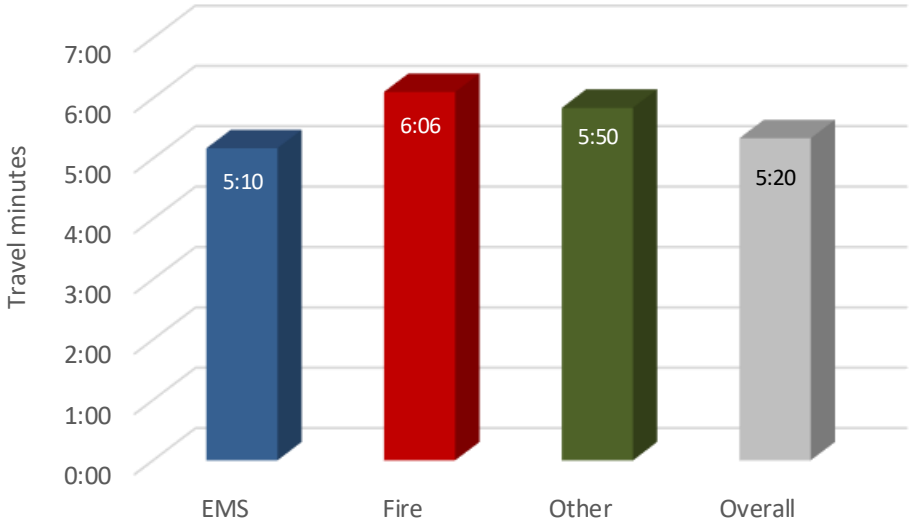
Distribution and Initial Arriving Unit Travel Time

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 towards the incident location and ends when response personnel and apparatus arrive at the emergency's location. Within the SRFD goal, four minutes is allowed for the first response unit to arrive at an incident.

SRFD units are selected for response to an incident based on a calculation by the dispatch computer system to determine the unit that will have the shortest travel time. This method ensures the shortest possible travel times.

The following figure lists travel time for all priority incidents as well as specific incident types. Overall, travel time for all incidents within the city is within 5 minutes, 20 seconds, 90 percent of the time.

Figure 61: Travel Time Performance, First Arriving Unit

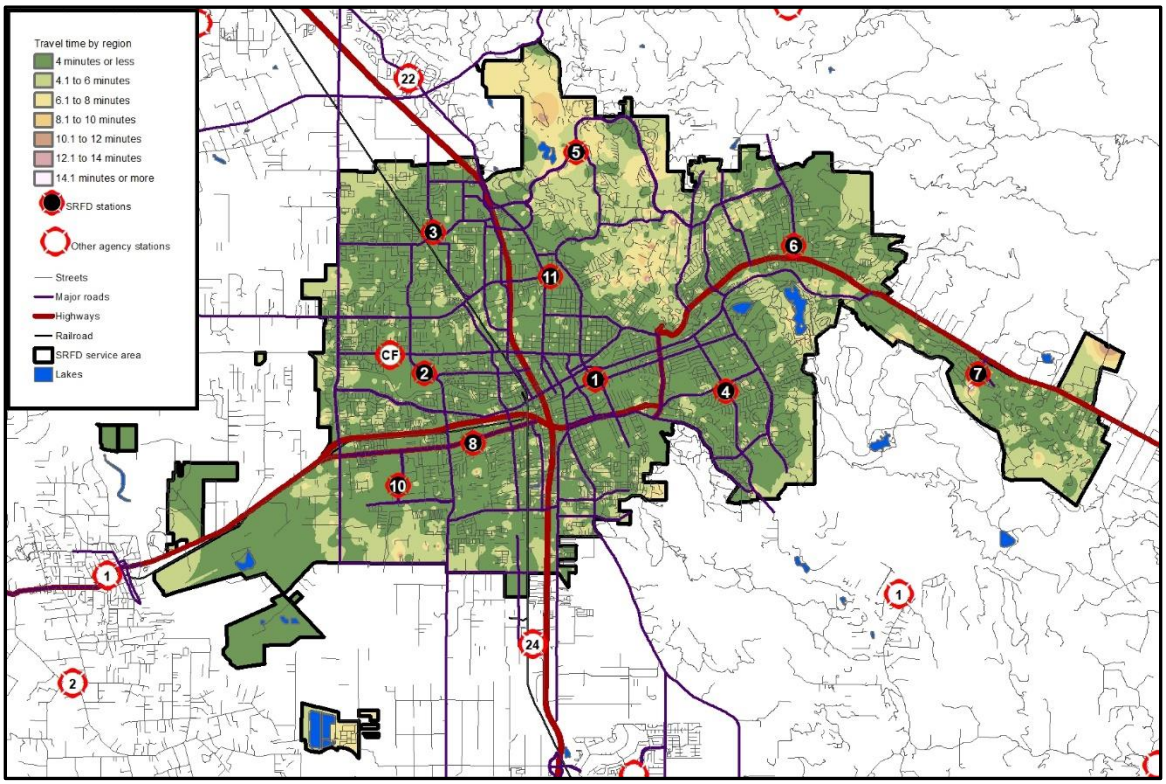


Travel Time Performance by Region

Travel time performance by region is variable and influenced by a number of factors including individual station area workload and the number of times a station must cover another station's area. Additional factors include the size of the station area and the street system serving it. More highly connected, grid-patterned street systems contribute to faster response times than do areas with meandering streets with numerous dead-ends.

The following figure evaluates travel time performance by sub-area using Inverse Distance Weighting analysis (IDW). This process uses travel time for known points (actual incidents) to predict travel time for the area surrounding the actual incident. Better performance is generally noted near fire stations, with progressively longer response times for those incidents more distant from the stations. Travel times to the area around Fire Station 5 suffered during 2018 due to the loss of the station and the relocation of the response unit normally staffing it.

Figure 62: Travel Time Performance by Region

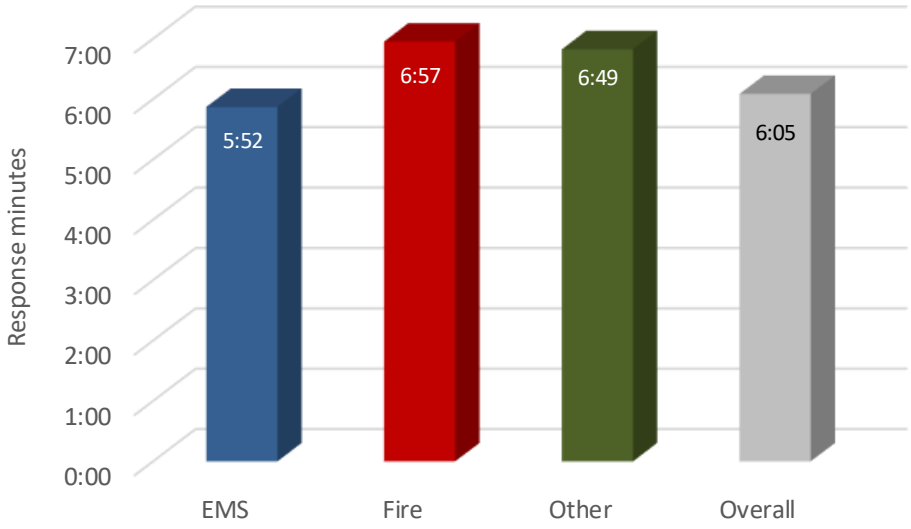


First Arriving Unit Response Time

Response time is defined as that period between the notification 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 SRFD performance goal for response time is within 5 minutes, 90 percent of the time.

