City of

Coalinga Fire Department

Coalinga, California

June 2021

Community Risk Assessment & Standards of Cover

Strategic Plan Development

AP TRITON

VISION · INNOVATION · SOLUTIONS

Contents

Acknowledgments

The following report serves as the Coalinga Fire Department Community Risk Assessment: Standards of Cover. It follows closely the Center for Fire Public Safety Excellence (CPSE) 6th Edition Community Risk Assessment: Standards of Cover model that develops written procedures to determine the distribution and concentration of a fire and emergency service agency's fixed and mobile resources. The purpose of completing such a document is to assist the agency in ensuring a safe and effective response force for fire suppression, emergency medical services, and specialty response situations.

Creating a Community Risk Assessment: Standards of Cover document requires that many areas be researched, studied, and evaluated. This report will begin with an overview of both the community and the agency. Following this overview, the plan will discuss areas such as risk assessment, critical task analysis, agency service-level goals, and distribution and concentration measures. The report will provide an analysis of historical performance and will conclude with policy and operational recommendations.

The entire Ap Triton Team extends its appreciation to the elected officials, business members, and community members of the City of Coalinga, the Coalinga Fire Department, and all others who contributed to this study.

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Executive Summary

The City of Coalinga Fire Department (CFD) contracted with AP Trioton LLC to conduct a Center for Public Safety Excellence, 6th Edition-compliant, Community Risk Assessment: Standards of Cover report. This *Community Risk Assessment: Standards of Cover* report quantifies community risks and recommends standards of service.

Triton analyzed the data provided by CFD and others to determine the current levels of response performance. From this analysis,Triton also identified factors influencing risk, response performance, and identified opportunities for delivery system improvement inclusive of the extended EMS service area. This study identified response time objectives, standards for measuring the effectiveness of department resources, and the deployment of those resources. The document is divided into sections generally based on the format recommended by the Center for Public Safety Excellence, *Community Risk Assessment: Standards of Cover, 6th Edition*.

The analysis completed during this study revealed a number of important findings:

- Recent year's General Fund revenues have exceeded General Fund expenditures
- General Fund revenues have increased over the past few years and have improved significantly with the voter approval of the Measure J transaction tax.
- Revenue growth does not appear to match expenditure growth resulting in structural deficits in future years
- An adopted, city-wide capital improvement program, including the fire department, does not exist.
- The age of CFD's ladder truck far exceeds the recommended replacement cycle.
- The EMS Service has been unable to respond to all calls within its service area, losing access to a significant amount of funding.
- The Fire Department has deployed a third ambulance to provide increased service in the community.
- A wildland urban interface program has not been established for low ground cover types of fires.
- There is not a comprehensive fire and life safety inspection program for commercial businesses.

- CFD had difficulty providing a useful set of data for analysis. The disparate sources of information (Fresno County Fire Protection District Communications and American Ambulance) provided different levels of detail.
- Fresno County Fire Protection District (FCFPD) provided the most comprehensive data; however, non-CFD units were recorded in the data.
- Units from the California Department of Forestry and Fire Protection (CAL FIRE) Kings Station and the Pleasant Valley Prison do not appear in the data provided by the FCFPD.
- CFD advised that there is no computer-aided dispatch (CAD) feed of information into their record system (ESO), so times are manually transcribed.
- Address designation in CAD data is inconsistent. Sometimes street names contain street types (e.g., AVE, ST). Other times for the same street or intersection, they do not.
- The FCFPD Dispatch provided data that often was truncated. Some of the street types and city locations were cut off, which presented difficulty for geocoding.
- Call processing times were longer than the NFPA recommended time for an emergency.
- Data provided by FCFPD is incomplete. Only 690 incidents provided valid call process times out of 2,847, or roughly 24.2% of all possible incidents.
- For the call processing times that were evaluated, the performance was 4 minutes 16 seconds for EMS incidents and 4:56 for Fire incidents. This is well outside the NFPA recommended 64 seconds 90% of the time for answering the phone, collection/entry of data, and the alerting of responding units (dispatch).
- The data contains a significant reduction in requests for service in 2018 and 2019. When asked about this decline, CFD reported that they had reduced staffing to such a degree that requests were turned away during this period.
- CFD identified that the number of staff required to perform critical tasks at the scene of a low-risk structure fire is sixteen. CFD has seven personnel on duty, two on the engine, two on each of the paramedic units, and one chief. The remaining staffing has to come from outside sources (Pleasant Valley Prison and CAL FIRE King's station); however, these resources are far away, and providing the required staff levels is not assured.
- Turnout (reaction) times were longer than NFPA's recommended time for an emergency and PPE required call types.

- For the call processing times that were evaluated, the performance was 2 minutes 37 seconds for EMS incidents and 2:52 for Fire incidents. This is well outside the NFPA recommended 80 seconds for Fire incident types and 60 seconds for all other emergency call types.
- There are a significant number of requests for service in the City of Huron (Response District C09) that were responded to by American Ambulance units. The bulk of these ambulance requests were fulfilled by the American Ambulance Kings County unit from Avenal.
- Response times into Huron were over 25 minutes, 90% of the time from all units.

Fire Station Findings

- The Fire Department Training Room is used as the City EOC. As a result, this eliminates room for a Fire Department Operations Center during a disaster.
- The dormitories need refurbishing to include accommodations for bathroom and shower facilities that enable gender segregation
- A door in the dormitory area (referred to as the 2nd exit door) is blocked, unmarked and the exit stairs do not meet building code requirements.
- The diesel exhaust emissions system in the apparatus room is inefficient and was nonoperational during our inspection.
- Firefighter protective gear is stored in the apparatus bay with no protection from exhaust emissions.

The analysis conducted during the evaluation phase of this process identified a number of opportunities to improve service (improvement goals). The following improvement goals are offered for consideration. These goals and specific recommendations for each are described in more detail at the end of this report in the Conclusions section.

Recommendations

Short-Term Recommendations

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

Develop a proactive wildland urban interface educational program.

CFD should develop proactive educational programs relating to wildland urban interface outreach and weed abatement. Small fires can occur and potentially damage properties if proper mitigation efforts are not implemented, even in areas of the city where the risk is low. Currently, there is not this type of program unless requested by the property owner.

Develop a comprehensive fire and life safety commercial inspection program.

Currently, the fire chief is responsible for fire and life safety inspections. An inspection program should be established to ensure all properties requiring annual inspections by the State of California are completed. A comprehensive record management system to collect information during the inspection should be utilized to track each occupancy, violation found, and staff activity.

Closely monitor the performance of the Dispatch Center(s)

CFD needs to develop a closer relationship with the dispatch center(s) so that FCFPD and American Ambulance Dispatch Centers understand the importance of performance measuring and improvement.

Reduce the turnout time interval.

Turnout time is the period between when dispatchers notify response personnel of the incident and when response crews begin to travel towards the incident location. The recommended performance goal for turnout time is within 80 seconds, 90 percent of the time for fire and special operations incidents, and within 60 seconds, 90 percent of the time for all other incidents.

Convert the existing single-role-staffed ambulance unit to two 12-hour units

Expand the capacity of the EMS service by using peak-hour 12-hour units to respond to areas in C01, C12, and the Huron area. The conversion would improve service to the Huron area and enhance revenues

Evaluate the adoption of cost recovery fees for certain services.

It is becoming more common for fire service providers to implement cost recovery fees such as fire and EMS first response cost-recovery and others.

Mid-Term Recommendations

The mid-term strategies are progressive enhancements of the current conditions. Many will likely require two to three years to accomplish.

Consider adding career staff to stabilize scheduling and enhance crew safety and effectiveness.

Creating a deployment model is critical to the safe operation for the entire crew—the recommendation to deploy two 12-hour per day medic units, as depicted in the short-term recommendation S-5 in the "Conclusions" section of this report.

Develop a comprehensive pre-incident planning program.

CFD should implement a formalized and continuous pre-incident program for all personnel to assist in identifying potential hazards within the community, as recommended within NFPA 1620: *Standard for Pre-Incident planning*.

Develop a Department Specific Capital Improvement Program (CIP).

The CIP should be specific to Department assets, including facilities, apparatus, land acquisition, and other major capital projects. Adopting a multi-year CIP provides the Department with a tool to properly anticipate and financially prepare for capital needs.

Acquire a new Ladder Truck.

Consideration should be given to replacing the existing Ladder Truck with a new unit and placing the current unit in reserve.

Long-Term Recommendations

The short- and mid-term strategies discussed will move the organization forward substantially. A longer-term, high-level view of future needs is also important to provide a "big picture" view of how the organization may continue with future initiatives. Primarily, long-term strategies are centered around community growth and related workload and how both impact the future deployment of personnel.

Plan for facility remodel/expansion to maintain a high degree of safety, efficiency, long-term sustainability, and effectiveness.

- The CFD should plan for and direct funding for a Fire Department facility project with the following considerations:
- Remodel the station dormitory area to accommodate gender segregation and additional full-time staffing.
- Addition of room(s) for a reserve firefighter sleeper program.
- Construct the facility to house the fire department vehicles inside to prolong the life cycle of the vehicles and equipment and to secure the equipment and supplies located on the vehicles.

Develop a formalized planning process.

CFD should initiate a master plan, a 15 to 20-year plan that will help guide the efforts of the CFD and assist in identifying the framework under which subsequent actions and planning activities will be developed.

Section I:
OVERVIEW OF THE COMMUNITY & FIRE DEPARTMENT

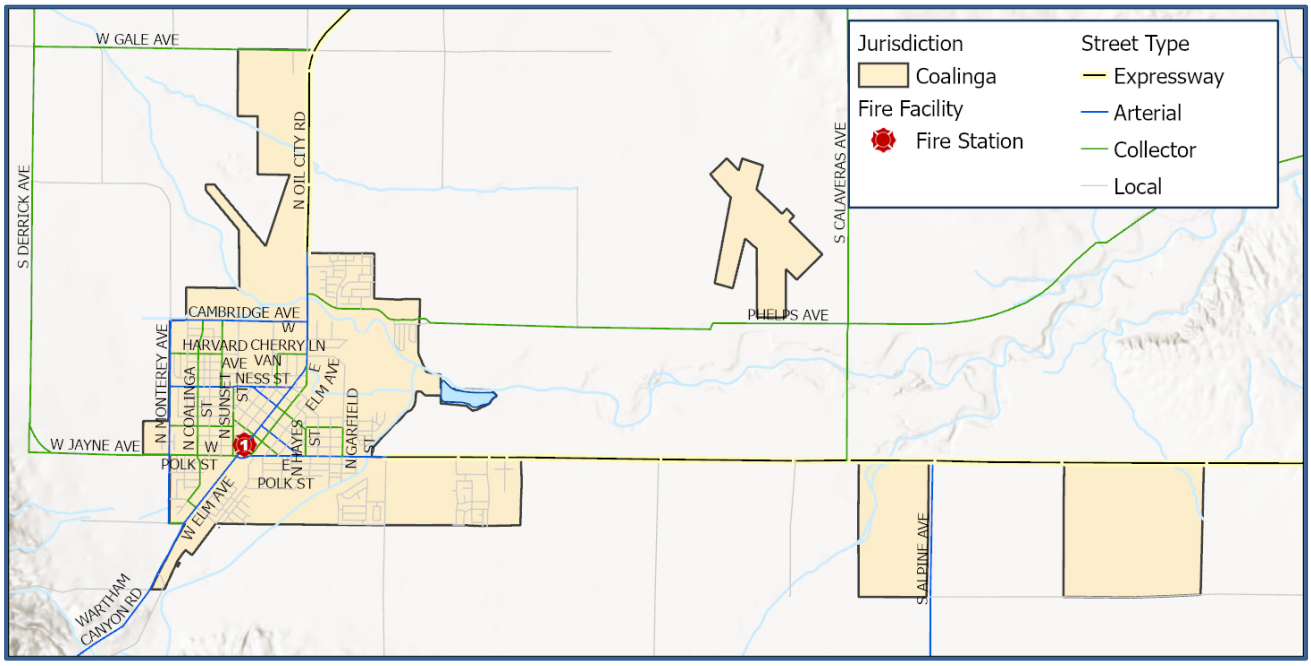
Description of the Community Served

Overview of the City of Coalinga & Fresno County

Coalinga is a city located in Fresno County and the western side of the San Joaquin Valley in central California. The area was formerly known as Coaling Station A by the Southern Pacific Railroad, which established the site as a coaling station in 1888 for the railroad steam engines. The first post office was established in 1899, and the City was incorporated in 1906.

According to the United States Census Bureau, the 2010 population was 13,380. As of 2019, the population of the City of Coalinga was estimated to be 17,179 persons. The following figure illustrates the study area.

Figure 1: City of Coalinga Study Area Map



Geographic & Topographic Features

Coalinga is located 52 miles southwest of Fresno, California, at an elevation of 673 feet. The topography is generally level, suitable for a number of field crops. The area is located near the eastern foothills of the Diablo Range.

The area geology provides for considerable accumulations of petroleum known as the Coalinga Oil Field. The area is also near an active portion of the San Andreas Fault, where earthquakes are frequent. On May 2, 1983, a 6.5 earthquake nearly destroyed 300 residential buildings, while another 691 buildings suffered major damage.

Weather

The weather in the area has a cold semi-arid climate, with hot summers and cool winters. The average precipitation is 8.25 inches, falling mainly from October to May.

Overview of the Coalinga Fire Department

The following section provides a brief overview of the Coalinga Fire Department, its history, organizational structure, and governance.

History & Formation of the Coalinga Fire Department

The City of Coalinga was founded in 1906, although the community had been occupied since about 1887 due to coal mining and the coming of the Southern Pacific Railroad.

The Coalinga Fire Department has a long history beginning as an all-volunteer department around 1903. The fire department transitioned to a paid/combination configuration in 1906 and then Paid/Reserves in 2007. In 1915, the Department obtained its first motorized fire apparatus, an American LaFrance chemical engine. The second motorized apparatus was purchased at some point between 1916 and 1921. In 1925, CFD purchased its first pumper—a 1924 American LaFrance Type 75 triple combination, which was assigned the moniker "Engine Number 1."

The Department purchased its first ambulance in 1934, in partnership with the police department. The Fire Department purchased the first CFD ambulance in 1937. CFD transported basic life support patients until 1987, when they initiated an advanced life support ambulance staffed by the American Ambulance Company. In 1998 The CFD transitioned from using American Ambulance Company personnel to paramedic firefighter staffing utilizing CFD personnel.

Organizational Structure

The Coalinga Fire Department operates out of a single fire station located in the central portion of the City and, depending on community growth and increasing demands for service, may need to consider adding a second fire station in the future. In March of 2018, the Department was awarded an *Insurance Services Office* Public Protection Classification (PPC®) rating of 3.

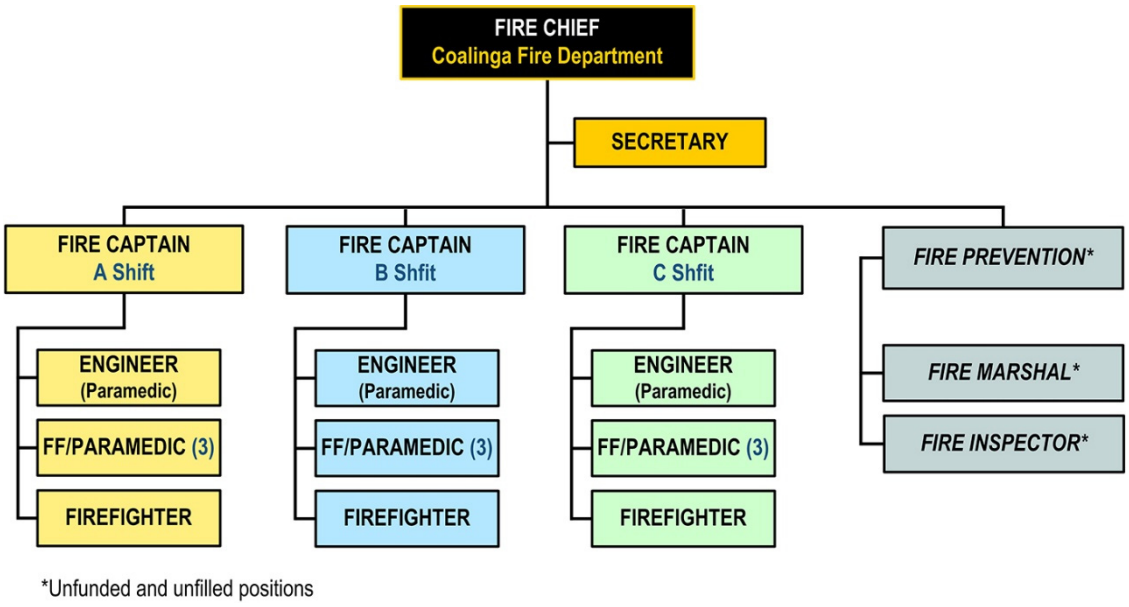
The organizational structure of an emergency services agency is vitally important to its ability to deliver service efficiently and timely while providing the necessary level of safety and security to the members of the organization—whether career, paid-on-call, or volunteer. CFD is organized with a relatively typical fire department hierarchy.

Governance & Lines of Authority

The City of Coalinga is a full-service city with a council-manager system of government. The City is divided into five Council Districts from which the five-member City Council is elected. The City Manager answers to the Council and supervises the various department heads and CFD Fire Chief.