The following figure illustrates the response time for all priority incidents as well as specific incident types during 2018. Overall, response time for all priority incidents was within 6 minutes, 5 seconds, 90 percent of the time.

Figure 63: Response Time Performance, First Arriving Unit

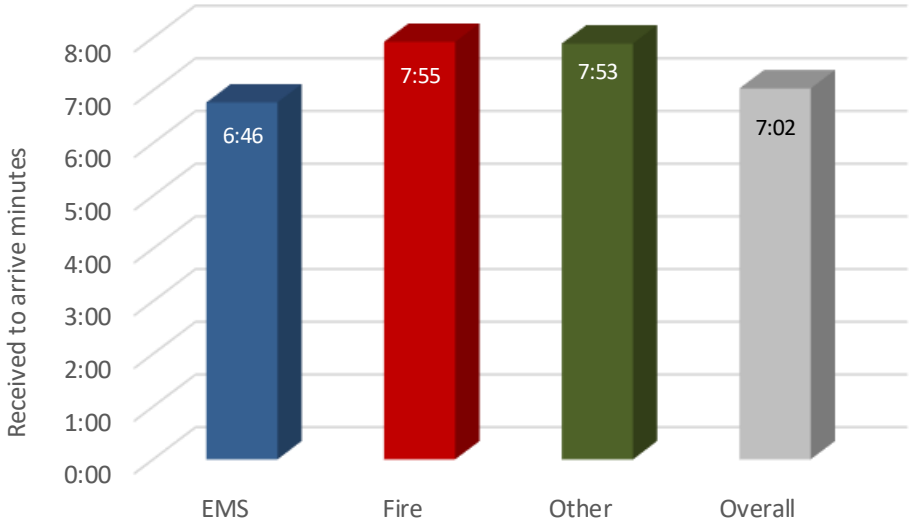


First Arriving Unit Received to Arrival Time

From the customer's standpoint, response time begins when the emergency occurs. Their first contact with emergency services is when they call for help, usually by dialing 911. Received to arrival time combines answer/transfer, call processing, turnout, and travel time. As described in the "Call Processing" discussion in this section, reliable data for call answer and transfer time is not available. The time the call was "received" will either be the actual answer time for calls created by PSAPs other than REDCOM or the time REDCOM received the call transferred by another agency. When the SRFD performance goals are combined, received to arrival time should be within 6 minutes, 90 percent of the time.

The next figure shows received to arrival performance during 2018 at the 90th percentile for priority incidents within the SRFD service area. Overall, received to arrival time is within 7 minutes, 2 seconds, 90 percent of the time.

Figure 64: Received to Arrival Time, First Arriving Unit



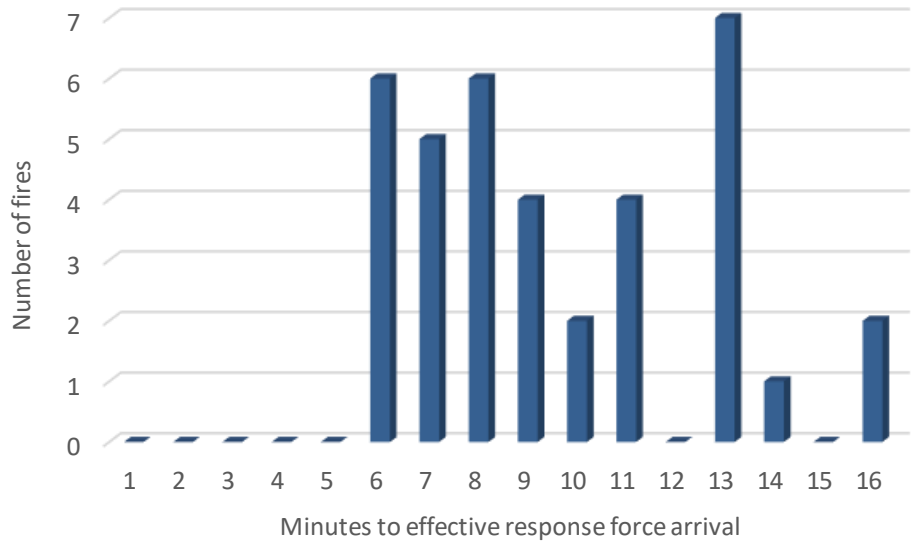
Concentration and Effective Response Force Capability Analysis

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 as to effectively mitigate the incident without unnecessary loss of life and/or property. The ERF is specific to each individual type of incident and is based on the critical tasks that must be performed. In accordance with NFPA 1710, a moderate-risk building fire is modeled for this analysis.

The SRFD response time goal for the delivery of the full ERF to a moderate-risk building fire is within 8 minutes, 90 percent of the time. SRFD has defined the minimum full effective response force for moderate-risk building fires as three fire engines, one truck, and one Battalion Chief, with a total of 14 firefighters.

The minimum full effective response force arrived at 37 building fires during 2018. SRFD delivered the full ERF to these building fires within 12 minutes, 33 seconds **response time**, 90 percent of the time. The following figure illustrates the frequency distribution of the response times experienced during the study period.

Figure 65: Frequency Distribution of Travel Time, Full ERF Arrival



Second Unit Arrival Time

SRFD fire engines are staffed with three personnel. Ladder trucks are staffed with four personnel. Safety regulations require that at least four firefighters be on scene before firefighters can enter a burning building. The only exception is if it is known that a person is inside the building and needs rescue. Current staffing levels on engines require the arrival of a second response unit before non-rescue interior firefighting activities can be initiated.

Incident data for building fires during the study period was reviewed to determine the time the second response unit arrived on the scene. According to the data, the second unit arrived on the scene of a structure fire within 1 minute, 43 seconds, 90 percent of the time, after the arrival of the first unit.

FUTURE SYSTEM DEMAND PROJECTIONS

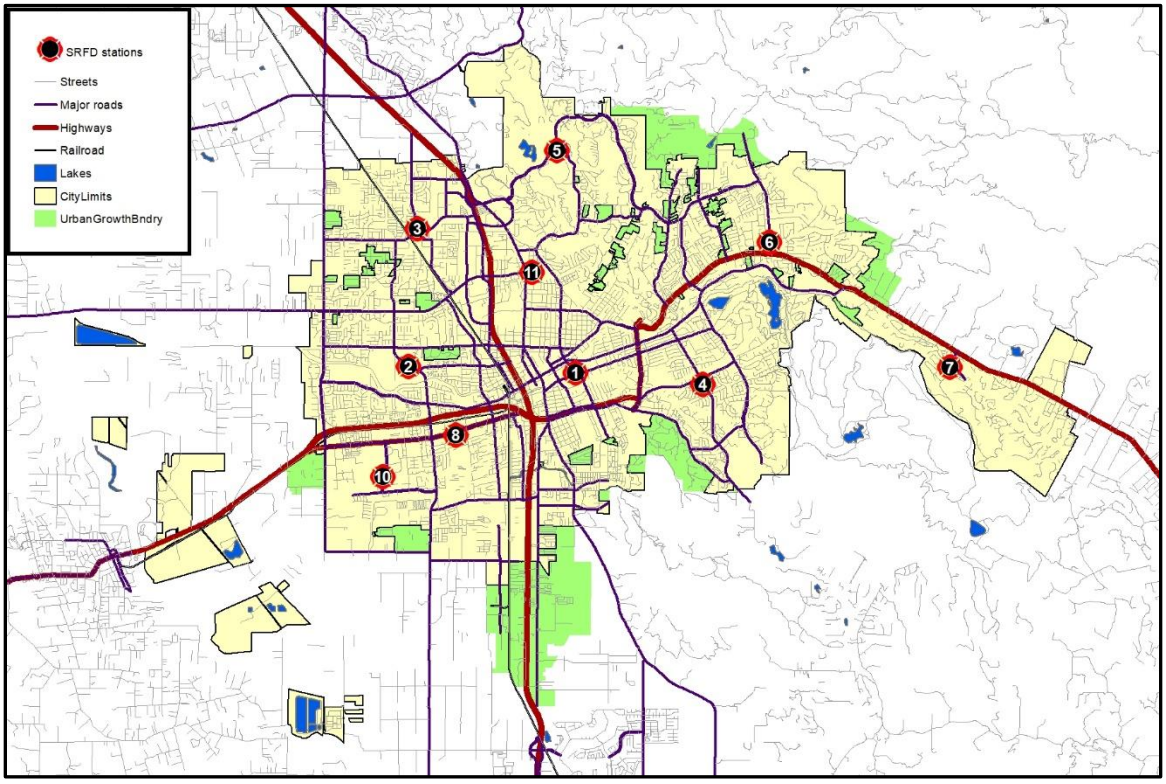
A population forecast was provided by the City. Population growth for Santa Rosa is forecast to average 0.79 percent per year through 2050. Using this estimate, the city's population could reach 222,228 by 2050.

Development activity has increased as a result of the recovery from the 2008 recession. Development projects stalled due to lack of demand are beginning to be implemented and new projects proposed.

There are numerous vacant land pockets throughout the city. Though some, particularly in the city's southwest area, are constrained by environmental concerns, a fair amount of vacant land is available for development. In-fill and redevelopment opportunities exist as well.

The city has additional territory both within and outside its current boundary that it could annex in the future. An area south of Station 8 is currently being considered for annexation. The city's urban growth boundary is shown in the following figure.

Figure 66: Urban Growth Boundary



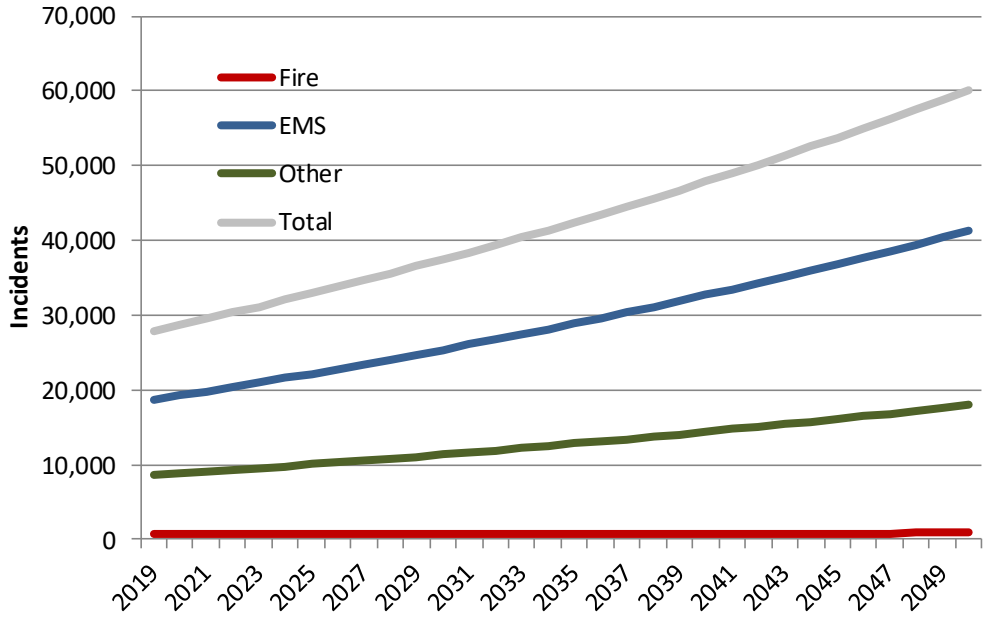
Incident Workload Projection

The most significant predictor of future incident workload is population; 100 percent of requests for emergency medical service are people-driven. The National Fire Protection Association reports that approximately 70 percent of all fires are the result of people either doing something they should not have (i.e., misuse of an ignition source) or not doing something they should have (i.e., failure to maintain equipment). It is reasonable to use forecast population growth to predict future Fire Department response workload.

The current Department services utilization rate is 144 incidents per 1,000 population. This is higher than typical for similar-sized communities and is reflective of the tourism influence on Department workload and other factors not yet fully understood.

The utilization of fire department services is expected to grow modestly over time at a rate of about 2 percent per year. This, plus expected population growth, will increase the SRFD's workload as shown in the following figure. Response workload could reach 60,000 responses per year by 2050, driven primarily by requests for emergency medical care.

Figure 67: Response Forecast, 2016–2050



CONCLUSIONS AND RECOMMENDATIONS

This section of this report contains various staffing and work schedule models for providing adequate staffing for emergency services, prevention services, training services, and administrative/support services, with the specific intent of identifying those options that can deliver the desired levels of service at the most efficient cost. ESCI has taken into consideration population growth projections, along with historical and forecast activity rates, in the development of the projections for future service demand and the impacts on identified staffing and work schedule options.

Key Findings

- Overtime expenditures appear excessive and may contribute to firefighter injuries, poor decision making, and behavioral health concerns.
- Consistent with modern-day fire service administration, all SRFD chief officers are assigned numerous collateral duties. These assignments and expectations impact their availability to respond as support when the shift Battalion Chiefs are committed to incidents.
- The current organizational configuration needs restructuring to enhance the span of control, accountability, and efficiency.
- The current daily staffing exceeds the recommended span of control for the one battalion chief per shift configuration.
- SRFD's workload is greater than normal for an urban community. The total response workload is growing, and some units have reached peak utilization. This trend will continue.
- In 2006, the Fire Prevention Bureau staffed 16 full-time equivalent positions. As of the date of this study, the Bureau is staffed with 10.
- From 2014 through 2018, workload related to the Bureau increased approximately 51.3 percent. This is mostly due to an increase in new construction plan review and inspection.
- The SRFD's Standards of Coverage and Deployment Plan recommended that SRFD enhance fire prevention and public education programs.
- The Emergency Preparedness Coordinator needs additional assistance to complete the work required for a City the size of Santa Rosa.
- Santa Rosa FD requires 40 full-time operations personnel for each shift (total of 126) to provide minimum staffing under the current deployment model.
- Current authorized personnel count is 126-line personnel, or 42 per shift.
- As of June 30, 2018, eight firefighter positions were vacant.
- In FY 2018, injury time off required the equivalent of approximately four full-time positions to cover the shifts.
- Staffing an emergency response organization at its minimum staffing level or with minimal extra capacity in the system produces a significant burden on those employees to maintain the minimum levels. Scheduled vacations, sick time, or other time off, estimated at approximately 384 hours annually, result in some employee(s) being required to work an overtime shift to fill the position.