The Fire Chief oversees the Department and, together with the Secretary to the Fire Chief, comprises the organization's administration. As is demonstrated in the following figure, Emergency Operations is comprised of three shifts (A, B, and C)—of which one Fire Captain supervises each. In addition to the Fire Captain, each shift is assigned one Engineer/Paramedic, three Firefighter/Paramedics, and one Firefighter. Currently, the Prevention Bureau does not have any staff and remains unfunded.

Figure 2: Coaling Fire Department Organizational Chart (2021)



Each shift staffs an engine company and two Advanced Life Support (ALS) ambulances. When necessary, the Department's single ladder is cross-staffed by the engine crew.

Staffing & Personnel

At the time of this study, there were 18 full-time shift personnel involved in delivering services to the city. Staffing coverage for emergency response is through the utilization of career firefighters on 48-hour shifts. Minimum staffing consists of no less than six personnel on duty at all times. The Fire Chief and on-duty Captain are responsible for commanding incidents on multi-company emergency operations and more complex incidents.

The following figure illustrates administrative and staffing support for the Coalinga Fire Department at the time of the study.

Fire Chief Position

The Fire Chief is appointed by, and answers directly to, the City Manager. The responsibilities of the Fire Chief are varied, and they encompass both City-designated and state statute requirements. Currently, the Fire Chief manages the appropriate span of control that is consistent with best management practices. The Fire Chief is also responsible for Fire Prevention duties and fills the role of Fire Marshal for the City.

The following figure illustrates response personnel by rank in the organization.

Figure 3: Operations Personnel by Rank

Position	Number
Fire Captain	3
Apparatus Operator/Paramedic	3
Firefighter/Paramedic	9
Firefighter	3

Description & Review of Services Provided

The Coalinga Fire Department is an all-hazards agency providing multiple services and programs:

- Traditional fire protection
- Paramedic Advanced Life Support (ALS) fire engine response
- Patient transport by Advanced Life Support ambulance
- Special operations and technical rescue
- Hazardous materials response at the First Responder Operations level

- Life-safety programs (inspections, code enforcement, plan reviews)
- Public education and prevention programs
- Fire and arson investigations (in development)

Operations & Deployment

The following figure provides basic information on each department's core services, its general resource capability, and information regarding staff resources for each service.

Figure 4: Core Services of the Coalinga Fire Department (Part 1)

Service	General Resource & Asset Capability	Basic Staffing Capability per Shift
Fire Suppression	1 staffed engine, 1 command unit. Additional automatic and mutual aid engines, aerials, and support units available.	2 suppression-trained personnel on-duty 24/7/365. Additional automatic and mutual aid firefighters available.
EMS	1 Engine–ALS equipped 4 Ambulances–ALS equipped	6 minimum staffing daily trained to BLS minimum. 4 of the 6 are full ALS Paramedics.
Vehicle Extrication	1 engine equipped with hydraulic rescue tools, hand tools, airbags, cutting torch, stabilization cribbing, and a combination cutter-spreader rescue tool.	6 minimum staffing 24/7/365. All firefighters are vehicle rescue trained.
High-Angle Rescue	1 engine equipped with rescue-rated rope and all associated hardware.	No personnel trained to RS1 level; no policy with respect to minimum daily staffing.
Trench & Collapse Rescue	1 engine equipped with limited equipment and hand tools for initial stabilization.	No minimum daily staffing; trained to minimum Basic Trench Rescue and awareness.

Figure 5: Core Services of the Coalinga Fire Department (Part 2)

Service	General Resource& Asset Capability	Basic Staffing Capability per Shift
Swiftwater Rescue	All engines equipped with throw bags, PFDs, and helmets.	Awareness and Technician Swift Rescue
Confined Space Rescue	1 engine cross-staffed equipped with a tripod, cribbing, pneumatic shores, air monitoring equipment, basket stretchers, and rescue-rated rope.	No daily minimum staffing; all personnel trained to the minimum Operations level.
HazMat Response	HazMat response is provided at the First Responder (FR) level.	Minimum daily staffing; trained to minimum FR level & decon training. Fire Chief is HazMat IC qualified

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

The Department serves a primary fire/EMS area of approximately seven square miles from one fire station. The CFD also provides ambulance response coverage to 1,200 square miles surrounding Coalinga. The agency has one frontline engine and two paramedic or ALS-level ambulances. The CFD relies on neighboring fire agencies for the provision of Hazardous Materials Response.

Management Components

Effective fire department management is a common challenge for fire service leaders. Today's fire department must address management complexities that include an effective organizational structure, a qualified workforce, maintenance of personnel competencies, adequacy of emergency response, and financial sustainability for the future. In this section, the components of management will be discussed; however, it must be noted that good management alone will not guarantee a successful and effective organization.

Foundational Management Elements

To be effective, the management of a department needs to be based on a number of components. These include a clearly stated *mission* (what is the fundamental purpose of an agency?); a *vision* for the future (where is the organization going?); and the *values* or *guiding principles* (how will the organization treat its members, as it navigates from its current state to its desired future state?). From these fundamental elements, the organization evaluates the environment in which it operates and establishes a series of strategic initiatives, goals, and objectives. These elements combine to form a strategic plan.

The development of baseline management components in an organization enables it to move forward in an organized and effective manner. In the absence of foundational management elements, the organization will tend to operate in a random and generally ineffective manner. The City of Coalinga Fire Department has one of the three foundational management elements: a mission statement, a vision statement.

Mission Statement

The mission statement should tell why the Department exists and perhaps how the mission will be executed. The mission of the Coalinga Fire Department is as follows:

The City of Coalinga Fire Department is dedicated to providing effective emergency services and education to ensure community safety and enhance the quality of life to our citizens.

Vision Statement

The vision should define the Department when it has achieved its desired level of excellence. While the organization may not exhibit these traits consistently at this point in time, its goal is to achieve them. The Coalinga Fire Department has not yet established a formal vision statements.

Values Statement

Every organization has its own unique combination of values, which govern the decisions of the group. These values represent the organizational culture and the values statement ideally should be designed by a cross-section of the organization's members. It should accurately state those values which the members hold in common. It should become a document that guides behavior daily for interactions between members and citizens, member to member, staff and line, management, and firefighters. It should be easily understood and internalized if not actually memorized. The Coalinga Fire Department does not currently have a values statement.

Management Documents & Processes

An organization should establish appropriate documentation, policies, procedures, and identification of internal and external issues that affect the agency. Processes must also be established to address the flow of information and communication within the fire department, as well as with its constituents.

Regulatory documents consist of policies and procedures, employee handbooks, and standard operating procedures or guidelines. These documents may be called different things and may be divided up differently in different departments.

A review of the policies and procedures demonstrates that the Coalinga Fire Department uses an internal document management system. The documents are not currently being reviewed to bring them up to date and current. AP Triton recommends a review of all policies and procedures be accomplished on an annual cycle by an individual or group of employees. Reviewing one-third of the documents per year keeps the process manageable. The reviewer(s) can determine if the current practice is the same as the guideline. If there are no changes needed to the documents, the review date can be updated. If changes are needed, the document can be referred to the appropriate individual(s). Of course, as field procedures change, this should also trigger a guideline change. Standard Operating Guidelines (SOGs) and some policies should be the focus of training periodically.

Internal & External Communications

Communication within the organization and to the external world are both very important. The following discussion describes internal and external communications in the Department.

Internal Communications

Internal communications within CFD are accomplished in several ways, from in-person meetings to several print mediums. The in-person meetings include Chief's Tabletop Briefings that occur every first shift of the cycle. These are informal meetings with the shift personnel.

On a quarterly basis, the Department submits a report to Council that captures the activities and events from the previous quarter.

External Communications

Communicating with and educating the public is accomplished primarily through news releases, social media posts (Facebook), and presentations to civic and community groups.

Record Keeping & Documentation

In any organization, documentation of activities is of paramount concern. Coalinga Fire Department does a good job collecting information regarding incidents and other activities. The Department uses ESO as its records management system. Computer files are password protected. Personnel records are kept in locked and secured files. Personnel exposure occurrences are documented and stored in the personnel files. Records for hose testing results, pump testing, gas monitor testing, and vehicle maintenance are maintained. These tests are completed internally. SCBA, breathing air, and ladder testing are all done by outside vendors, and these records are maintained by CFD and the vendor.

Security

Fire Department facilities and Department vehicles are locked by key and security card access. Passwords protect computers. Assets are inventoried and tracked annually. Most of the fire apparatus is parked inside, with two reserve ambulances and a staff vehicle parked outside, which is not secured.

Financial Analysis

City of Coalinga

The City of Coalinga has an assessed valuation of $1,054,117,647 as of June 30, 2020.[1] This represents an increase in taxable value of approximately 9.5% from 2019. The City prepares an operating budget and related other various capital improvement plans based on a July through June fiscal year. As with most municipalities, the City of Coalinga operates through numerous funds, with the General Fund recording revenues and expenses for most governmental activities. General Fund recurring revenues have increased from $6,584,453 (Total GF Revenues of $10,671,603 less the sale of city property of $4,087,150) in FY 16/17 to a budgeted $9,010,361 in FY 20/21, an approximate 37% increase. FY 20/21 General Fund revenues consist of property taxes and assessments (52%), other revenues (23%), fire and EMS charges for services (24%), and airport related revenues (1%).

Tax revenues have increased substantially in the past two years due to the implementation of Measure J, a 1% transaction tax. The City anticipates through its budget adoption, the General Fund revenues will continue to increase at a minimal rate of approximately 2% between FY 19/20 and FY 20/21. The City's operating expenditures provide for the majority of City services offered. These expenditures include general government (9%), police department (37%), fire department (42%), community development (5%), airport (1%), other services (5%), and capital expenditures (1%).

Unlike a for-profit business, municipalities do not have the ability to immediately respond to changing economic conditions and require reasonable reserves to continue to provide service levels. The City's recent sale of city property and its adoption of the Measure J Transaction Tax has allowed the City to restore its fund balance to a positive amount. The following figure summarizes the financial operations of the City's General Fund for FY 16/17 through the adopted budget for FY 20/21. As indicated, the General Fund balance has improved significantly during the past three years.

Figure 6: City of Coalinga General Fund Resources

Revenue/Expenses	Actual 16/17	Actual 17/18	Actual 18/19	Projected 19/20	Budget 20/21
Revenues	10,671,603	8,054,612	8,743,303	8,783,064	9,010,361
Operating Expenditures	11,014,573	7,123,133	6,722,916	8,656,542	8,989,657
Net Change	(342,970)	931,479	2,020,387	126,522	20,704
Beginning Balance	(1,208,626)	(1,551,596)	(620,117)	1,400,270	1,526,792
Ending Balance:	**(1,551,596)**	**(620,117)**	**1,400,270**	**1,526,792**	**1,547,496**

Coalinga Fire Department

The Coalinga Fire Department is a combination agency with 20 full-time personnel supported by six reserve personnel. CFD provides fire suppression, community service programs, public education, and paramedic ambulance services to the community. Additionally, the Department's Prevention Bureau provides the EMS Division and other programs some funding support to defray the cost of its services to the City residents. The following figure indicates the sources of revenue derived from the operations of the EMS Division and attributable to the fire department.

Figure 7: Coalinga Fire Department Actual & Projected Budgets

Revenue/Expenses	Actual 16/17	Actual 17/18	Actual 18/19	Projected 19/20	Budget 20/21
Ambulance Receipts	1,073,709	1,473,718	1,220,588	1,550,000	1,550,000
GEMT Reimbursement	30,602	4,854	—	30,000	—
Transfer In from IGT Funds (Personnel Costs)	—	—	—	487,000	574,087
Fresno Amb. Contract	45,000	45,000	48,729	45,000	45,000
Other Fire/EMS Revenues	50,165	180,620	37,692	21,100	21,100
Total Revenues	1,199,476	1,704,192	1,307,009	2,133,100	2,190,187
Operating Expenditures	2,794,476	2,482,101	2,615,088	3,602,985	3,832,892
Required GF Tax Revenue (subsidy):	**(1,595,000)**	**(777,909)**	**(1,308,079)**	**(1,469,885)**	**(1,642,705)**

The City has received Intergovernmental Transfer (IGT) revenue from the Medi-Cal Program since 2016. These funds have been used to support the Department's delivery of EMS services to the community.

Revenues have exceeded expenditures between FY 16 and budgeted FY 21, resulting in a sizable reserve balance at the end of FY 21. The State has advised the participants that additional payments, while not current, will be made at an undetermined point in the future. The following reflects the revenues from the Medi-Cal Program into and transfers from the IGT Fund, Fund 217, to the Fire Department Operating Fund, Fund 416, FY 16/17–Budgeted FY 20/21.

Figure 8: Intergovernmental Transfer (IGT) Funds from the Medi-Cal Program

Revenue/Expenses	Actual 16/17	Actual 17/18	Actual 18/19	Projected 19/20	Budget 20/21
IGT Revenues from the Medi-Cal Program	905,663	1,847,272	1,488,613	—	—
Interest income	1,694	9,553	30,275	500	500
Total Revenues	907,357	1,856,825	1,518,888	500	500
Transfers to Fund 416	—	—	—	487,000	574,087
IGT-EMS Program Expenses	405,404	—	273	—	—
Total Expenditures	405,404	—	273	487,000	574,087
Increase (Decrease)	501,953	1,856,825	1,518,615	(486,500)	(573,587)
Beginning Reserves	733,479	1,235,432	3,092,257	4,610,872	4,124,372
Ending Reserves	**1,235,432**	**3,092,257**	**4,610,872**	**4,124,372**	**3,550,785**

The following figure shows the operating expenditure history for the previous four fiscal years and the current adopted budget. During the five-year period, the Department's overall budget increased 14%. The most significant operational and financial event in this period was the addition of four additional firefighters in the FY 19/20 budget cycle.

Figure 9: Fire Department Expenditures by Year—Actual & Budget

Expenses	Actual 16/17	Actual 17/18	Actual 18/19	Projected 19/20	Budget 20/21
Salaries & Wages	1,563,953	1,497,666	1,600,517	2,060,758	2,190,788
Employee Benefits	555,581	559,833	544,874	977,627	1,033,704
Services, Supplies & Others	513,436	424,023	458,425	544,600	548,400
Capital Outlay	161,506	579	11,272	20,000	60,000
Totals:	**2,794,476**	**2,482,101**	**2,615,088**	**3,602,985**	**3,832,892**

Capital Improvement Planning

A comprehensive capital improvement and replacement program is essential to the long-term financial and operational stability of any fire and or emergency medical service organization. These programs provide systematic development and renewal of the physical assets and rolling stock of the agency. A capital program must link with the planning process to anticipate and time capital expenditures in a manner that does not adversely influence the operation of the agency or otherwise place the agency in an unfavorable financial position. Items usually included in capital improvement and replacement programs are facilities, apparatus, land acquisition, and other major capital projects. At the time of this writing, the City of Coalinga does not have an adopted multi-year capital improvement plan for facilities and major equipment inclusive of fire apparatus. Additional revenue sources were recently approved by the voters that may allow this to be implemented in the future.

Fire department personnel staff a two-person fire apparatus, and EMS service is provided by staffing two ALS level ambulances on a 24/7 basis with dual-role firefighter/paramedics and firefighter/EMTs. From conversations with the Fire Chief, a third ambulance has been deployed using single-role paramedics and EMTs. This unit was placed in service after this study commenced. This unit is staffed with non-firefighter (civilian) single-role EMT/Paramedics. These positions do not qualify for the Fair Labor Standards Act (FLSA) 53-hour workweek exemption afforded firefighters, and, as a result, any hours worked over 40 are paid at an overtime rate of one and one-half times the base rate.

Additionally, assuming four weeks of paid time off each year for each employee, additional funding is required to cover those hours. Triton calculates that factor at 0.15 of the additional cost of approximately $46,500. Benefits of approximately 42% for retirement, insurance, payroll taxes, and workers compensation are added to this amount to create salaries and benefits totaling $674,182. The ambulance unit and additional uniform costs are estimated at $20,000 for the first year. The following figure calculates the cost of the single-role paramedic and EMT-staffed medic unit that was implemented after the start of this study. As indicated, overtime is a significant issue as these single-role employees are not eligible for the firefighter 7k exemption under FLSA.

Figure 10: Cost Structure of Single-Role (Civilian) Staffed EMS Units

Description	Hours	Pay Rate	Total Cost
Single Role Paramedic			
Straight-time	2,080	$16.00	$33,282
Calculated Overtime	832	$24.00	$19,968
	2,912	—	$53,248
Single Role EMT			
Straight-time	2,080	$15.00	$31,200
Calculated Overtime	832	$22.50	$18,720
	2,912	—	$49,920
Total Salaries per Shift:			**$103,168**
Number of shifts			3
Total salaries			$309,504
Staffing factor			1.15
Total Salaries:			**$355,930**
Payroll taxes			27,229
Retirement			27,520
Insurance			60,564
Worker's compensation			33,813
Total Benefits:			**$149,126**
Total Salaries & Benefits:			**$505,056**
Unit operating costs			20,000
Total Costs:			**$525,056**

Estimated Fire Department Revenues and Expenses for FY 20/21 are projected through FY 25/26, starting with the adopted budget and adjusting it for the third ambulance using single-role EMT/Paramedics. After the study began, the addition of the third ambulance unit to the deployment model was instituted to allow the department to respond to the estimated 375 missed calls and 281 missed transport opportunities in Sections C01 and C12 of the response area.[2] This is projected to enhance revenue by approximately $221,621 from ambulance service based on the average recovery per transport incident. These changes result in a revised projected revenue of $1,771,621 from ambulance services in FY 20/21. Salaries are projected to increase at a 5.25% rate annually.