- In the Santa Rosa Fire Department, anticipated annual time off for only the minimal of reasons is 15.14 percent of the scheduled annual work cycle. Interpolating this number to the 126-person authorized staffing deployment model results in an approximate requirement of 58,356 hours that need backfilled. Dividing that by the normal work cycle of 2,536 hours (2,920 less the 384 hours of time off) results in a requirement for 23 additional positions to minimize, if not eliminate, overtime costs. Considering the existing nine extra firefighter positions, 14 more firefighters would need to be hired.
- The annual work cycle per operations person will be 36 hours times 52 weeks, or a total of 1,872 hours per year. Dividing the annual work cycle of 8,760 hours by 1,872 results in 4.68 FTEs being required to perform the work presently handled by three FTEs.
- The following are recommendations that will improve service, lower the cost of service, and create efficiencies. Those recommended for implementation in the short term are listed first, with longer-term recommendation following.

Short-Term Recommendations

Recommendation—Increase the number of firefighters per shift to reduce overtime expenses

The current staffing is a minimum of 40 individuals per 48-hour shifts. It is important to note that on-duty numbers are regularly impacted by traditional vacation and sick leave, resulting in a need to fill vacancies via utilization of overtime. ESCI noted that in an attempt to address a structural deficit, the City unfunded six Firefighter Paramedic positions. The result of this action has resulted in an increase in overtime to maintain minimum staffing. Fire departments across the United States typically establish a "minimum staffing" level. This number reflects the minimum number of personnel a department will have on duty before beginning to hire overtime.

Over the past, questions have arisen as to whether or not shifting from the traditional 56-hour workweek utilizing three shifts or platoons working a 48/96 configuration would be more efficient.

ESCI analyzed the fiscal impact and FTE requirements of a 12-hour shift staffing pattern vs. SRFD's current staffing pattern.

Projected Costs of Alternative Staffing Models for Operational Positions

Assumptions for All Alternatives

- The negotiated compensation rate for each fire department employee for each rank has been set by the adoption of the Memorandum of Understanding on April 9, 2019.
- Overtime costs for line personnel will continue to be based on a 56-hour workweek.
- Average health and other insurance costs per employee will be applied to any additional employees considered in the alternative.
- Overtime costs will reduce by 95% as a result of the implementation of any of the alternative staffing models.
- There are 8,760 hours in a 365-day year
- The current deployment model utilizes a 56-hour workweek or 2,920-hour annual work cycle resulting in three shifts of firefighters.
- A minimum of 384 hours of vacation and sick time per year per employee must be backfilled with other personnel.

Alternative 1, Reduce the Work Week to a 42-Hour Work Cycle

Applying the above assumptions to an alternative deployment model that utilizes a 42-hour workweek produces the following results.

The annual work cycle per operations person will be 42 hours times 52 weeks, or a total of 2,184 hours per year. Dividing the annual work cycle of 8,760 hours by 2,184 results in 4.01 people being required to perform the work presently being handled by three people.

The projected cost of this alternative is provided in Figure 68.

Alternative 2, Reduce the Work Week to a 36-Hour Work Cycle

Applying the above assumptions to an alternative deployment model that utilizes a 36-hour workweek produces the following results.

The annual work cycle per operations person will be 36 hours times 52 weeks, or a total of 1,872 hours per year. Dividing the annual work cycle of 8,760 hours by 1,872 results in 4.68 people being required to perform the work presently being handled by three people.

The projected cost of this alternative is provided in Figure 68.

Alternative 3, Add Sufficient Staffing to Provide for Backfill for the Minimal Time Off Available to Operations Personnel

The average number of hours granted to Operations personnel for vacation and sick time on an annual basis has been calculated at 384 total hours. Multiplying this number by the authorized 126 Operations positions results in a total of 48,384, which, when divided by the net annual work cycle of 2,536 hours (2,920 – 384), results in 19.07 required positions. At this time, based on an e-mail exchange with Chief Gossner, there are presently nine extra firefighter positions included in the 126 authorized positions. Of these nine positions, three have been assigned to ME06 to create a four-person engine company, due to the distance from the next due apparatus and the increased response time to assemble an effective firefighting force. This leaves six additional firefighting positions to deduct from the recommended 20 additional Operations personnel to hire. Alternative 3 recommends increasing the authorized staffing for SRFD by 14 additional personnel. Alternative 3 is projected to reduce overtime by 95 percent.

The following figure compares the costs of the various alternatives to the adjusted FY 2019 Budget.

Figure 68: Comparison of Deployment Alternatives

	Current Deployment		Alternative 1		Alternative 2		Alternative 3	
	Total Count	Current Model	Total Count	42-Hr. workweek	Total Count	36-Hr. workweek	Total Count	Increasing FTEs to cover
Annual Work Cycle Hours		2,920		2,184		1,872		2,920
Required shifts		3.00		4.01		4.68		3.00
Total Operations Personnel		42		40		40		42
Number of Shifts		3		4		5		3
Total Minimum Staffing		**126**		**160**		**200**		**126**
Current Operations								
Operations Administrative		754,635		754,635		754,635		754,635
Training Captain		137,945		137,945		137,945		137,945
Battalion Chiefs	3	569,768	4	759,690	5	949,613	3	569,768
Captains	36	4,241,772	48	5,427,612	60	6,613,452	36	4,241,772
Engineers	42	4,391,809	48	4,907,545	60	5,939,017	42	4,391,809
Firefighters	45	4,029,789	60	5,201,589	75	6,373,389	45	4,029,789
Total Required to Meet Minimum Staffing	**126**		**160**		**200**		**126**	
Employee Add On Factor								
Captains			9	889,380	16	1,581,120		-
Engineers			8	687,648	16	1,375,296		-
Firefighters			11	859,320	20	1,562,400	14	1,093,680
Incentive		1,246,621		1,246,621		1,246,621		1,246,621
Total Base Compensation	**126**	**15,372,339**	**188**	**20,871,985**	**252**	**26,533,488**	**140**	**16,466,019**
Current Administration		573,558		573,558		573,558		573,558
Current Prevention		1,190,911		1,190,911		1,190,911		1,190,911
Prevention Incentive		23,446		23,446		23,446		23,446
Current Measure "O"		1,098,958		1,098,958		1,098,958		1,098,958
Measure "O" Incentive		212,911		212,911		212,911		212,911
Employee Count	149		211		275		163	
Overtime		3,514,720		175,736		175,736		175,736
Total Compensation		**21,986,843**		**24,147,505**		**29,809,008**		**19,741,539**
CalPERS Percentage		40.85%		40.85%		40.85%		40.85%
Retirement		8,981,625		9,864,256		12,176,980		8,064,419
Avg Insurance Benefit Cost Per Employee		24,615		24,615		24,615		24,615
Benefit Cost		3,667,635		5,193,765		6,769,125		4,012,245
Other Retired Employee Benefits		1,806,622		1,806,622		1,806,622		1,806,622
Totals		**36,442,725**		**41,012,148**		**50,561,734**		**33,624,824**

ESCI recommends Alternative 3 because it provides the least cost for the organization.

Recommendation—Audit factors that are resulting in lost time due to injuries.

The absence of an employee increases operating costs to the employer, regardless of whether the absence is work-related or is an off-duty illness or injury. At the very minimum, the employer must pay overtime to have the injured or ill employee's shift filled by another employee. The ill or injured employee will most likely be paid sick leave while absent from work. For a work-related injury, not only is the injured safety employee receiving medical treatment but should they be removed from performing the essential duties of their job, they will be receiving benefits under Labor Code 4850; their shift will more-than-likely be backfilled, resulting in the Department paying overtime.

In order to minimize additional costs to the Department, at a very minimum a review of the following documents should occur by Human Resources or whomever the Department designates: a review of sick leave utilization, review, and approval of a claim for worker's compensation benefits, as well as monthly internal audit of reports from the worker's compensation insurance provider or third- party administrator.

Recommendation—Fill positions currently open.

The Department is experiencing considerable costs related to overtime. Filling the open positions along with the addition of personnel will result in a significant reduction in costs as identified in Figure 68.

Recommendation—Cross-train senior officers of the Fire Department to support the Emergency Preparedness Coordinator and incorporate staff from other City departments to participate in the development and operation of the City's Emergency Management Program.

ESCI reviewed the "City of Santa Rosa Emergency Operation Center Response to the 2017 Fire Storm" after-action review and interviewed the Emergency Preparedness Coordinator as part of the site visit to determine the current performance of the emergency management activities within the City of Santa Rosa. The current program should include all City departments. In addition, all senior staff should be trained to support the activation and operation of the City's Emergency Operations Center.

Recommendation—Review and consider updating all current fees intended to offset the cost of fire prevention personnel. During the fee review and update process, include the cost to fund the recommended additional positions with fire prevention.

The current fees associated with the provision of services delivered by the Fire Prevention Division do not appear to fully recover costs. The addition of staff necessary to accommodate the current and increasing workload should be cost-neutral wherever possible.

Recommendation—Add a Second Battalion Chief per Shift for a Total of Three Additional Battalion Chiefs.

As noted in the Department's 2016 Standards of Coverage and Deployment Plan (SOC), SRFD currently staffs each operational shift with one Battalion Chief. The Battalion Chief's duties include coordination of all on-shift response personnel and supervision of response crews, ensuring coverage is balanced across the city and assuming command of larger incidents. Typically, agencies staff with one Battalion Chief for every five response units. The SRFD's single on-shift Battalion Chief is managing 12 response units.

Adding a second Battalion Chief will improve overall shift management. Greater attention can be given to the needs of response crews, including training, communications, and the like. In addition, a second Battalion Chief will improve effective response force coverage.

Consistent with this evaluation, ESCI has made the recommendation to add an additional Battalion Chief position to reduce the span of control of the single on-duty Battalion Chief.

Figure 69: Projected Cost of Adding an Additional Battalion Chief, FY 2020–FY2024

Descriptions	FYE June 30,				
	2020	2021	2022	2023	2024
Compensation	194,595	200,433	206,446	212,639	219,019
CalPERS Percentage	27.35%	27.35%	27.35%	27.35%	27.35%
Retirement	53,222	54,818	56,463	58,157	59,902
Benefit Cost	24,615	24,616	24,617	24,618	24,619
Medicare	2,822	2,906	2,993	3,083	3,176
Workers' Compensation	15,658	16,128	16,612	17,110	17,623
Total Costs per position	$290,912	$298,901	$307,131	$315,607	$324,338
Cost for three positions	**$872,736**	**$896,703**	**$921,393**	**$946,821**	**$973,014**

Recommendation—Add a Second Deputy Chief for a Total of Two Deputy Chiefs.

The addition of a second Deputy Chief will allow for a restructuring of the Administrative Bureau to accommodate current and future workloads. This added position will enhance the span of control and improve accountability.

Figure 70: Projected Cost of Adding One Deputy Chief

Costs	June 30,				
	2020	2021	2022	2023	2024
Compensation	194,949	200,797	206,821	213,026	219,417
CalPERS Percentage	27.35%	27.35%	27.35%	27.35%	27.35%
Retirement	53,319	54,918	56,566	58,263	60,010
Benefit Cost	24,615	24,616	24,617	24,618	24,619
Medicare	2,827	2,912	2,999	3,089	3,182
Workers' Compensation	15,686	16,157	16,642	17,141	17,655
Total Costs	**291,396**	**299,400**	**307,645**	**316,137**	**324,883**

Recommendation—Reclassify the Emergency Medical Services Battalion Chief to Division Chief.

The reclassification of this position will bring it in line with the level of responsibility and accountability consistent with the level of work expected from this position.

Figure 71: Projected Costs to Reclassify the EMS Battalion Chief to the Rank of Division Chief

Costs	June 30,				
	2020	2021	2022	2023	2024
Division Chief Salary	189,366	195,047	200,898	206,925	213,133
Battalion Chief Salary	(184,160)	(189,685)	(195,375)	(201,237)	(207,274)
Net Increase	5,206	5,362	5,523	5,689	5,859
CalPERS Percentage	27.35%	27.35%	27.35%	27.35%	27.35%
Retirement	1,424	1,467	1,511	1,556	1,603
Benefit Cost	-	-	-	-	-
Medicare	75	78	80	82	85
Workers' Compensation	-	-	-	-	-
Total Costs	**6,705**	**6,906**	**7,114**	**7,327**	**7,547**

Mid- to Long-Term Recommendations

Recommendation—Reclassify the Training and Safety Division Battalion Chief to Division Chief.

The mandates, workload, supervisory expectations, and accountability of this Division warrant the appropriate skill sets, knowledge, and capabilities commensurate with the Division Chief Classification.

Costs	June 30,				
	2020	2021	2022	2023	2024
Division Chief Salary	189,366	195,047	200,898	206,925	213,133
Battalion Chief Salary	(158,795)	(163,559)	(168,466)	(173,520)	(178,725)
Net Increase	30,571	31,488	32,433	33,406	34,408
CalPERS Percentage	27.35%	27.35%	27.35%	27.35%	27.35%
Retirement	8,361	8,612	8,870	9,136	9,411
Benefit Cost	-	-	-	-	-
Medicare	443	457	470	484	499
Workers' Compensation	-	-	-	-	-
Total Costs	**39,375**	**40,557**	**41,773**	**43,027**	**44,317**

Recommendation—Reclassify the Division Chief/ Fire Marshal Position to Deputy Chief.

Costs	June 30,				
	2020	2021	2022	2023	2024
Deputy Chief Salary	194,949	200,797	206,821	213,026	219,417
Division Chief Salary	(189,366)	(195,047)	(200,898)	(206,925)	(213,133)
Net Increase	5,583	5,750	5,923	6,101	6,284
CalPERS Percentage	27.35%	27.35%	27.35%	27.35%	27.35%
Retirement	1,527	1,573	1,620	1,669	1,719
Benefit Cost	-	-	-	-	-
Medicare	81	83	86	88	91
Workers' Compensation	-	-	-	-	-
Total Costs	**7,191**	**7,407**	**7,629**	**7,858**	**8,093**

Recommendation—Add three additional personnel to the Prevention Division and or train all engine company crews to conduct Wildland Urban Interface risk reduction inspections.