The net increase in cash flow from the addition of the third ambulance unit is offset by the costs of operating the third ambulance unit. It is anticipated that the shortfall in revenues will be provided through a transfer from the IGT Reserve balance to maintain a similar contribution from the City's General Fund to support the Fire Department. The following figure projects fire department revenues and expenses from the current budget year, FY 20/21 through FY 25/26.

Figure 11: Projected Fire Department Revenues & Expenditures by Year

Revenue/Expense	Revised 20/21	Projected 21/22	Projected 22/23	Projected 23/24	Projected 24/25	Projected 25/26
Ambulance Receipts per Original Budget	1,550,000	1,813,173	1,849,437	1,886,426	1,924,154	1,962,6397
GEMT Reimbursement	—	—	—	—	—	—
Transfers in from IGT	574,087	1,130,516	1,303,555	1,486,189	1,689,927	1,882,301
Fresno Ambulance Contract	45,000	45,000	45,000	45,000	45,000	45,000
Other Fire/EMS Revenues	21,100	21,100	21,100	21,100	21,100	21,100
Original Adopted Budget	2,190,187	—	—	—	—	—
Additional EMS Revenues	221,621	—	—	—	—	—
Projected Total Revenues	**2,411,808**	**3,009,789**	**3,219,092**	**3,438,715**	**3,669,181**	**3,911,038**
Salaries & Wages	2,190,788	2,305,804	2,426,859	2,554,269	2,688,368	2,829,508
Employee Benefits	1,033,704	1,128,324	1,172,576	1,218,920	1,267,461	1,318,306
Services, Supplies, & Others	548,400	564,852	581,798	599,251	617,229	635,746
Capital Outlay	60,000	60,000	60,000	60,000	60,000	60,000
Original Adopted Budget	3,832,892	—	—	—	—	—
Third Ambulance Costs	262,528	550,809	577,859	606,274	636,122	667,478
Total Expenditures	**4,095,420**	**4,609,789**	**4,819,092**	**5,038,715**	**5,269,181**	**5,511,038**
Cash (Required) from GF:	**(1,683,612)**	**(1,600,000)**	**(1,600,000)**	**(1,600,000)**	**(1,600,000)**	**(1,600,000)**

The IGT revenues, while not currently being paid by the State, are expected to continue to accrue at an annual amount similar to the historic levels. The following figure shows anticipated IGT revenues and interest on account balances used to build up the reserve balance. As previously indicated, the revised projections were focused on maintaining the $1,600,000 General Fund support for the Fire Department operations. Transfers to Fund 416 reflect the amounts necessary to maintain that support level.

Figure 12: IGT Revenues from Medi-Cal & Changes to Fund Balance

Revenue/Expenses	Projected 20/21	Projected 21/22	Projected 22/23	Projected 23/24	Projected 24/25	Projected 25/26
Medi-Cal Revenue	—	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Interest income	500	1,000	1,000	1,000	1,000	1,000
Total Revenues:	**500**	**1,501,000**	**1,501,000**	**1,501,000**	**1,501,000**	**1,501,000**
Transfers to Fund 416	574,087	1,130,516	1,303,555	1,486,189	1,689,927	1,882,301
IGT-EMS Expenses	—	—	—	—	—	—
Total Expenditures:	**574,087**	**1,130,516**	**1,303,555**	**1,486,189**	**1,689,927**	**1,882,301**
Increase (Decrease)	(573,587)	370,484	197,445	14,811	(188,927)	(381,301)
Beginning Reserves	4,124,372	3,550,785	3,921,269	4,118,714	4,133,525	3,944,598
Ending Reserves:	3,550,785	3,921,269	4,118,714	4,133,525	3,944,598	3,563,297

Capital Facility & Apparatus

Three basic resources are required to successfully carry out the mission of a fire department:

- Trained firefighters and staff
- Apparatus and equipment
- Fire stations

No matter how competent or numerous the firefighters, if appropriate capital equipment is not available for use by responders, it would be impossible for CFD to deliver services effectively. The essential capital assets for use in emergency operations are facilities and apparatus (response vehicles). Of course, a fire department's financing ability will determine the level of capital equipment it can acquire and make available for use by emergency personnel. This section of the report is an assessment of the respective capital facilities, vehicles, and apparatus of CFD.

Coalinga Fire Station

Figure 13: Coalinga Station & Apparatus

Fire stations play an integral role in the delivery of emergency services for several reasons. To a large degree, a station's location will dictate response times to emergencies. A poorly located station can mean the difference between confining a fire to a single room and losing the structure. Fire stations also need to be designed to adequately house equipment and apparatus, as well as meet the needs of the organization and its personnel—including administrative support staff where applicable. It is important to research needs based on service demand, response times, types of emergencies, and projected growth before making a station placement commitment.

Consideration should be given to a fire station's ability to support the Department's mission as it exists today and into the future. The activities that take place within a fire station should be closely examined to ensure the structure is adequate in both size and function. Examples of these functions may include the following:

- Residential living space and sleeping quarters for on-duty personnel (all genders).
- Kitchen facilities, appliances, and storage.

- The housing and cleaning of apparatus and equipment, including decontamination and disposal of biohazards.
- Bathrooms and showers (all genders).
- Administrative and management offices, computer stations, and office facilities.
- Training, classroom, and library areas.
- Firefighter fitness area.
- Public meeting space.

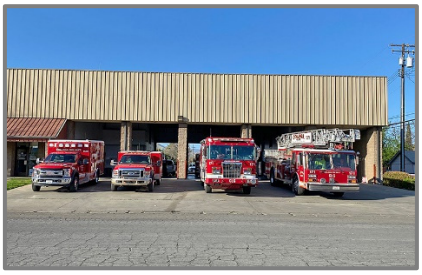
In gathering information from the Coalinga Fire Department, Triton requested that they rate the facility based on the criteria in the following figure.

Figure 14: Criteria Utilized to Determine Fire Station Condition

Excellent	Like new condition. No visible structural defects. The facility is clean and well maintained. Interior layout is conducive to function with no unnecessary impediments to the apparatus bays or offices. No significant defect history. Design and construction match the building's purposes. Age is typically less than 10 years.
Good	The exterior has a good appearance with minor or no defects. Clean lines, good workflow design, and only minor wear of the building interior. Roof and apparatus apron are in good working order, absent any significant full-thickness cracks or crumbling of apron surface or visible roof patches or leaks. Design and construction match the building's purposes. Age is typically less than 20 years.
Fair	The building appears structurally sound with a weathered appearance and minor to moderate non-structural defects. The interior condition shows normal wear and tear but flows effectively to the apparatus bay or offices. Mechanical systems are in working order. Building design and construction may not match the building's purposes well. Showing increasing age-related maintenance, but with no critical defects. Age is typically 30 years or more.
Poor	The building appears to be cosmetically weathered and worn, potentially with structural defects, although not imminently dangerous or unsafe. Large, multiple full-thickness cracks and crumbling of concrete on the apron may exist. The roof has evidence of leaking and/or multiple repairs. The interior is poorly maintained or showing signs of advanced deterioration, with moderate to significant non-structural defects. Problematic age-related maintenance and/or major defects are evident. Age is typically greater than 40 years.

The following figure lists the basic features of the Coalinga Fire Station. Built in 1985, the station is 36 years old.

Figure 15: Coalinga Fire Station

Address/Physical Location:	300 W. Elm Avenue, Coalinga, CA 93210
	**General Description:** CFD operates from this single station which houses all apparatus and on-duty personnel. The station is currently undergoing remodeling to better suit the current staffing. The crew quarters need immediate attention, as does the diesel exhaust emissions system.

Structure						
Date of Original Construction	1985					
Seismic Protection	Consistent with requirements at construction time					
Auxiliary Power	Generator					
General Condition	Fair					
Number of Apparatus Bays	Drive-through Bays	3	Back-in Bays	1		
ADA Compliant	Partial					
Total Square Footage	Approximately 11,000 square feet					
Facilities Available						
Sleeping Quarters	7	Bedrooms	18	Beds	0	Dorm Beds
Maximum Staffing Capability	7+					
Gender Segregation	No					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Station Sprinklered	No					
Smoke Detection	Yes					
Decontamination/Bio. Disposal	No					
Security System	Key Card System					
Apparatus Exhaust System	Not operational at time of inspection					

Apparatus & Vehicles Inventory

Fire apparatus and medic units (ambulances) are unique and expensive pieces of equipment customized to operate for a specific community and a defined mission. Other than its firefighters, officers, and support staff, the next most important fire department resources are likely the fire apparatus, ambulances, and special operations vehicles.

Apparatus must be sufficiently reliable to transport firefighters and equipment rapidly and safely to an incident scene. Such vehicles must be equipped properly and function appropriately to ensure that the delivery of emergency services is not compromised. For this reason, they are very expensive and offer little flexibility in use and reassignment to other missions.

Modern ambulances are complex and sophisticated vehicles that must be sufficiently maintained to ensure that firefighters and EMS providers arrive promptly and must be in a condition to ensure patients are transported safely to the hospital or clinical facility.

Figure 16: Coaling Fire Department Apparatus & Vehicles Fleet Inventory (2021)

Apparatus	Type	Make	Year	Condition	Features
Engines					
Engine 171	Pumper	Spartan/Smeal	2010	Fair	1500 gpm
Ambulances					
Medic 251	Ambulance	Wheeled Coach	2019	Excellent	ALS equipped
Medic 252	Ambulance	Wheeled Coach	2019	Good	ALS equipped
Other Apparatus & Vehicles					
Truck 171	Ladder Truck	E-One/Cyclone	1986	Poor	80-ft. w/pump
Patrol 171	Special	Ford F-450	2009	Good	
Chief 170	Command	Chevy Tahoe	2011	Good	
Reserve Units					
Engine 371	Pumper	KME/Predator	2006	Poor	1500 gpm
7206	Ambulance	Wheeled Coach	2016	Poor	
7207	Ambulance	Wheeled Coach	2016	Poor	

Apparatus Maintenance & Replacement Planning

No piece of mechanical equipment or vehicle can be expected to last indefinitely. As apparatus age, repairs tend to become more frequent and more complex. Parts may become more difficult to obtain and downtime for repair and maintenance increases. Given that fire protection, EMS, and other emergencies prove critical to a community, downtime is one of the most frequently identified reasons for apparatus replacement.

Because of the expense of fire apparatus, most communities develop replacement plans. To enable such planning, fire departments often turn to the accepted practice of establishing a life-cycle for apparatus that results in an anticipated replacement date for each vehicle. The reality is that it may be best to establish a life-cycle for planning purposes, such as the development of replacement funding for various types of apparatus, yet apply a different method (such as a maintenance and performance review) for determining the actual replacement date, thereby achieving greater cost-effectiveness when possible.

Economic Theory of Apparatus Replacement

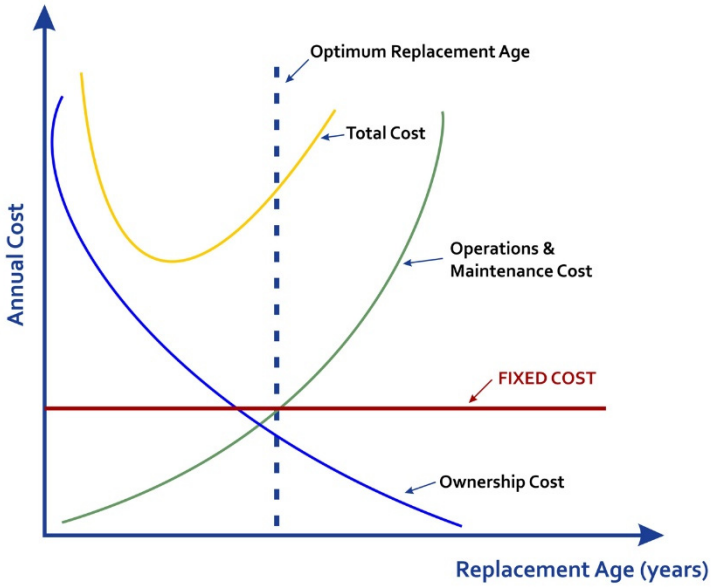
A conceptual model utilized by some fire departments is the *Economic Theory of Vehicle Replacement*. The theory states that, as a vehicle ages, the cost of capital diminishes, and its operating cost increases. The combination of these two costs produces a total cost curve. The model suggests that the optimal time to replace any apparatus is when the operating cost begins to exceed the capital costs. This optimal time may not be a fixed point but rather a range of time.

Shortening the replacement cycle to this window allows an apparatus to be replaced at optimal savings to the fire department. If an agency does not routinely replace equipment in a timely manner, the overall reduction in replacement spending can quickly increase maintenance and repair expenditures. Fire officials, who assume that deferring replacement purchases is a good tactic for balancing the budget, need to understand two possible outcomes that may occur because of that decision:

- Costs are transferred from the capital budget to the operating budget.
- Such deferral may increase overall fleet costs.

The following figure is a graphic representation of the *Economic Theory of Vehicle Replacement*.

Figure 17: Economic Theory of Vehicle Replacement



Regardless of its net effect on current apparatus costs, the deferral of replacement purchases unquestionably increases future replacement spending needs and may impact operational capabilities and safe and efficient use of the apparatus.

The following figure utilized typical industry standards to estimate CFD's frontline vehicles' life expectancies and the costs to replace them.

Figure 18: CFD Estimated Costs & Year to Replace Frontline Apparatus (2021)

Apparatus	Replacement Cost	Current Cash Requirements	Annual Cash Requirements	Replacement Year[B]
Engine 171	$850,000	$757,666	$68,879	2025
Truck 171	$1,450,000	$1,450,000	N/A	**Overdue**
Medic 251	$275,000	$69,140	$34,570	2034
Medic 252	$275,000	$69,140	$34,570	2034
Patrol 171	$225,000	$225,000	N/A	**Overdue**
Chief 170	$90,000	$76,577	$7,658	2029
Totals:	**$3,165,000**	**$2,648,271**	**$145,677**	

[A]Includes cost plus 5% for inflation

[B]Based on typical estimated life expectancy

These figures are estimates only and intended primarily for illustrative purposes. The exact costs to replace vehicles and apparatus will depend on the type and configuration of each. Note that two frontline apparatus are currently overdue for replacement.

Future Apparatus Serviceability

An important consideration for fire departments is the cost associated with the future replacement of major equipment. Apparatus service life can be readily predicted based on factors including vehicle type, call volume, age, and maintenance considerations.

NFPA 1901: Standard for Automotive Fire Apparatus recommends that fire apparatus 15 years of age or older be placed into reserve status, and apparatus 25 years or older should be replaced. This is a general guideline, and the standard recommends using the following objective criteria in evaluating fire apparatus lifespan:

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

It is important to note that age is not the only factor for evaluating serviceability and replacement. Vehicle mileage and pump hours on engines must also be considered. A two-year-old engine with 250,000 miles may need replacement sooner than a 10-year-old one with 2,500 miles.

Apparatus Discussion

As part of this study, Triton provided CFD with an evaluation tool with which to score and rate the condition of its vehicles and apparatus. The tool uses five evaluation components, each with assigned points. The lower the score, the better the condition.

- Vehicle age
- Miles/hours
- Condition (body, rust, accident history, etc.)
- Reliability

CFD's only frontline engine was given a "Fair" condition rating, and its single 35-year-old aerial apparatus rated as "Poor." The two frontline ambulances are considered in "Excellent" and "Good" condition, respectfully. The reserve engine and two reserve ambulances were all considered to be in "Poor" condition.

CFD's two frontline ambulances are relatively new and were built by Wheeled Coach®— considered as one of the highest quality manufacturers in the industry. Combined, the two frontline ambulances have an average of nearly 52,000 miles as of early January 2021.

Capital Medical Equipment

The Coalinga Fire Department utilizes four Physio-Control LIFEPAK® 15 Cardiac Monitor/Defibrillators, which are expected to require replacement by April 2024. The key features include 12-lead capability, oxygen saturation (SpO_2) and end-tidal carbon dioxide ($etCO_2$), and blood pressure (BP) monitoring. The Department also has five Physio-Control automated external defibrillators (AED), one Physio-Control Lifepak® 500 and three Physio-Control Lifepak® 1000s. They are expected to require replacement between 2022–2024.

The Department maintains four Stryker Power-PRO® powered gurneys that operate with the vehicle Power-LOAD® lift assist system in each ambulance. In addition, CFD has two Stryker Stair-PRO® stair chairs.

For extrication and rescue operations, CFD utilizes the Hurst® powered combination spreader-cutter too, the 32B spreader tool, and the ML-28 spreader and cutter.

Stakeholder Input

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

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

Stakeholders were identified within the following groups: Elected Officials, Department Heads, Business Community Leaders, Citizens, Company Officers, Association Leadership, Rank & File, and Administrative Staff. The responses have been summarized and are captured in Appendix A.

Section II:
COMMUNITY RISK ASSESSMENT

Risk Classification

Risk Assessment Methodology

Developing a risk score to determine risks in a community is necessary to provide an organization a method for creating response protocols for an incident. Using the Three-Axis Heron model, a score is established by reviewing factors such as probability, consequence, and impact and assigning a score between 2–8 in each category.[3]

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

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

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

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

Probability

Probability is the likelihood of an incident occurring in the community over time. It can range from a rare event to one that occurs often.

Figure 19: Probability or Likelihood of an Incident

Score	Probability or Likelihood
2	A Rare Occurrence
4	Annual Responses
6	Monthly Responses
8	Weekly Responses

Consequence

The consequence of an incident can vary from minor casualties to severe impacts that may destroy historical or major facilities in the community and create a large loss of employment or life.