As noted in the Department's 2016 Standards of Coverage and Deployment Plan, a substantial Wildland Urban Interface area exists in the city's north and east that could contribute to significant fires. Numerous homes lie near highly combustible wildland fuels. This condition can and does contribute to rapid-fire growth and the loss of homes.

To manage this risk, SRFD should initiate a wildland fuels modification program. This would involve conducting property inspections to identify necessary mitigations, working with property owners to ensure fuel modification efforts are completed, and providing public education to reinforce the reasons why such efforts are important.

Because the risk is significant, this effort should be backed by enforcement authority provided to fire officials.

Consistent with the SOC, ESCI has made the recommendation to add additional personnel to the Prevention Division as well as cross-training engine companies to conduct wildland interface related inspections. However, it is anticipated that current Prevention Division revenues are not sufficient to provide the funding necessary for these additional positions and training.

Figure 72: Projected Cost of Additional Prevention Division Personnel, FY 2020–FY 2024

Description	FYE June 30,				
	2020	2021	2022	2023	2024
Vegetation Management	88,689	91,350	94,090	96,913	99,820
Public Education	88,689	91,350	94,090	96,913	99,820
Code Enforcement	88,689	91,350	94,090	96,913	99,820
Total Salary Increases	266,067	274,049	282,270	290,739	299,461
CalPERS percentage (40.85-13.50)	27.35%	27.35%	27.35%	27.35%	27.35%
Retirement	72,769	74,952	77,201	79,517	81,903
Benefit cost	73,845	73,845	73,845	73,845	73,845
Medicare	3,858	3,974	4,093	4,216	4,342
Workers' Compensation	21,409	22,051	22,713	23,394	24,096
Total Costs	**$437,948**	**$448,871**	**$460,122**	**$471,710**	**$483,646**

Recommendation—Add additional response units during periods of high incident activity.
Fire stations should be located, staffed, and equipped to provide response resources using two primary considerations:

1. Provide response times that ensure unit(s) arrive in time to effectively mitigate an emergency.
2. Provide sufficient resources to ensure a reliable response to predictable emergency service requests.

The first consideration suggests that stations and response units should be located to minimize travel time to emergencies. The second consideration suggests that during periods of higher incident activity, additional resources should be available to respond. The additional resources should be of the type necessary for predictable requests for service. Emergency medical incidents are the most common.

The second consideration is a dynamic approach to deployment and provides two benefits. First, additional response resources can be made available during times each is predictably needed. Second, because these resources are not needed or assigned during slower workload periods, the organization is maximizing its ability to match resources with system demand.

Peak workload periods occur every day of the week. The following figure illustrates workload by station and by time of day during the study period. The workload is based on responses made by each unit assigned to the station.

Figure 73: Incidents by Station and by Period of Day, 2017

Station	Incidents 9:00 a.m.–8:59 p.m.	Incidents 9:00 p.m.–8:59 a.m.	Incidents per hour 9:00 a.m.–8:59 p.m.	Incidents per hour 9:00 p.m.–8:59 a.m.
1	4,359	1,798	1.00	0.41
2	2,204	907	0.50	0.21
3	1,586	671	0.36	0.15
4	1,741	739	0.40	0.17
5	438	193	0.10	0.04
6	1,812	733	0.41	0.17
7	917	501	0.21	0.11
8	1,384	599	0.32	0.14
10	1,298	486	0.30	0.11
11	2,781	1,106	0.63	0.25

A process called "queuing analysis" has been used to determine the number of units needed in each station area by time of day. This process utilizes probability analysis to determine the number of units needed in each station area to reduce the likelihood that a response unit would not be available to serve an incident to 10 percent or less. It uses the variables incidents per hour, number of available response units, and average time committed per incident.

Though very useful to this effort, queuing analysis has some limitations. It assumes that customers (incidents) arrive at a constant rate. This is not always true in emergency services. It also assumes that each customer requires an equal amount of time from servers (response units). While the average time committed to an incident was used for service time, some incidents require less or substantially more than the average.

The following figure illustrates the current deployment and proposed deployment plan for both daytime (8:00 a.m. to 7:59 p.m.) and nighttime (8:00 p.m. to 7:59 a.m.) based on current station locations. The figure includes the current and proposed probability of wait analysis based on the current number of stations. Four stations exceed 10 percent probability of wait during the day and none at night.

Figure 74: Current and Proposed Response Units

Station	Current Units Day	Current Units Night	Current Probability of Wait—Day	Current Probability of Wait—Night	Proposed Units Day	Proposed Units Night	Proposed Probability of Wait—Day	Proposed Probability of Wait—Night
1	2	2	3.4%	0.6%	2	2	3.4%	0.6%
2	2	2	0.9%	0.2%	2	2	0.9%	0.2%
3	1	1	10.1%	4.3%	1	1	10.1%	4.3%
4	1	1	11.1%	4.7%	2	1	0.6%	4.7%
5	1	1	2.8%	1.2%	1	1	2.8%	1.2%
6	1	1	11.6%	4.7%	2	1	0.6%	4.7%
7	1	1	5.9%	3.2%	1	1	5.9%	3.2%
8	1	1	8.8%	3.8%	1	1	8.8%	3.8%
10	1	1	8.3%	3.1%	1	1	8.3%	3.1%
11	1	1	17.8%	7.1%	2	1	1.5%	7.1%
Total	**12**	**12**		**Total**	**15**	**12**		

An additional three response units are needed during the day to reduce the probability of wait to at or below 10 percent. The recommended type of vehicle is a Type 6 engine or similar. Staffing for these units should be two personnel, one of whom is a paramedic. These units should be used in place of engines for most medical calls. They can also be used for other minor incidents not requiring a full-sized fire engine.

Estimated Cost: Total one-time costs are approximately $150,000 per unit for the apparatus, plus $40,000 for equipment per unit. Total ongoing expenses are approximately $118,892 for a Fire Engineer and $123,421 for a Firefighter/Paramedic per FTE annually plus projected benefits of $84,418 and $86,696, respectively, and vehicle maintenance.