Figure 20: Consequences to the Community

Score	Consequence to the Community
2	Minor Impact (minor casualty–family loss)
4	Moderate Impact (moderate casualty–job losses–tax losses
6	Major Impact (high casualty–job losses–tax losses)
8	Severe Impact (irreplaceable - historic - hospital)

Impact

The last factor in determining the risk is the fire department's impact and the critical tasking needed to control or mitigate an incident. This includes the number of emergency responders and apparatus available, whether they are available internally or from external agencies.

Figure 21: Impact on Operational Forces

Score	Impact Against Operational Forces—Critical Tasking
2	Low—Involves the response of a single fire unit with pump capabilities
4	Moderate—Response of a complete primary first alarm assignment
6	High—Full primary alarm assignment and the need for additional units
8	Maximum—Need for full second alarm assignment

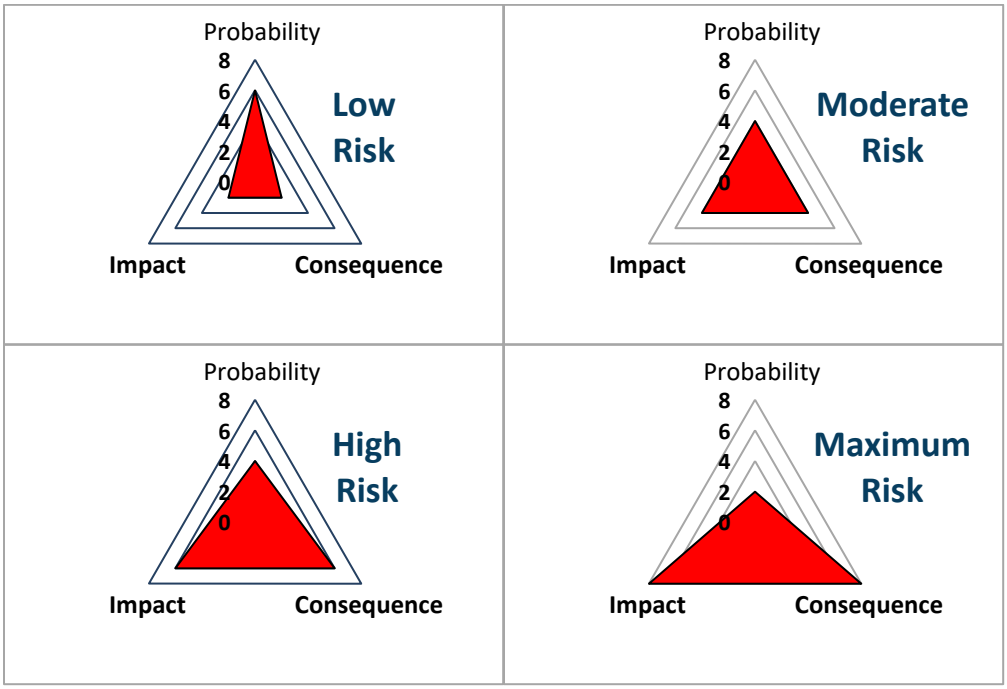
Fire Response

CFD is the primary provider of prevention or mitigation of fire-related incidents. These range from low-risk incidents such as a vehicle fire, to a maximum risk for a fire involving a school. This scoring is applied to four different types of fires in Coalinga to provide information regarding staffing needs to meet critical tasks on the fire ground. Fire risks for a vehicle fire are considered low compared to a maximum risk for a school that houses students.

Figure 22: Fire Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score Range	4.89–16.25			16.26–28.14			28.15–36.79			36.80 +		
Incident Type:	**Vehicle Fire**			**House Fire**			**Apartment Fire**			**School Fire**		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	6	2	2	4	4	4	4	6	6	2	8	8
Score Assigned	12.33			16.60			34.99			48.00		
Available Staffing	13			13			13			13		
ERF Assigned:	**3**			**16**			**25**			**25**		
ERF Remaining:	**10**			**-3**			**-12**			**-12**		

Risk Classifications

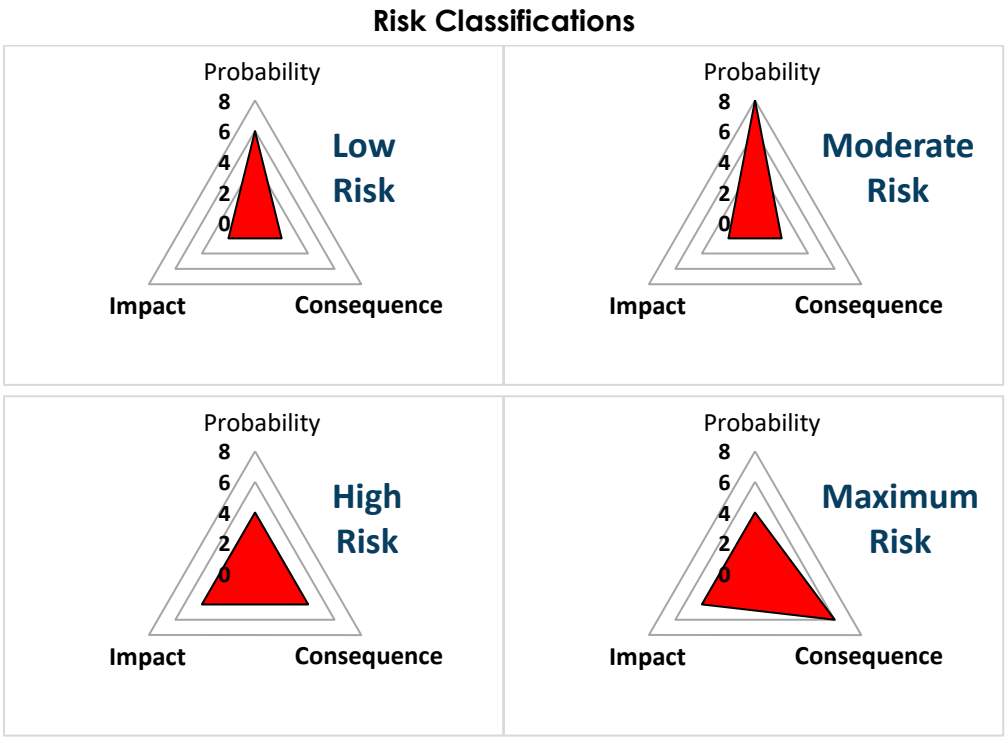


Emergency Medical Services

CFD provides advanced life support emergency medical care to more than 1,200 square miles in Fresno County. The Department has a contract with the California State Hospital and Pleasant Valley State Prison to provide EMS if requested. Low-risk incidents range from a medical assist to a maximum for a cardiac arrest.

Figure 23: EMS Risk Classifications

Description	Low			Moderate			High			Maximum		
Risk Score Range	4.89–12.33			12.34–16.25			16.26–25.92			25.93 +		
Incident Type:	**Medical Assist**			**Sick Person**			**Motor Vehicle with Injuries**			**Cardiac**		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	6	2	2	8	2	2	4	4	4	4	6	4
Score Assigned	12.33			16.625			19.60			26.53		
Available Staffing	13			13			13			13		
ERF Assigned:	**2**			**3**			**6**			**6**		
ERF Remaining:	**11**			**10**			**7**			**7**		

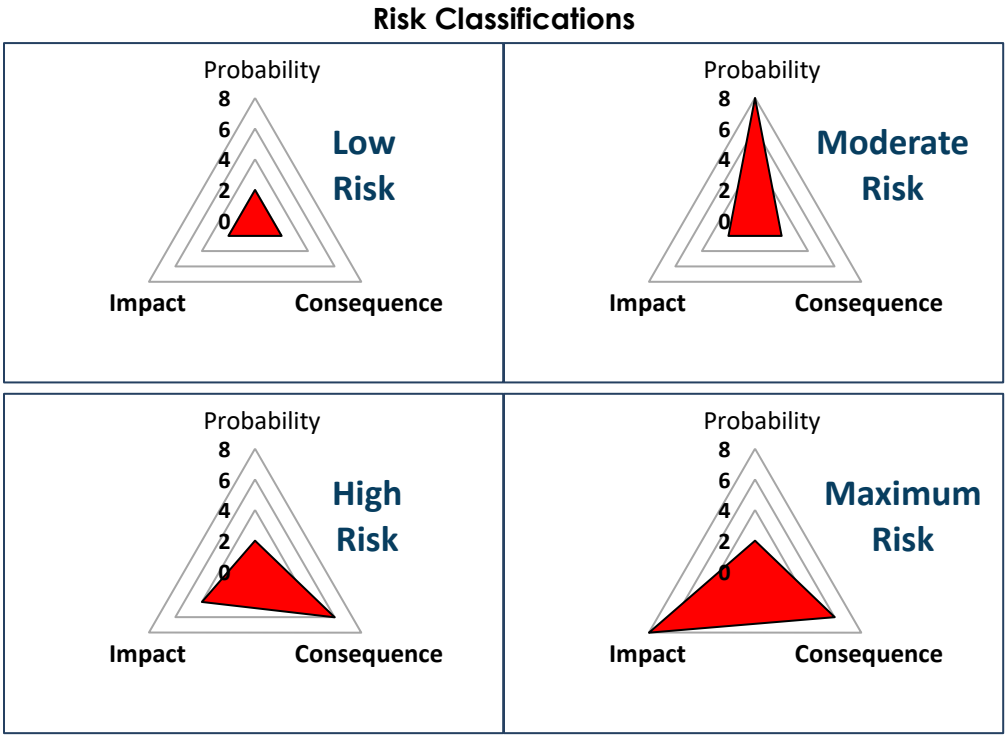


Technical Rescue

Rescue services can vary from a low risk such as accessing a locked vehicle with a child inside to a confined space incident (maximum) that potentially requires a large number of staff to mitigate the incident. CFD does not provide any technical rescue services above the Operations level and relies on Fresno County for assistance for an incident above their ability to manage or control the event.

Figure 24: Technical Rescue Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score Range	4.89–13.85			13.86–16.25			16..26–28.14			28.14 +		
Incident Type:	**Lockout**			**Motor Vehicle Accident**			**Extrication**			**Confined Space**		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	2	2	2	8	2	2	2	6	4	2	6	8
Score Assigned	4.89			16.25			19.80			36.77		
Available Staffing	13			13			13			13		
ERF Assigned:	**3**			**6**			**7**			**11**		
ERF Remaining:	**10**			**7**			**6**			**2**		



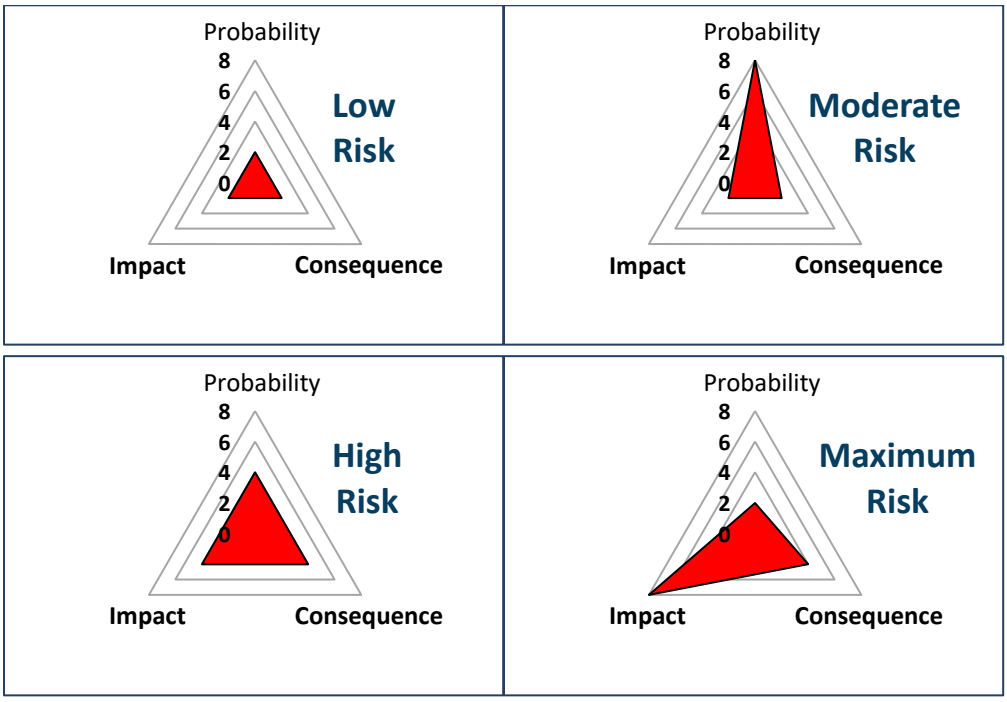
Hazardous Materials

The type of hazardous material responses can vary from low-risk odor investigations to the maximum risk for a fuel tanker fire in the higher population areas. Most of these incidents can be managed by CFD, but higher risks will need assistance from outside resources. CFD is trained to the hazardous materials operations levels and would receive assistance from Fresno County during a major event.

Figure 25: Hazardous Materials Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score Range	4.89–13.86			13.87–16.25			16.26–19.60			19.61 +		
Incident Type:	**Odor Investigation**			**Gasoline Spill**			**Carbon Monoxide Incident**			**Fuel Tanker Fire**		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	2	2	2	8	2	2	4	4	4	2	6	8
Score Assigned	4.89			16.25			19.6			36.77		
Available Staffing	13			13			13			13		
ERF Assigned:	**3**			**4**			**4**			**15**		
ERF Remaining:	**10**			**9**			**9**			**-2**		

Risk Classifications

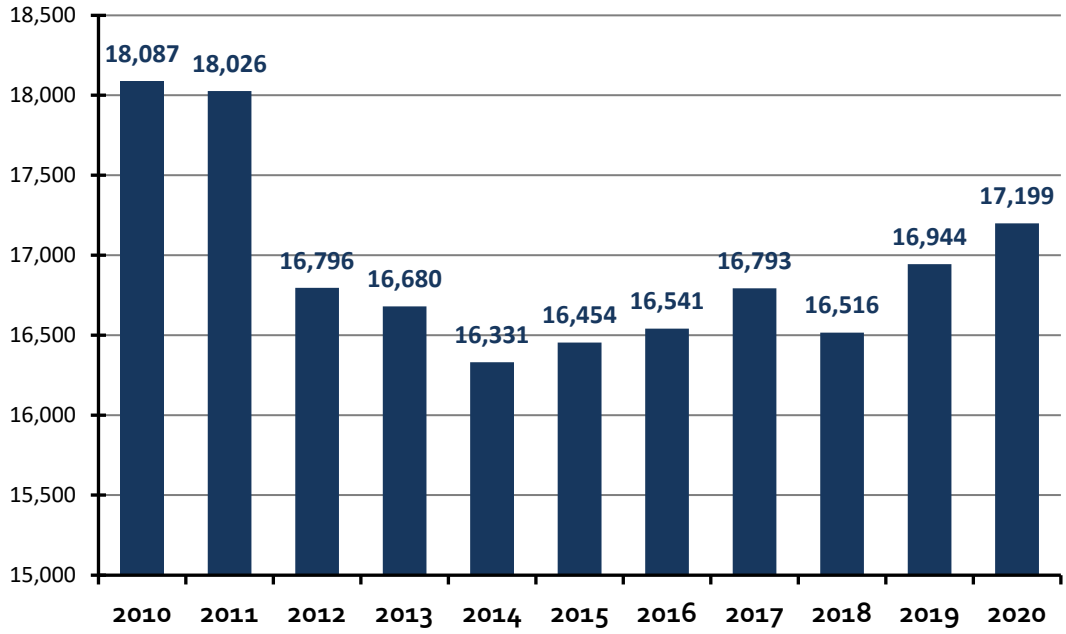


Population Density & Demographics

Population

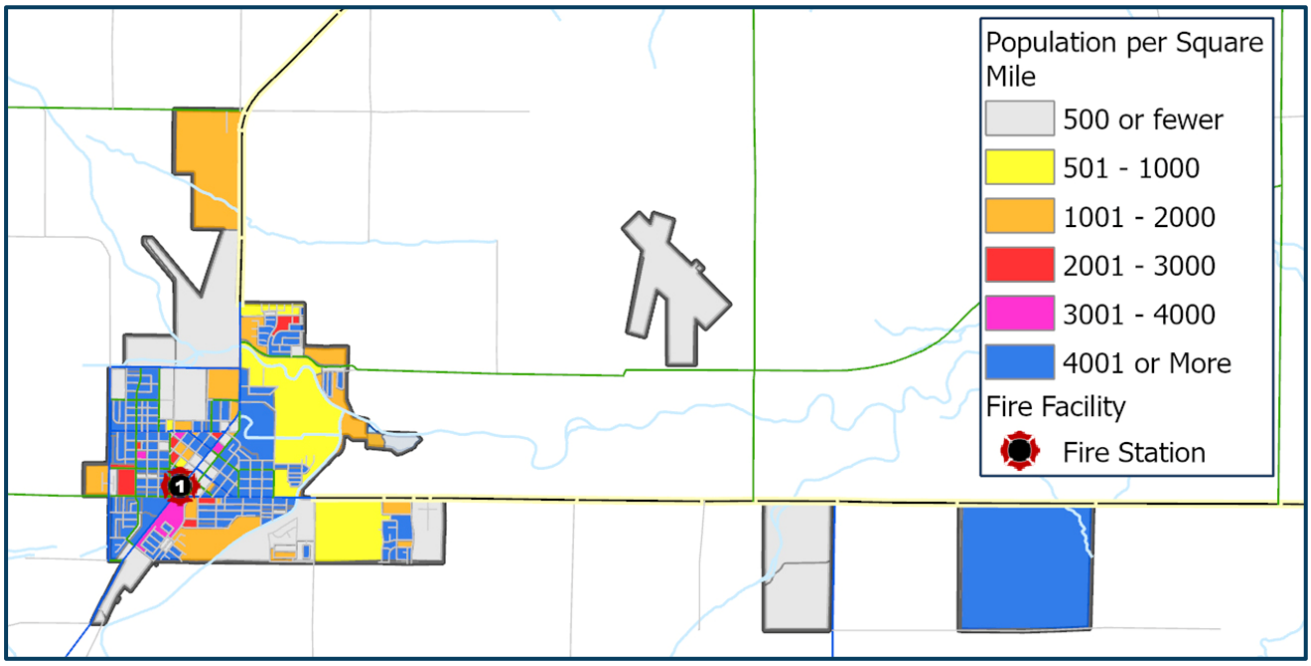
The following sections will review the population and demographics of Coalinga and how it impacts CFD and associated risks. The population of Coalinga, based on data from the California Department of Finance, depicts a large decrease from 2010 to 2012 and isfluctuating yearly. The current estimate, as of January 1, 2020, is 17,199.[4] U.S. Census data indicates variations between 2010 to 2012 but can be explained by the lack of counting the Pleasant Valley State Prison population.

Figure 26: Coalinga Population (2010–20)



The population per square mile provides agency information where it can expect a higher volume of incidents. A review of Coalinga's incident responses confirms that population density aligns with where incidents occur. CFD can anticipate that call volume will rise as the City grows and the population increases. It is incumbent that the Department recognizes growth patterns with the population increase.

Figure 27: Population Density per Square Mile



At-Risk Populations

An area's population will contain different types of residents who may be at a higher risk for fires and other unintentional injuries. When an incident occurs, it affects service delivery for CFD. The CFD response area is considered urban but primarily residential with commercial occupancies along primary thoroughfares. NFPA has identified groups with an increased risk of injury or death from a fire, as indicated below.[5]

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

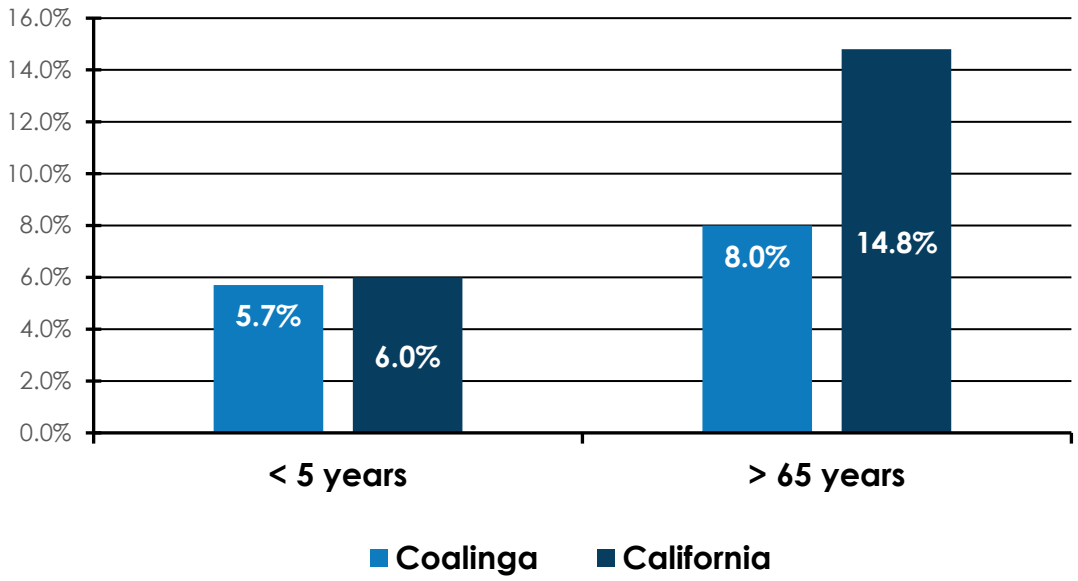
Data from 2019 U.S. Census American Community Survey 5-year estimates identified several groups in these categories that are more likely to need emergency services, specifically EMS, than other populations. [6]

Age

The age of CFD's population may directly relate to higher service demands, specifically to older adults. The percentage of the population in Coalinga less than five years of age is 5.7% compared to California at 6.0%. This younger population will need additional assistance if required to evacuate a building during a fire or other unintentional incident.

The number of adults older than 65 years of age in Coalinga is 8.0%, while California is considerably higher at 14.8%. This is confirmed by the median age of 32.1 compared to 38.5 in California. It should be expected that those in this age group will create a higher demand in service. As adults age, their mobility may decrease which will place them at a higher risk during a fire if their ability to escape a fire is reduced.

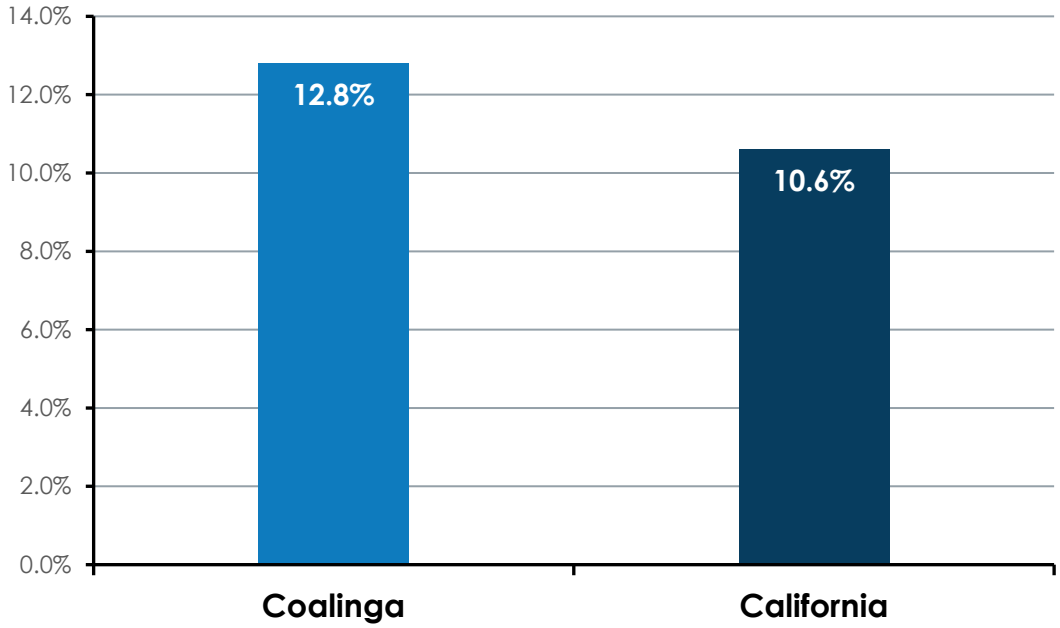
Figure 28: Coalinga Percentage of Population by Age Risk



Disabilities

The residential population with disabilities is 12.8% in Coalinga compared to California's at 10.6%. This population group may be unable to self-evacuate a building during an emergency or need additional medical services because of their disability. This may create additional demand for services specifically as they age. It is noted that 46.5% of the population 65 years of age and older has a disability.

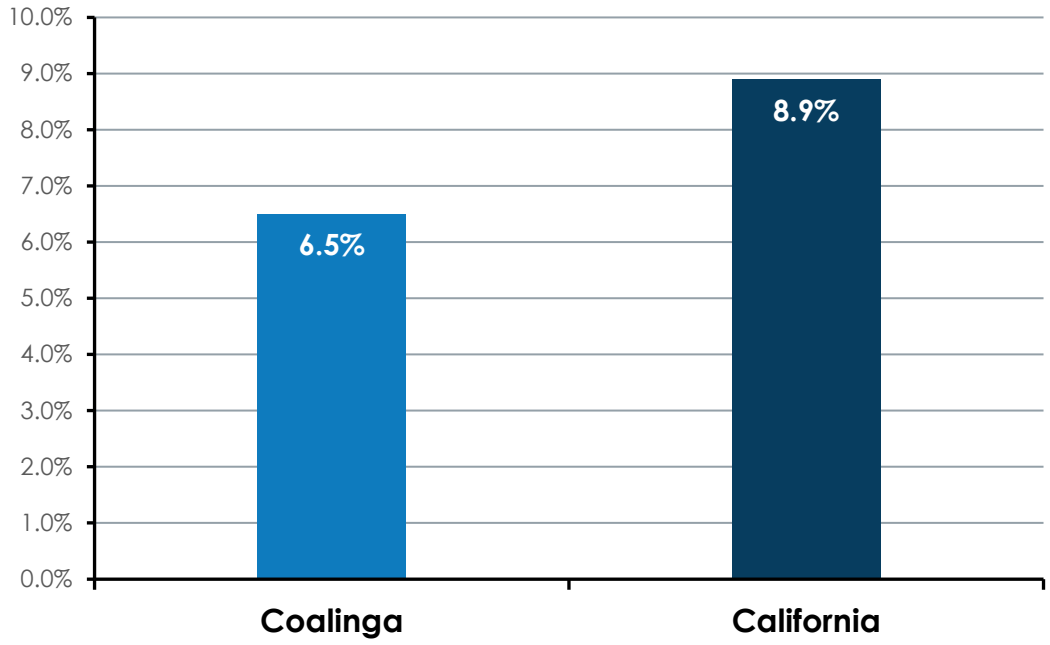
Figure 29: Coalinga Percentage of Population with Disabilities



Persons without Health Insurance

The population in Coalinga with an age of less than 65 and without health insurance is estimated at 6.5%, which is lower than California at 8.9%. This group is likely to require additional emergency medical assistance because of chronic illnesses because they did not seek treatment. This affects lower-income populations since they have difficulty paying for medical visits because of the lack of insurance.

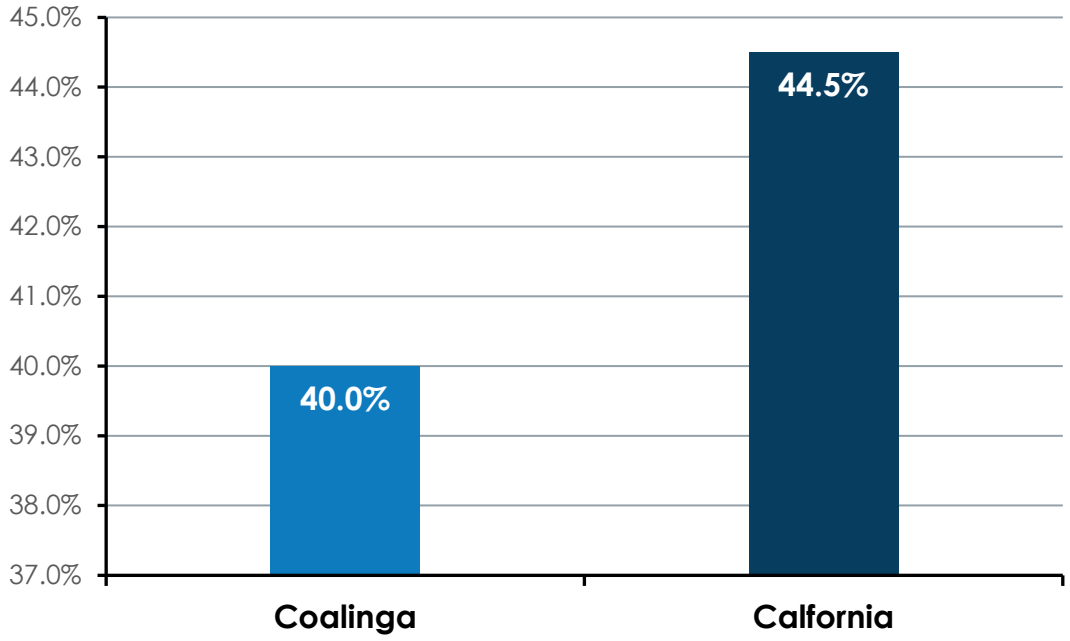
Figure 30: Coalinga Population without Health Insurance



Language Barrier

The population that uses a language other than English at home in Coalinga is 40.0% and is less than California at 44.5%. This group may present problems such as their inability to communicate during an incident involving CFD. This will require CFD to use multiple communication types, whether in verbal or written form when interacting with the community. This population may not understand the smoke alarm technology designed to provide an early warning during a fire, increasing the risk of injuries or death in their home.

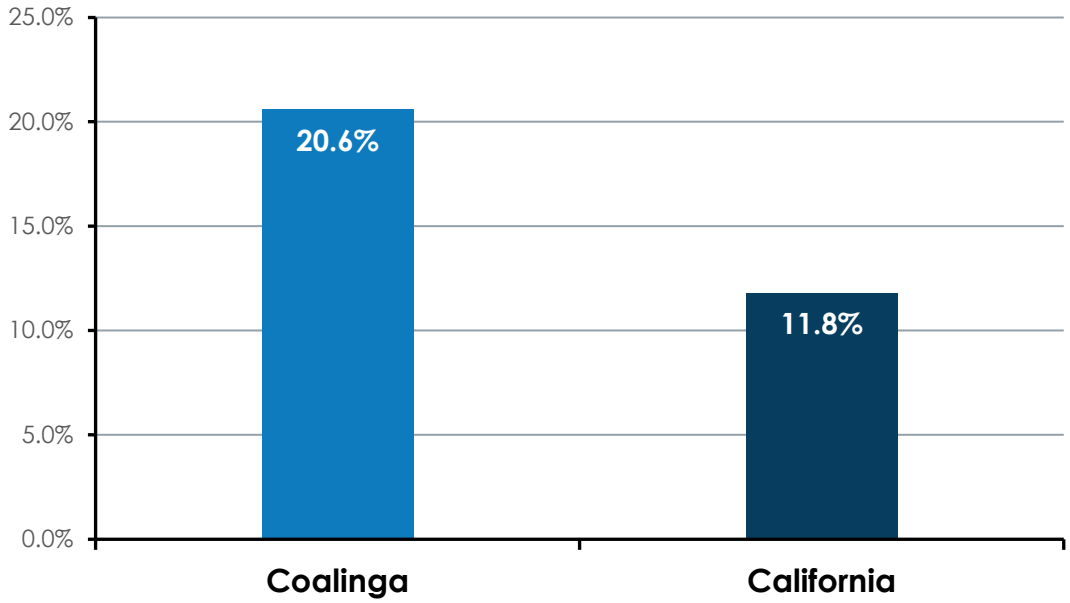
Figure 31: Language Spoken at Home Other Than English



Low Income Population

The lack of high incomes has an increased risk for fires and medical illnesses on the population because of their age, inability to receive adequate medical services because of no health insurance, inability to pay, and the condition of their housing. Colinga's population that speaks a language other than English is 40.0% compared to the state at 44.5%. People living below the poverty level are considered at the highest risk when combined with other factors such as education levels, disabilities, or inability to work.

Figure 32: Population in Poverty

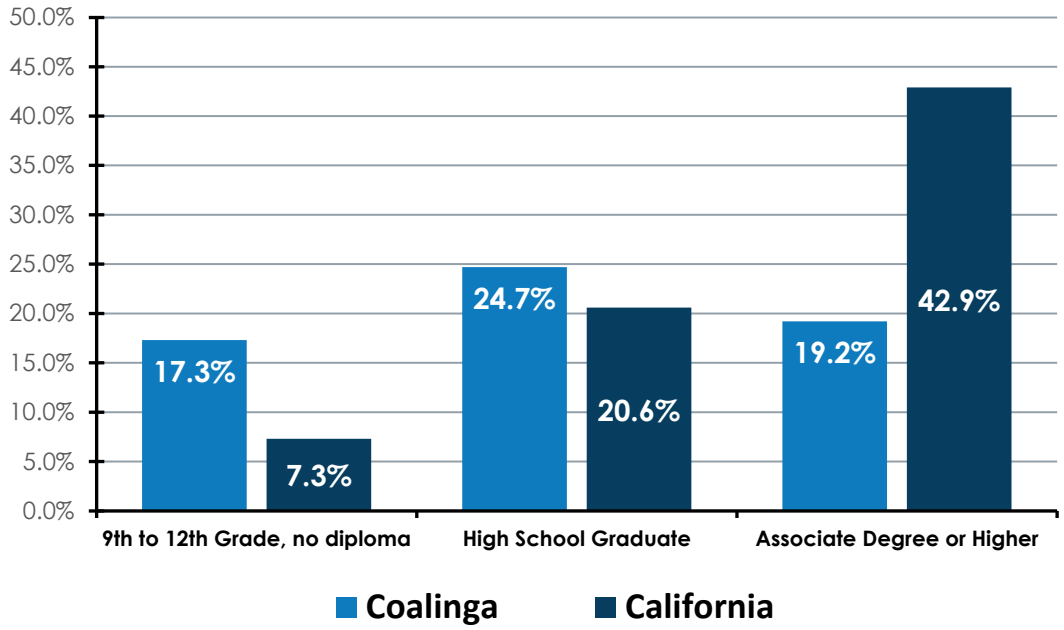


Demographics

Education

Although educational attainment is not one of the at-risk populations, it is another group that should be considered when developing risk reduction programs. In many cases, those with lower education levels also fall into lower incomes and no health insurance. In Coalinga, 17.3% of the population over the age of 25 is considered to have at least a 9th–12th-grade education but no diploma compared to 7.3.% in California. The population with a high school diploma is 24.7%, while California is less at 20.6%. The population over age 25 with an associate's degree or higher is 19.2%, while California is much higher at 42.9%.