Figure 75: First-Year and Projected Operating Costs of Three Rapid Response Units

Description	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24
Fire Engineer	118,892	122,459	126,133	129,916	133,814
Pension @ 40.85%	48,567	50,024	51,525	53,071	54,663
Other Benefits	35,851	36,926	35,425	33,880	32,288
Total Per Employee	203,310	209,409	215,692	222,162	228,827
Additional Employees	6	6	6	6	6
Total Fire/Engineer Costs	1,219,860	1,256,456	1,294,149	1,332,974	1,372,963
Firefighter/Paramedic	123,421	127,124	130,937	134,865	138,911
Pension @ 40.85%	50,417	51,930	53,488	55,093	56,745
Other Benefits	36,279	35,021	33,463	31,858	30,205
Total Per Employee	210,117	216,421	222,913	229,601	236,489
Additional Employees	6	6	6	6	6
Total Firefighter/Paramedic Costs	*1,260,702*	*1,298,523*	*1,337,479*	*1,377,603*	*1,418,931*
Salaries and Benefits	*2,480,562*	*2,554,979*	*2,631,628*	*2,710,577*	*2,791,894*
Capital Costs					
Apparatus Cost	150,000	-	-	-	-
Equipment Cost	40,000	-	-	-	-
Capital Investment Per Unit	190,000	-	-	-	-
Number of Units	3	-	-	-	-
Total Capital Investment	*570,000*	-	-	-	-
Total Costs	**$3,050,562**	**$2,554,979**	**$2,631,628**	**$2,710,577**	**$2,791,894**

CONCLUSION

The ESCI project team began collecting information concerning the Santa Rosa Fire Department in December 2017. The team members recognize that this report contains a large amount of information and recommendations that will require additional funding. ESCI also recognizes that the current fiscal status of the City may impede the implementation of many of the recommendations presented. We would encourage the City and the Fire Department to work together in determining what recommendations can be implemented now at minimal cost and develop a plan for implementing the balance of the recommendations.

APPENDIX A—TABLE OF FIGURES

APPENDIX B—STAKEHOLDER INTERVIEWS

The ultimate goal of any emergency service delivery system is to provide sufficient resources (personnel, apparatus, and equipment) to the scene of an emergency in time to take effective action to minimize the impacts of the emergency. This need applies to fires, medical emergencies, and other emergency situations to which the fire department responds. Obtaining and understanding the desires and expectations of internal and external stakeholders proves an important first step.

It is important to note that the information solicited and provided during this process was provided in the form of "people inputs," some of which are perceptions as reported by stakeholders. All information was accepted at face value without an in-depth investigation of its origination or reliability. ESCI reviewed the information for consistency and frequency of comment to identify specific patterns and/or trends. The observations included in this report were confirmed by multiple sources, or the information provided was significant enough to be included. Based on the information review, the team was able to identify a series of observations, recommendations, and needs that are included in this report.

Perceptions about the Santa Rosa Fire Department and the services it delivers were gathered by direct interviews of stakeholders. Forty-one stakeholders were scheduled for interviews that were completed over a three-day period. Of these 40 interviewees, these stakeholders represented the City of Santa Rosa staff, the Santa Rosa City Council, the Santa Rosa firefighter's union, Santa Rose Fire executive staff, Santa Rosa Fire administrative staff, chief officers, and the Fire Prevention Bureau.

The summarized results of the interviews have been broken down into the following groups: Chief Officers and Administration (chief officers, Office Manager, Administrative Assistant, and Department ASO), Rank and File/Labor, Fire Prevention, and City Staff (City Manager, HR Director, Planning Director, CFO, Mayor, and Council member).

The responses are summarized below:

CHIEF OFFICERS AND ADMINISTRATION

What strengths contribute to the success of the Department?

- All chief officers felt that the willingness of their personnel to assume additional responsibilities and workload are one of the primary contributors to the overall success of the organization. They felt that although their personnel are already busy, they are often willing to take on additional responsibilities to establish new programs and capabilities.
- Another strength of the organization is the relatively few disciplinary issues involving their personnel.
- The chief officers also felt that the Department prides itself on being an "all-risk" organization and always "rises to the occasion" when a new capability is needed. This is evident by the fact that the Department participates in programs such as hazmat, USAR, swift water rescue, SWAT-medic, etc.

- Another strength that contributes to the Department's success is their ability to innovate and become creative to resolve issues. For example, since they find it more and more difficult to find time in the day to take companies out of service for training, they developed and implemented a "closed circuit" type of video system to broadcast their training sessions to companies while they remain in quarters in order to improve response reliability.

What are some areas in which you believe the Department could make improvements?

- The primary improvement the Department could make focuses on additional funding. The City faces a $15 million+ deficit that is likely to swell over the next few years. The Department's budget has been flat for the past six years, despite an increase in call volume. The City should prioritize available funding to go toward public safety. Recently a poll was taken on a sales tax initiative that would fund public safety and help with the homeless issue. The polling was very positive; however, the initiative was amended to exclude funding for public safety and failed at the ballot.
- One statement also pointed to a mandate that a certain percentage of the general fund be spent on public safety, yet they don't feel this is being followed.
- The Department faced a significant fire 18 months ago, but a number of homes and residents still remain living in the Wildland Urban Interface. The Department needs to engage in an aggressive fuel reduction program to safeguard the remaining homes.
- The Department needs more fire prevention staff to complete their tasks in a timely manner. They have been slow at approving plans as well as completing inspections. The recent fire and subsequent rebuilding of homes has caused a significant increase in workload, but this demand has been offset by using a private vendor to perform plan checking. Regardless, the bureau remains understaffed, even to handle the non-fire related work and new development. The Fire Prevention Bureau is self-sufficient financially, recovering more than enough funding to cover the costs of their assigned personnel.
- The Department is not meeting performance standards regarding response times. Some of this may be due to poor station location, traffic congestion, and overall call volume and the resulting reduction in response-reliability.
- The City needs to rebuild/ remodel several of the stations. The Department has two stations, both temporary buildings (trailers) that need to become permanent structures, and several stations that need maintenance. The City Council has deferred maintenance on all City-owned facilities for several years.
- The chief officers felt that the City staff don't really understand what the fire department does in order to carry out their mission. For example, there is a belief that some of the Department's special programs (i.e., hazmat, USAR) have dedicated staffing, when really those programs are cross-staffed by already on-duty personnel. Overall, better education and communication are needed between the City officials and the Fire Department, so the officials better understand the Department's needs.
- There needs to be better planning. It seems that the City, and thus the Department, are in a reactive mode instead of engaging in long-term planning for facility maintenance, apparatus replacement, etc.

What opportunities, in your view, are available to improve the service and capabilities?

- Much of the call volume increase is related to the homeless problem. Although the City Council has given funding to some of the non-profit organizations to help the homeless, there has been no funding provided to the fire department to offset their increased workload. It would be beneficial to provide funding to the various homeless shelters to include some sort of medical care to those in the shelters, thus avoiding 911 responses from fire.
- There are many retirement homes, convalescent homes, and other residential care facilities that rely on the fire department to lift patients after a fall. An ordinance requiring these types of facilities to employ staff that could provide this service would reduce call volume for the Department.
- There is currently only one Battalion Chief assigned to supervise all shift personnel. Hiring a second Battalion Chief would allow the Department to spread out the administrative workload to a more realistic level, bring the "span-of-control" to a recommended level, and provide a second officer to share in the command and control responsibilities at emergencies.

What challenges do you see to making the improvements?

- The $15 million+ budget deficit.
- The lack of understanding by City officials as to what the Fire Department does on a daily basis.
- The homeless problem that takes a large part of the City's budget.
- The various labor/management issues that remain on-going. The firefighters have been working without a contract for two years, and they are going to arbitration in March 2019. In addition, two Public Employee Relations Board complaints and an FLSA lawsuit are pending. The chief officers felt strongly that if these issues could be resolved, they could enjoy a "fresh beginning" to labor-management relations.

What do you see as the top three critical issues faced by the fire department today?