Figure 33: Education Levels Over the Age of 25



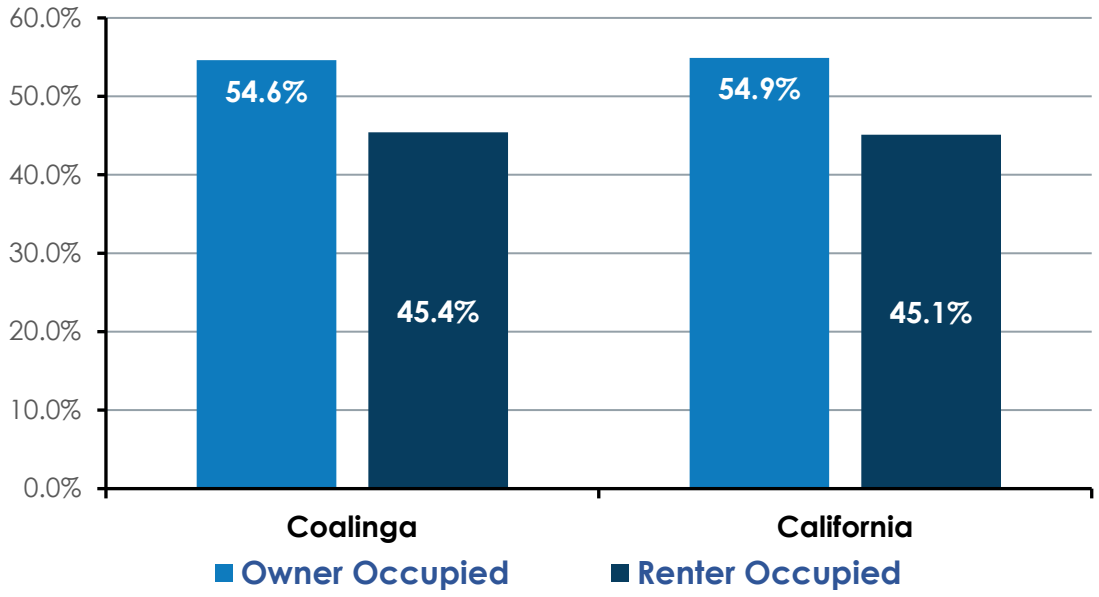
Housing Characteristics

Housing types will vary in a community and can provide insight into ownership, age of the home, and the number of units in the building. In Coalinga, there are approximately 4,721 housing units, with 90.9% occupied while 9.1% are vacant. Vacant structures can pose a risk for the fire department and the community if the building is not secured to prevent entry. If the building is not maintained, the structural integrity can degrade and present problems during a fire. Vandalism may create additional problems not only for the fire department but for law enforcement.

Housing Ownership

Home ownership in Coalinga and California is lower than the United States by 10% for various reasons, including the mobility of the population and lack of residential construction to meet the state's needs. Owner- & rental-occupied housing is similar in Coalinga compared to California. Owner-occupied in Coalinga is 54.6%, while rental-occupied housing is 45.4%.

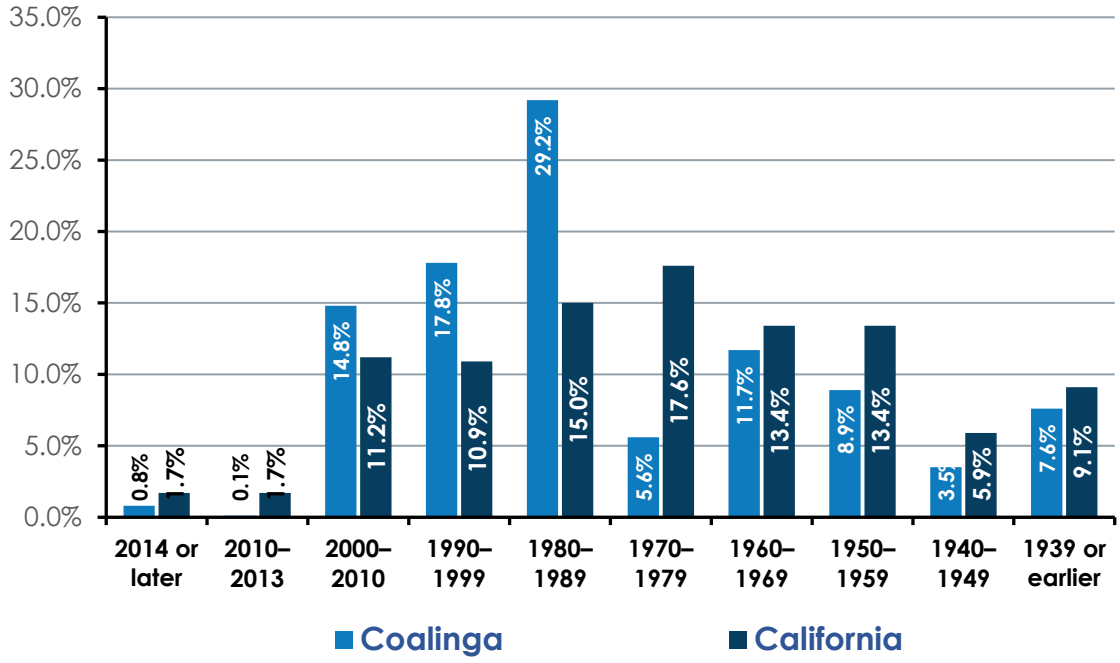
Figure 34: Owner & Rental-Occupied Housing



Age of Housing

Since 1980, 62.6% of the housing has been built in Coalinga compared to 40.5% in California. This can be attributed to May 2, 1983 earthquake, which required rebuilding many homes in the community.

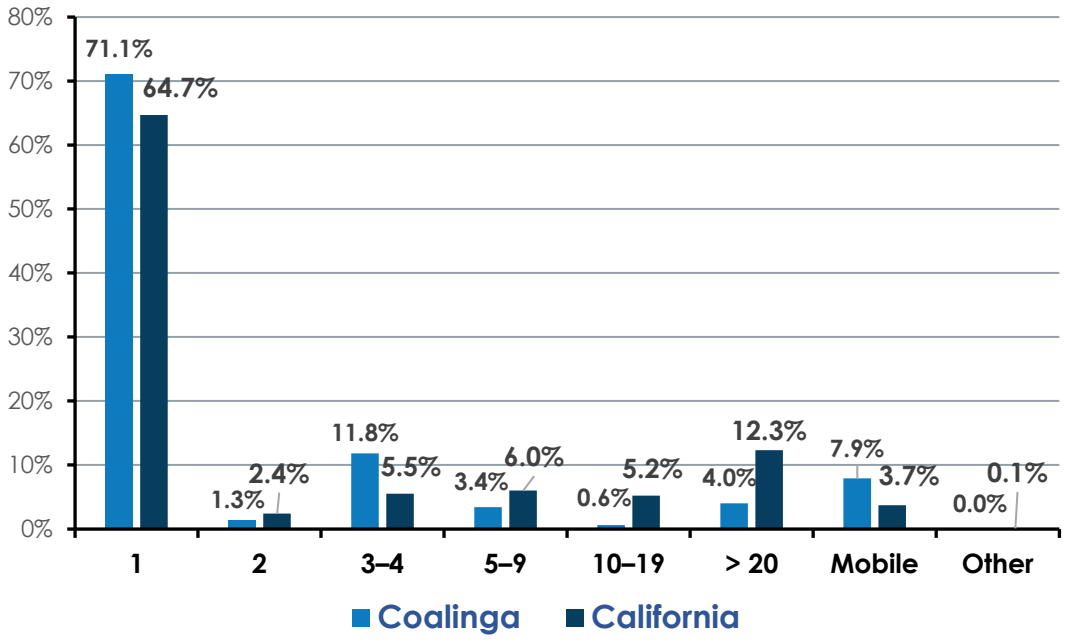
Figure 35: Age of Housing in Coalinga



Housing Units

In Coalinga, 71.1% of the structures are considered single-family homes, which are slightly higher than California at 64.7%.70.1% homes in Coalinga contain 2–3 bedrooms.

Figure 36: Number of Housing Units Per Building



Race & Ethnicity

Race is considered a person's identification with a social group such as White, Black, and Asian, while ethnicity identifies someone based on their nationality, religion, language, or culture.

Figure 37: Racial Composition in Coalinga

Race	Coalinga	California
White alone	59.3%	59.4%
Black or African American alone	2.9%	5.8%
American Indian & Alaskan Native alone	3.0%	0.8%
Asian alone	2.4%	14.8%
Native Hawaiian & Other Pacific Islander alone	0.7%	4.0%
Some other race alone	25.0%	13.7%
Two or more races	6.7%	5.0%

Physical Hazards

Every community is impacted by physical hazards daily. Those hazards can range from rain events to earthquakes. In Fresno County, there have been ten federally declared disasters since 1965. Although these may not have affected Coalinga directly, the events may impact the community. It is noted that the 1983 Coalinga Earthquake was classified in King County, not Fresno, and is not listed in the table. The Fresno County Hazard Mitigation Plan (HMP) lists many more declarations, but they are not specific to the County and are part of a statewide declaration.[7]

Figure 38: Federally Declared Disasters

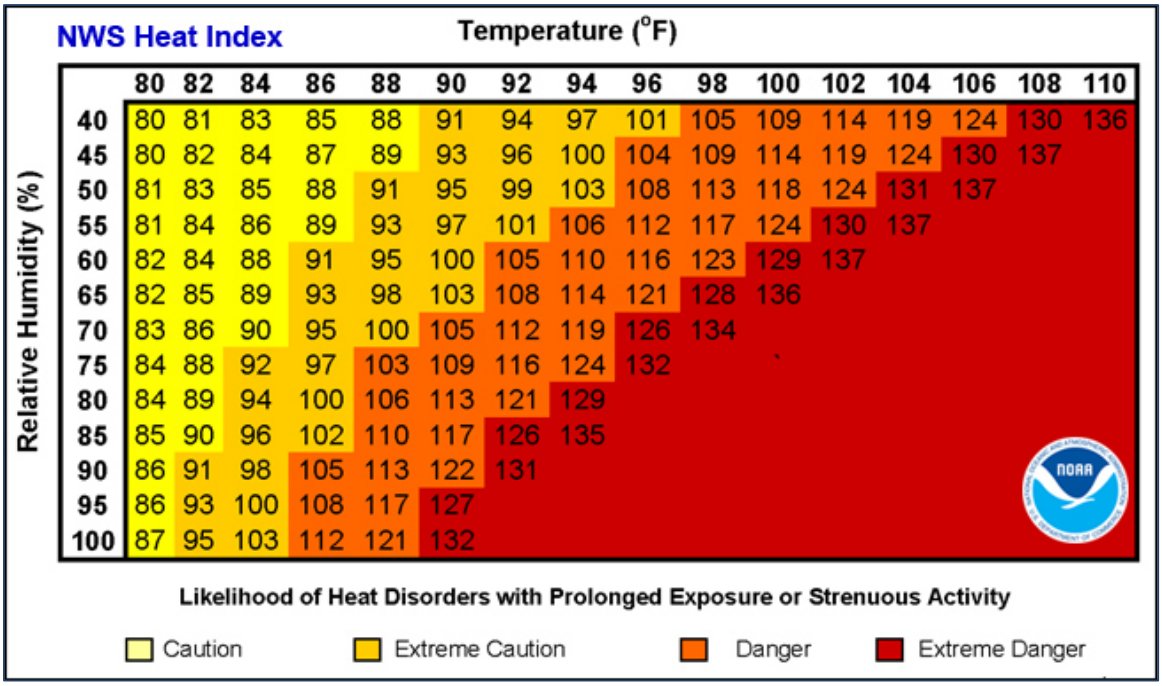
Type	Quantity	Percent
Drought	1	10.0%
Flood	3	30.0%
Freezing	3	30.0%
Severe Storm(s)	3	30.0%

Weather Conditions

Temperature

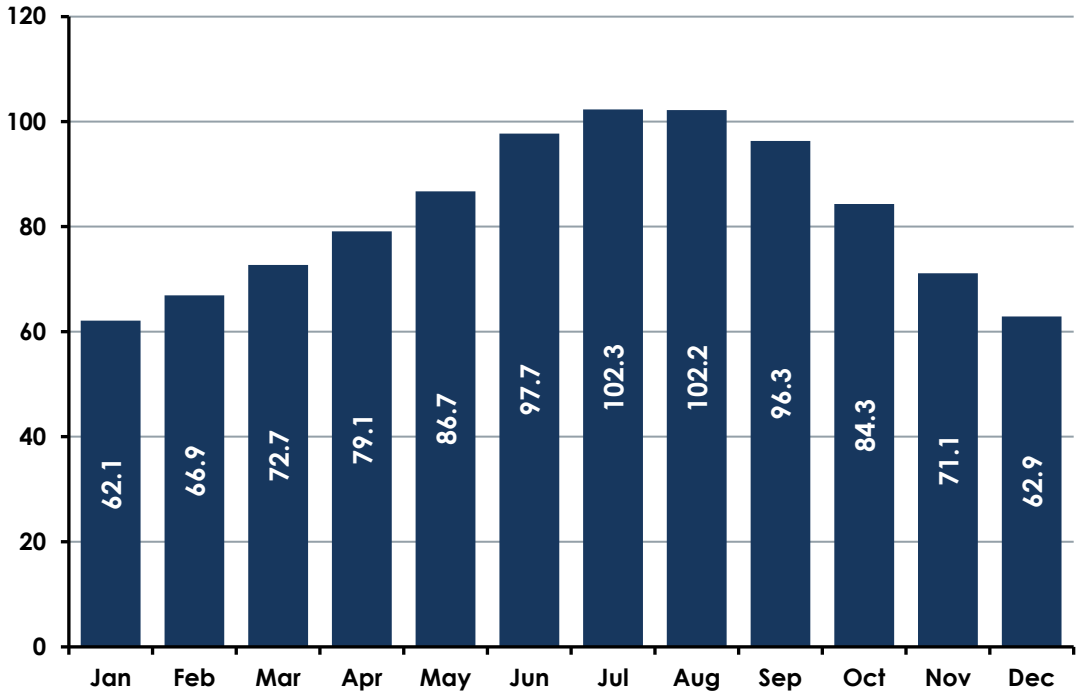
Weather conditions in Coalinga can impact not only the fire department but the entire community. Extreme heat will affect firefighters during extended incident operations and require additional resources for rehabilitation to prevent heat exhaustion. Heat may also affect the community if homes do not have air conditioning or when workers in open areas become overheated.

Figure 39: NWS Heat Index[1]



The average yearly temperature in Coalinga is 61.7 °F which is slightly higher than California at 61.2 °F. The average maximum temperature ranges from 62.1 °F in January to 102.3 °F in July while the minimum ranges from 36.4 °F in December to 69.8 °F in July.

Figure 40: Average High Temperatures in Coalinga[1]



Winds

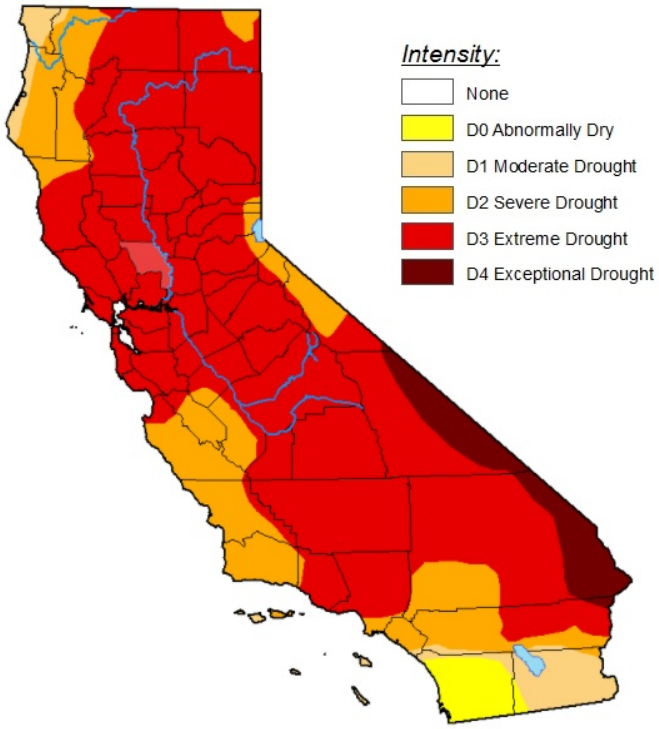
The speed and direction of winds may directly influence how CFD manages an incident response such as hazardous materials or wildland fire. Data from the closest reporting weather station at LeMoore Naval Air Station indicate winds are predominately out of the north-northwest except during December and January when the direction is from the southwest.

Drought

The effects of a drought directly impact the growing of crops and the ability to provide water to replace surface water supplies. Droughts may last for an extended period and create secondary problems during peak wildfire conditions as the vegetation becomes dry and extremely combustible. This creates problems in the community that can cause local resources to become overextended during an event when drought conditions exist.

All of Fresno County is currently in severe drought conditions. The Fresno County HMP states there have been five significant droughts since the 1930s and that droughts will continue to affect the County.

Figure 41: Drought Conditions (May 2021)[1]



Environmental Hazards

Earthquakes

On May 2, 1983, a major earthquake occurred near Coalinga that registered 6.7 on the Richter scale, and more than 5,000 aftershocks were recorded through the end of July 1983. The earthquake damaged or destroyed more than 1,800 buildings, and approximately 800 were considered destroyed. Damages were estimated at $10 million, and more than 90 people were injured.

Other than the City's fire station, public buildings in Coalinga survived the earthquake with only minor damages; however, City's commercial areas received heavy damage. The oil fields near Coalinga received damaged and were closed until repaired. Much of the infrastructure at the oil fields were damaged, including pipelines, storage tanks, subsurface piping, and buildings.

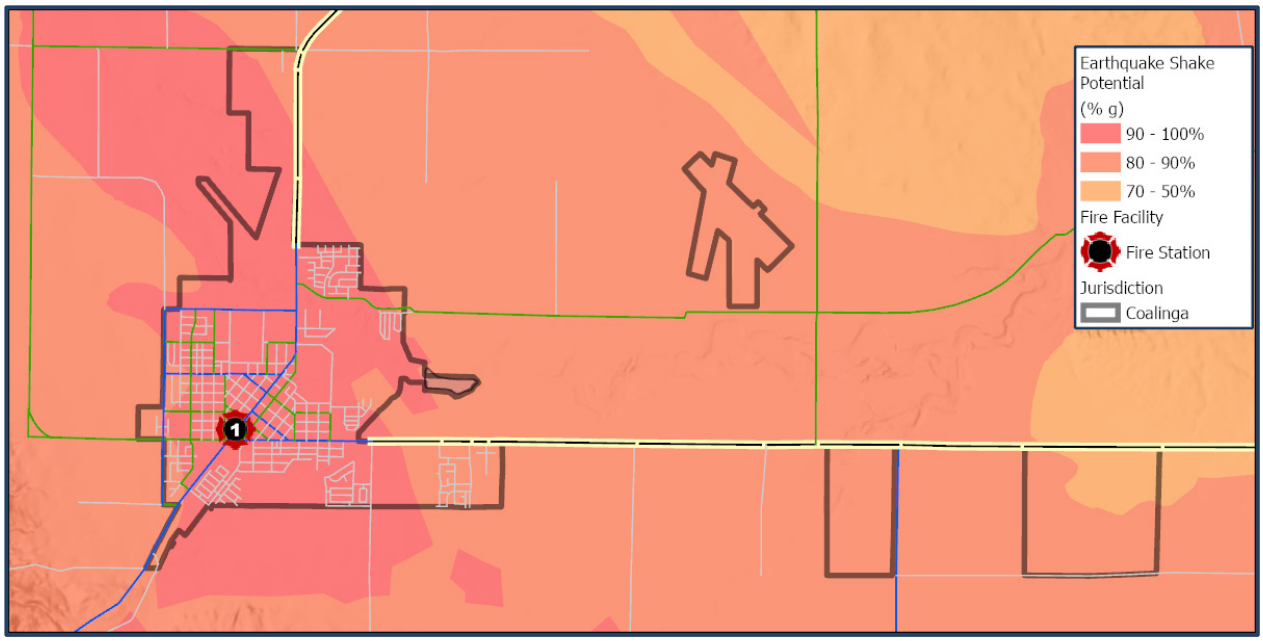
The earthquake originated from the Nunez fault located northwest of Coalinga. Previously this fault had not been identified nor considered active. This earthquake and the 1994 Northridge earthquake were from blind thrust faults beneath the earth's surface and had not been identified by geologists.

The United States Geological Survey is now dedicating more resources and technology to locate these types of faults. Most of the city proper is in a high shaking area. After the 1983 earthquake, the Nunez fault became a designated earthquake fault zone under the 1994 Alquist-Priolo Earthquake Fault Zoning Act. This act prohibits the construction of any building for human habitation or occupancy until geological investigations establish that the location is not impacted by fault traces that would cause a rupture or surface displacement. This is not currently affecting building construction in Coalinga.

The Coalinga Annex to the Fresno County Multi-Jurisdictional Hazard Mitigation Plan (HMP) provides information about hazards. The HMP rates the potential severity of and earthquake to be catastrophic.

The earthquake shaking potential in Coalinga is considered high based on data from the California Geological Survey. Ground shaking potential is based on the 2% chance of an earthquake occurring in 50 years. The probability is based on multiple factors that includes topography, soils, and groundwater if the shaking is strong enough to cause landslides or liquefaction (see the following image).[8]

Figure 42: Earthquake Shaking Potential



Wildland Fires

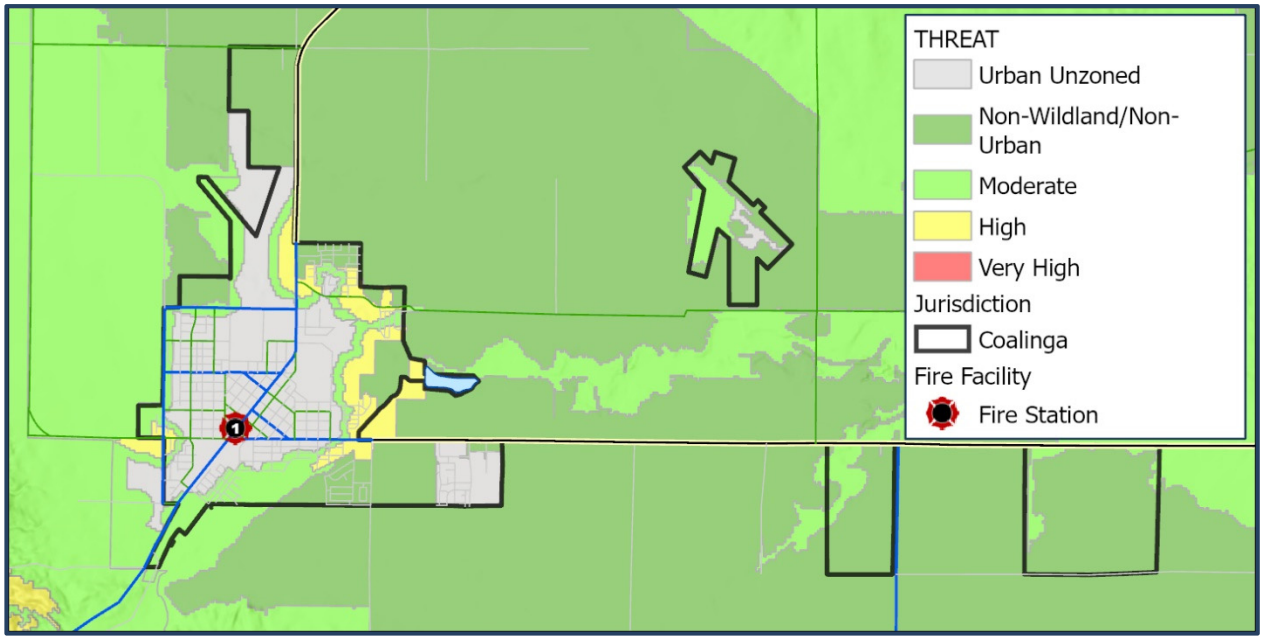
The wildland fire risk in Coalinga is low, but some areas are considered more at risk. There are no areas within the city classified as very high risk. Most of the land surrounding the City is agricultural fields or low-lying brush. These areas are located along the perimeter of the city, and mitigation efforts should be directed to these locations. CAL FIRE classifies the Coalinga service area as a local responsibility area.

The HMP provides information on the risks considered high and includes two critical facilities in the moderate fire hazard zone: a maintenance yard and a health care facility. The HMP identifies 234 residential properties at high risk and 542 at moderate risk.

Although the wildland fire problem is not as high as other portions of California, complacency can occur without proper planning. CFD should implement a wildland-urban interface plan specifically related to the low ground cover type of fire expected in the areas surrounding the city. The program should include how property owners can protect buildings in the urban interface.

Prevention and mitigation efforts should be implemented to reduce the spread of a fire that could affect homes in these areas. Ground cover fires can extend to the home's landscaping and exterior walls if mitigation efforts have not been implemented. A risk assessment for wildland fires should be completed to determine actual areas where the hazards exist, and prevention and mitigation efforts should be implemented. The next figure illustrates the wildfire risks in the Coalinga service area.[9]

Figure 43: Coalinga Wildfire Risks



Floods

Flooding can take various forms in a community. The primary hazards in the Coalinga community are associated with Los Gatos and Warthan Creeks. Los Gatos Creek enters the city from the northwest and travels in an easterly direction, where Warthan Creek joins it. As shown in the figure entitled *Coalinga Levee System*, there are levees along Warthen Creek designed to keep the waters from flooding adjacent properties.[10] There are areas of the City that may receive shallow flooding from low stream capacity along Los Gatos Creek or minimal levee height on Warthan Creek.[11]

Figure 44: FEMA Flood Hazard Zones

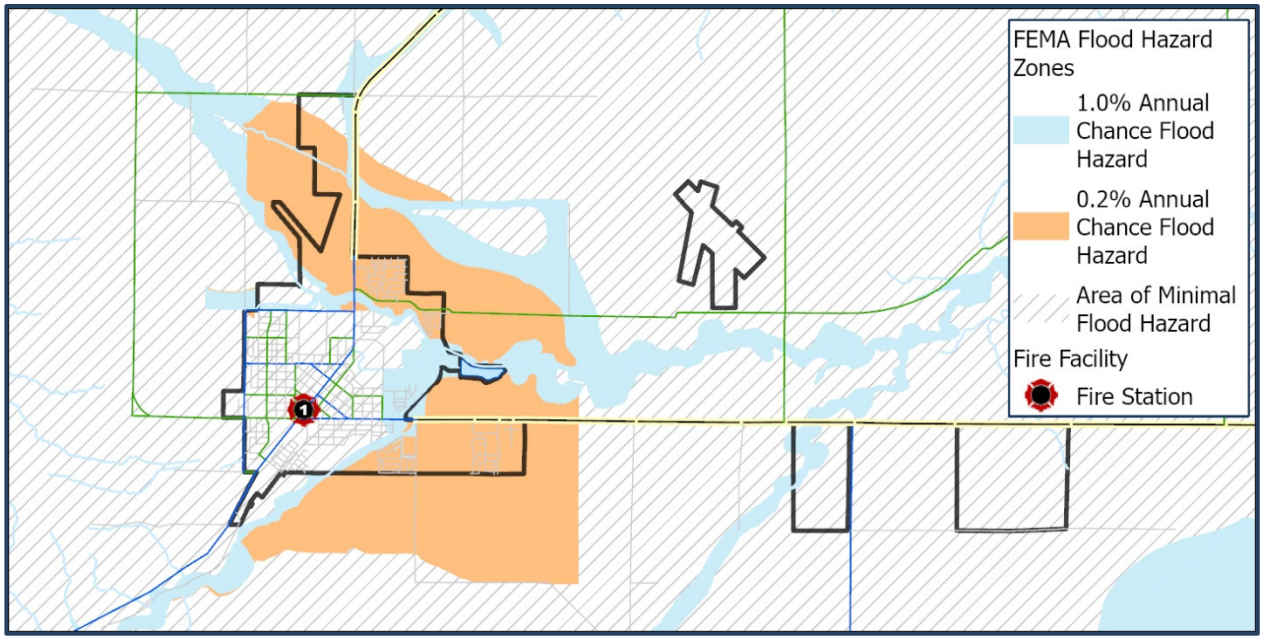
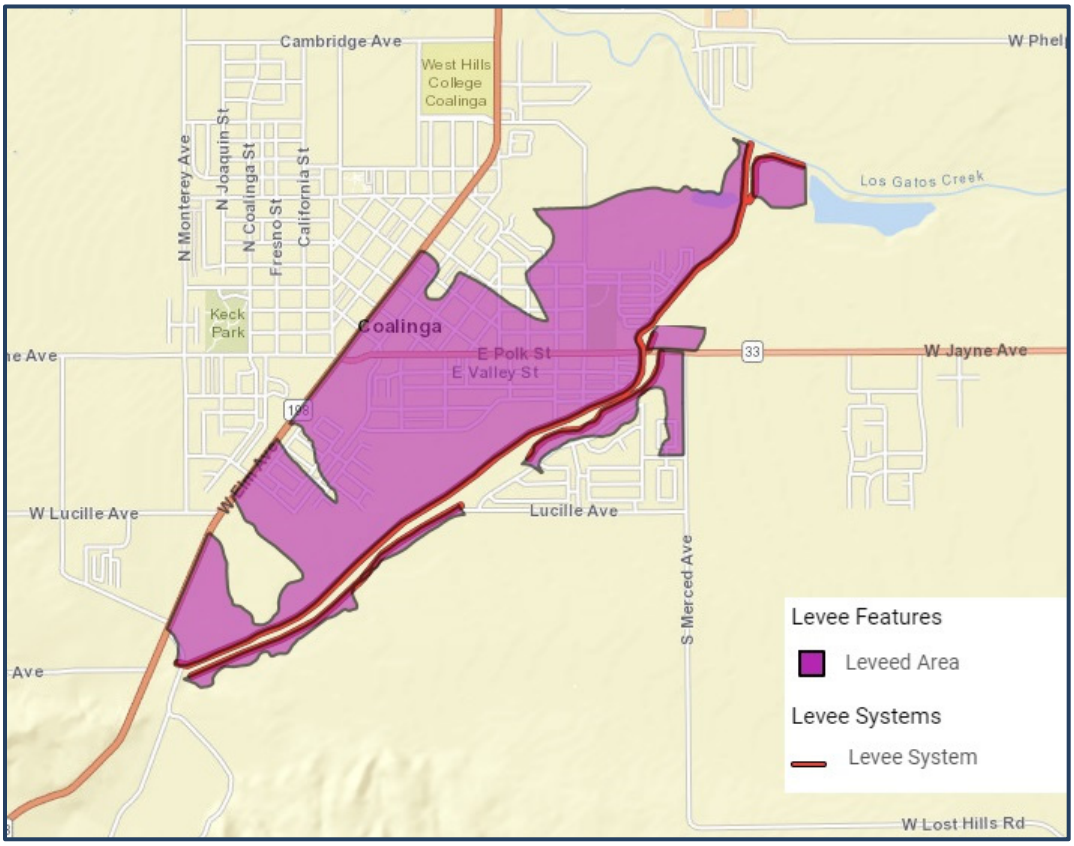


Figure 45: Coalinga Levee System



Technological (Human-Caused) Hazards

The most common types of technological or human-caused hazards in Coalinga include motor vehicle crashes where fluids have spilled onto the roadway. The airport poses a minimal risk because of the low number of aircraft landing daily.

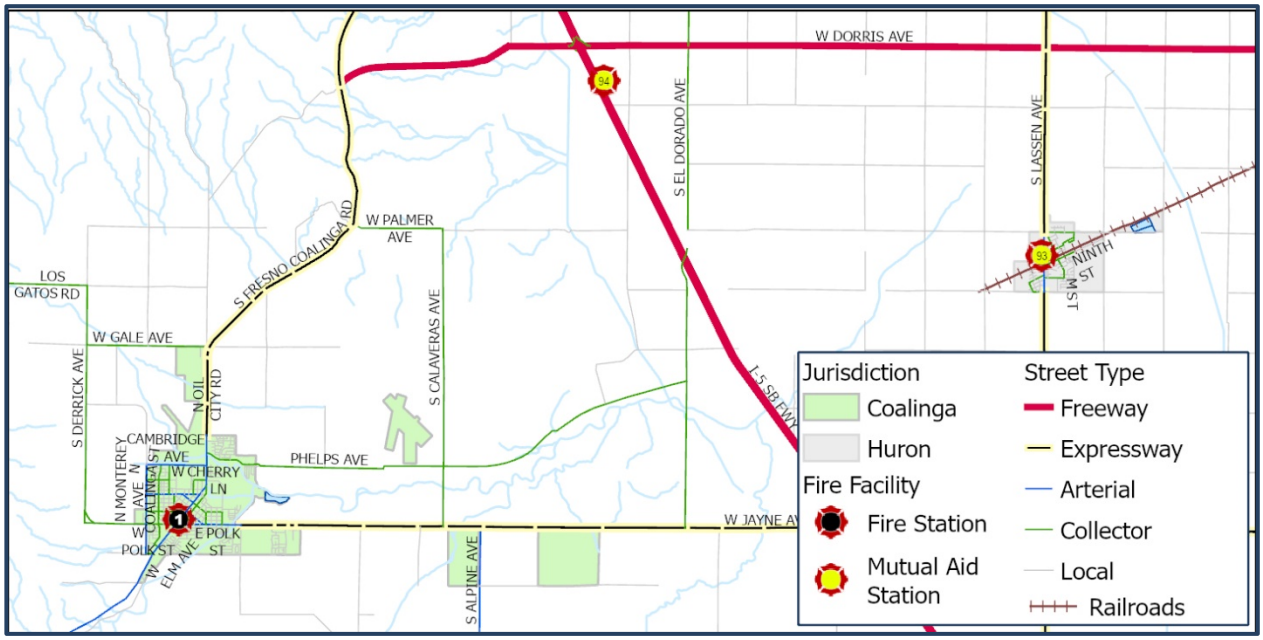
Transportation

Highways & Streets

Local streets and highways primarily provide the ability to access emergency incidents. Within the city limits of Coalinga, the local street system primarily uses a grid network for development, although there are some cul-de-sacs, and most streets are served with rear alleys. Cul-de-sacs can present operational issues for CFD because there may be only one access for the incident. The main roadways to enter Coalinga are Highways 33 and 198. These highways provide access for other emergency responders and vehicles entering the service area.

Although the number of hazardous materials transported in the service area is unknown, the Department should be familiar with locations where they are likely to occur. The development of contingency plans for a hazardous material event should include available resources and how to notify residents during an incident.

Figure 46: Road & Highway Network



Traffic counts provide data to determine the number of vehicles traveling on a street or highway. Reviewing the previous year's data will indicate if the street is nearing capacity and help the City's Community Development Department recommend improvements for new subdivisions or commercial projects. If capacity is not increased, it will affect emergency responders' response times and may delay arrival for an incident.