1. Service delivery/response times. This is caused by poor station location, travel distances, traffic congestion, and a mutual/auto aid issue that is excessively unbalanced.
2. Full schedules, no time left in the day. Things are falling by the wayside, such as training and special projects. Participation in overtime programs and projects is waning because of the excessive number of mandatory overtime and shift overtime on a daily basis. The chief officers all feel that the excessive workload and stress is resulting in an increase in behavioral issues.
3. Infrastructure/capital repair and replacement. All maintenance to City facilities has been deferred for several years and into the foreseeable future. In addition, no replacement/maintenance schedules for City facilities exist and no replacement plan for fire apparatus.

What don't you have control over that can threaten the operation?

- There is a fear that the City is sympathetic to the homeless population, which is attracting more homeless residents. This not only creates additional call volume for the Fire Department but threatens to consume more of the already scarce financial resources.

RANK AND FILE/LABOR

What strengths contribute to the success of the Department?

- The personnel and their willingness to assume additional workload is the primary contributor to the success of the organization. This includes both labor and management.

What are some areas in which you believe the Department could make improvements?

- Several of the personnel discussed the importance of educating City staff and Council on what the Fire Department does. They believe there are misperceptions as to how they are staffed, what they do during the time they are not on emergency incidents, etc.
- Better balance the auto/mutual-aid provided as compared to what is received. The county fire agencies are getting additional funding as a result of the North Bay fires, but their dependency on SRFD has not changed. In addition, the local EMS agency requires SRFD to respond outside of their jurisdiction to provide ALS as the closest resource, even though that jurisdiction does not normally provide ALS care.
- The rank and file believe that the personnel don't feel any ownership of the Fire Department and should be included in more things. There is a perception that fire management internalizes many of the issues and doesn't include the rank and file in conversations about the issues.

What opportunities, in your view, are available to improve the service and capabilities?

- The staff believes stations are located poorly and that if they were moved to more strategic locations, the call volume would be spread out more evenly.
- Provide funding to homeless shelters to provide basic medical service so 911 calls to these facilities are reduced.
- Require that care facilities employ staff that can lift patients after falls and provide basic medical care, thus reducing 911 calls to these types of facilities.
- There is a system that allows care facilities and medical offices to call for an ambulance only and not require fire department response. Although this system is in place, it is very cumbersome for facilities to participate in because of the local EMS agency review process. This system should be streamlined, eliminating unnecessary responses to these facilities when medical staff are on-scene.
- The labor union would be interested in discussing alternative delivery systems, but only if it added resources to the existing system and would not reduce the existing number of personnel.
- The City should implement developer fees and other funding measures to insure there is adequate revenue/fire services for new development.
- The rank and file believe (and desire) that a better relationship between labor and City staff would help in all aspects of the Fire Department operation.
- In the past, a "rover" engine helped fill in behind other companies that were committed to emergency incidents, training, etc. This spread out the call volume and created a more tolerable work level among the companies. There is interest in this type of company being used again.

What challenges do you see to making the improvements?

- The "stated" budget deficit.
- There is a general distrust between labor and City staff, resulting in the disbelief that a true fiscal crisis exists.
- The existing labor/management issues.
- The Union would like to participate in direct communications with City officials instead of communicating through attorneys. They feel this would prove more productive, more financially efficient, and develop better relationships.

What do you see as the top three critical issues faced by the Department today?

1. Finances.
2. Labor relations.
3. Facility and apparatus maintenance and funding.
4. They also added the call volume as a fourth top issue, resulting from the homeless population.

What don't you have control over that can threaten the operation?

- The perception by City staff that firefighters are paid to sleep. There needs to be a better understanding of the benefits of having firefighters on duty at all times as opposed to only when the majority of emergency calls occur.

FIRE PREVENTION

What strengths contribute to the success of the Department?

- The personnel contribute greatly to the success of the organization. They are willing to work long hours and assume additional responsibilities to get the necessary jobs done.

What are some areas in which you believe the Department could make improvements?

- Implement a vegetation management plan that will better protect the 10,000 homes and 22,000 residents that live in the WUI.

What opportunities, in your view, are available to improve the service and capabilities?

- The Department should add additional staff to the Prevention Bureau to speed up plan checks and inspections, as well as improve overall workload. The fees that Prevention staff collect in the course of their duties should fully support the cost of additional staff, so there seems to be no reason why additional staff shouldn't be added.
- Add a public education person. The Prevention Bureau collects approx. $1 million in excess revenue through permit and inspection fees, and this revenue could be used to fund a public education person to better educate the public.
- The fire companies perform about 2,000 inspections per year. There is an opportunity for the fire companies to give up doing inspections to allow them more time for emergency work, training, etc. The workload could only be absorbed by the Prevention Bureau IF additional staff were hired. Again, inspection and permit fees would more than pay for the additional staff.
- The City should implement developer fees and other avenues of generating additional revenue from new development.

What challenges do you see to making the improvements?

- If the excess revenue is being used by the City to offset the existing budget deficit, there may be resistance to use that revenue in the Fire Department for non-essential functions.
- The current labor/management relationship is creating obstacles between the Fire Department and City staff. The issues need to be resolved and relationships rebuilt.
- There is a feeling with City staff that if they were to add developer fees that it would discourage development in the city, and they also feel development is the answer to their budget deficit.

What do you see as the top three critical issues faced by the Fire Department today?

1. Staffing. The Fire Prevention Bureau has less staffing today than it did in 1992.
2. Workload. They have no time for training, vegetation management, public education, etc.
3. The homeless issue is creating a lot of work for everyone, with no end in sight.

What don't you have control over that can threaten your operation?

- Labor/management relationship.
- The homeless problem.

CITY STAFF

What strengths contribute to the success of the Department?

- The personnel contribute greatly to the success of the organization. They are busy, and their experience and skill level has led to the Department's success.
- The Fire Department has a good reputation with the public, and the Fire Chief is a team player within City staff.
- The Fire Department has had few personnel issues and takes care of most issues in-house. It is a rare occasion that something percolates up to HR.

What are some areas in which you believe the Department could make improvements?

- The Department should wait until development actually occurs in areas before they request additional stations/companies. Currently, there is no agreed-upon criteria when stations or companies should be added.
- There is a concern about the sustainability of the Fire Department in the future and an opinion that more extensive regional collaboration and partnerships are needed to secure their future.

What opportunities, in your view, are available to improve the service and capabilities?

- The current model is acceptable and performing well; however, there is a concern that the City is financially unable to meet some of the national standards for staffing and response. The Department needs to find ways to improve service within the available budget.
- The county has proposed a ½ cent sales tax measure to increase revenues. Few details surround this proposal, but City staff feels this would help.

What challenges do you see to making the improvements?

- The biggest hurdle is the budget deficit.

What do you see as the top three critical issues faced by the Department today?

1. The rebuilding of Fire Station 5 that burned down in the North Bay fires. The cost to rebuild as the Department wants is about $9 million, and the City will receive only $3 million–$5 million in reimbursement.
2. No money is available for facility maintenance or construction. Many of the Department's facilities are in bad need or repair or replacement, but City Council has deferred all facility expenses.
3. The Department needs a second Battalion Chief, but no money is available to add that position.

What don't you have control over that can threaten your operation?

- Labor/management relationship.
- The homeless problem.