Figure 47: Average Annual Daily Traffic Counts[12]

Location	Ave Annual Daily Traffic–Vehicles	Ave Annual Daily Traffic–Trucks
Jayne Ave. and S. Merced Ave.	8,300	539
Jayne Ave. and Fifth St.	12,800	N/A
W. Elm Ave. and Fifth St.	6,900	1,365
W. Elm Ave. and Firestone Ave.	1,050	205
Elm Ave. and Phelps Ave.	5,400	712

Airport

The Coalinga Municipal Airport is located approximately four miles east-northeast of the City and accessed by Phelps Avenue. CFD provides fire protection services at the airport but is not required to provide on-site staff because of low aircraft traffic. The airport, which was built in 1997, has two runways. The primary runway (12–30) is 5,000 feet by 100 feet. A second crosswind runway (01-19) is 2,500 feet by 60 feet. Lights are available at the airport from dusk to dawn for Runway 12–30 and available for night landings. Runway 01–19 is available for daytime use only. A heliport landing area of 50 feet by 50 feet is available and provides night landing capabilities.

This airport is primarily for small private aircraft and does not offer any commercial service. Fueling is available on site and hangers can be rented monthly.

Hazardous Materials

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

- Ten thousand pounds for hazardous chemicals
- Less than 500 pounds, or the threshold planning quantity, for extremely hazardous chemicals
- California requires additional reporting quantities through a five-tier system that authorizes the treatment and storage of hazardous waste.

Although no major facilities are producing hazardous materials in Coalinga, multiple occupancies store or use these products. There is oil production around the City and one well at Cambridge Avenue and N Monterey Avenue with tanks on site that contain crude oil and water. Other local storage includes convenience stores selling fuel for vehicles andstores selling paint or other types of flammable or combustible liquids. Local highways and streets allow the transportation of hazardous materials and present a possibility of incidents involving motor vehicles and trucks.

CFD provides hazardous materials mitigation at the Operations level and relies on Fresno County Hazardous Materials Team for assistance if the incident requires additional resources beyond their ability to control the event.

Land Use

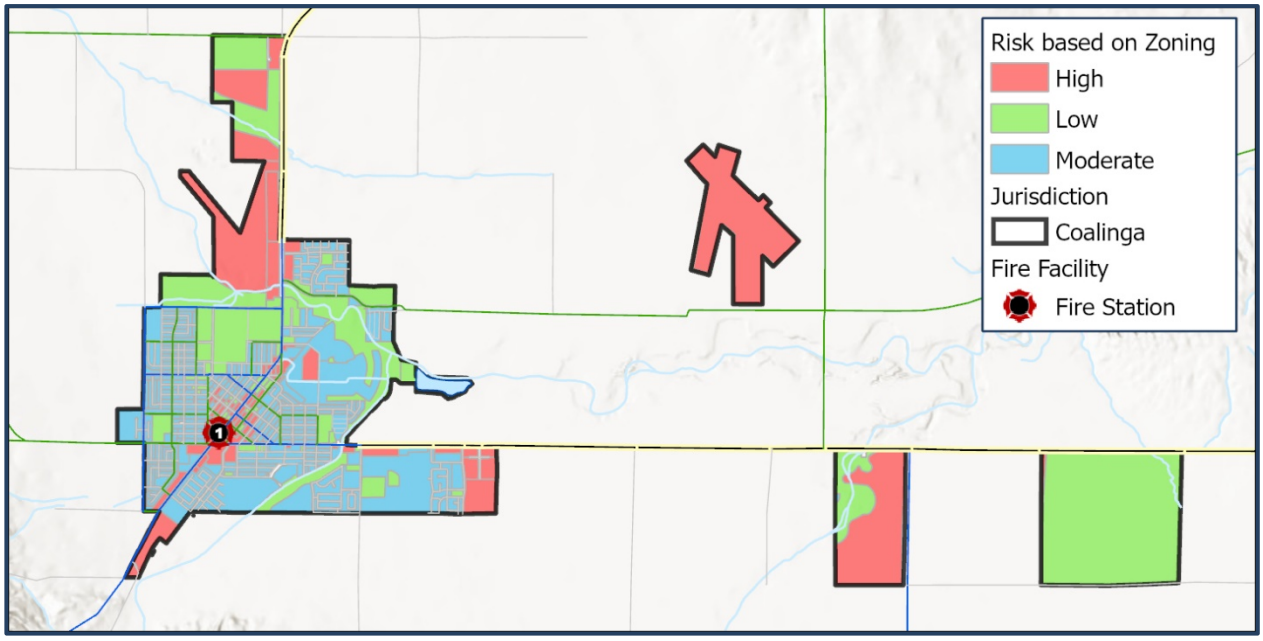
Zoning classifications for the City of Coalinga are used to examine current land use and how it affects development. Risk is assigned to zoning classifications as a method to present a view of community hazards and how it can impact response by CFD. The Coalinga service area is a mix of low-, moderate-, and high-risk properties.

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

Land use regulations are designed to establish a planning document to manage growth in a community and are defined by local appointed and/or elected officials. Where land use regulations exist, it provides a method to determine if a development is suitable for that area. Regulations may require minimum street widths, landscaping, and proper turning radius, potentially impacting fire service responses.

In 2009, the City of Coalinga adopted their General Plan 2005–2025 for future development. The plan was adopted before the "Great Recession" and anticipated high growth patterns that never materialized after the downturn in the economy in 2008. Many of the approved developments never started, and growth has languished. There are discussions to update the plan within the next few budget years.

Figure 48: Coalinga Land-Use Risk Classifications



Physical Assets Protected

The definition of target hazards varies among jurisdictions; thus, every Department must determine what is important in their community and define and identify those special target hazards. For continuity, Triton uses the Federal Emergency Management Agency (FEMA) definition of target hazards as "facilities in either the public or private sector that provide essential products and services to the general public, are otherwise necessary to preserve the welfare and quality of life in the community, or fulfill important public safety, emergency response, or disaster recovery functions."[13]

Target Hazards

Within the community are buildings considered target hazards. These buildings or facilities typically present higher risks to people, property, or the environment. These may include buildings with a high occupancy rating, facilities where the occupants may need assistance during an evacuation, or locations where hazardous materials are present. These occupancies will create special hazards for not only the occupants but for emergency responders as well. Target hazards can also be considered significant or historic properties that are important community assets.

The International Building Code (IBC) has created a listing of occupancy groups to define the type of use in a building. These groups can be broken into risk categories to assist an organization when determining what buildings to complete pre-incident surveys and fire and life safety inspections first.

This list can also be utilized to create fire and life safety inspection programs for CFD. The Department offers no inspection program to meet minimum State of California requirements to inspect higher-risk occupancies. Inspections of commercial occupancies are designed to protect the occupants and emergency responders through prevention or mitigation efforts. The Fire Chief reviews site plans for new development, but no other inspections are provided in the community.

A fire inspection program should include a comprehensive records management system (RMS) to track on-site visits, occupancy building information, code violations, plan reviews, and violations. Many records management systems provide a robust occupancy and inspection module to gather this data.

Figure 49: IBC Occupancy Classifications

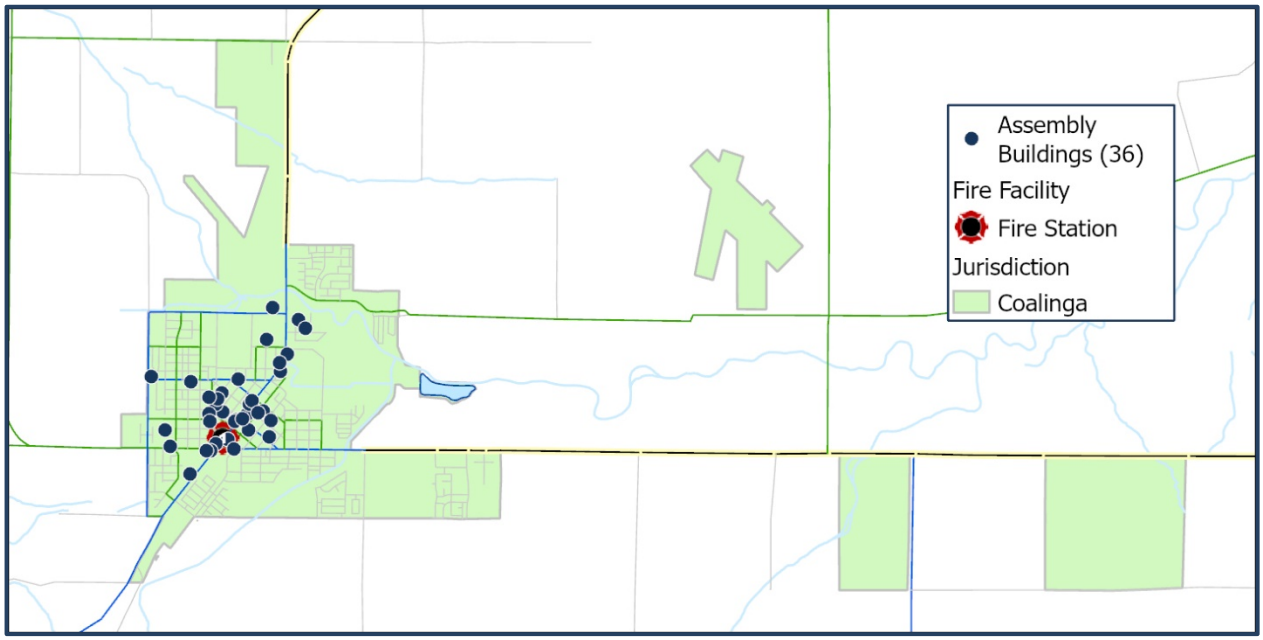
PRI Risk	IBC Group	Examples
High	A-1, A-2	Nightclubs, restaurants, theater, airport/cruise ship terminals
	A-3, A-4, A-5	Arenas, museums, houses of worship
	H-1, H-2, H-3, H-4, H-5	Hazardous materials sites (Tier II)
	B	All government & public buildings, other office buildings over two stories
	E	Schools, daycare centers
	I-1, I-2, I-3, I-4	Hospitals, assisted living centers, correctional
	M	strip centers, closed-air shopping malls, big box stores
	R-1, R-3	Hotels, motels, dormitories, apartments, board & care facilities
	Special Risk (Target hazard)	Railroads, interstate highways, airports
		Any building with life safety risk beyond reach of preconnected hose lines > 200 feet
Moderate	B	Outpatient clinics, general business, offices < 3 stories
	F-1	Fabrication or manufacturing of combustible materials
	M	Mercantile, free-standing
	I-2, R-4	Foster group homes, assisted living homes
	S-1	Storage of combustible materials, car repair facilities, hangars
Low	F-2	Fabrication or manufacturing of non-combustible materials
	R-1, R-2	1- and 2-family dwellings, foster homes
	S-2	Storage of combustible materials
	U	Barns, silos, other unclassified buildings

Public Assembly

Buildings classified as public assemblies are considered to be a higher risk because of the number of people allowed to gather for worship, entertainment, or special events in a single location. Special events may include large sporting venues or large outdoor festivals, such as street fairs. These occupancies may require a large number of emergency response personnel during an incident, such as a fire or active shooter. They should have up-to-date pre-incident plans completed for use by personnel during a response.

Large outdoor events should be required to submit a public safety plan. The plan should include emergency vehicle access and egress, fire protection, emergency medical services, public assembly areas, directing of vehicular traffic and attendees, vendor, and food concessions, need for law enforcement, fire, or EMS personnel, and weather monitoring.

Figure 50: Public Assembly Occupancies

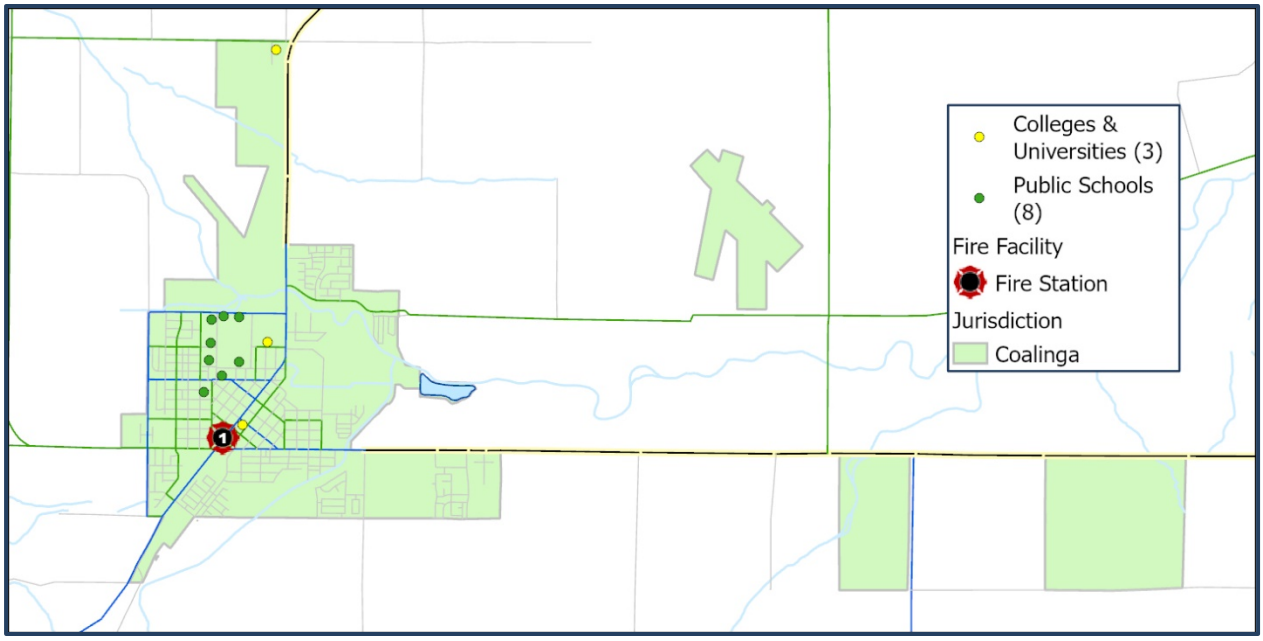


Schools

Several public and private schools are located in Coalinga and these facilities create additional risks, primarily for mass casualty incidents; therefore, they are considered target hazards. The public schools are part of the Coalinga-Huron Unified School District and provide education for approximately 5,000 students from kindergarten through high school. These facilities should be familiar to emergency responders, and up-to-date pre-incident plans should be completed annually.

West Hills College has provided post-secondary education in the community since 1932 and offers a certificate or associate degree. The Coalinga Campus provides housing for students, which may present additional risks during an event depending on the number of students in the residential buildings.

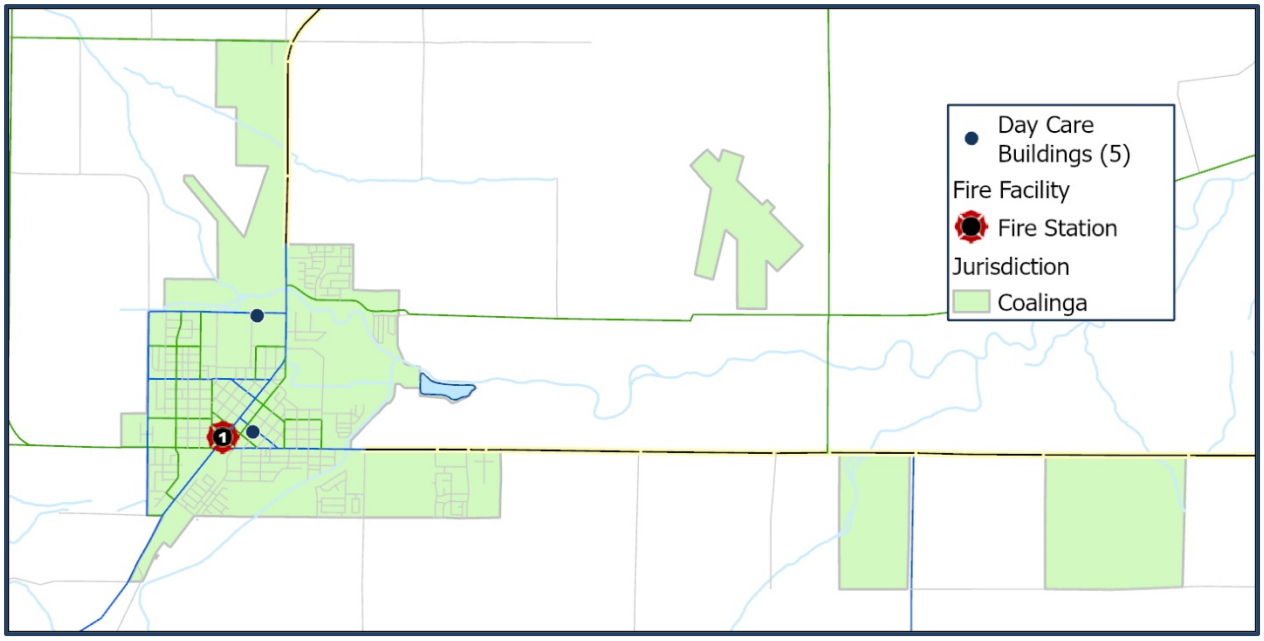
Figure 51: Educational Facilities



Childcare Facilities

Facilities that provide care for infants and pre-school-age children present a special concern because of their age. These young children's inability to self-evacuate during an emergency will require childcare workers to assist them in leaving the building or physically carry or remove infants. A proper planning meeting on fire code requirements should be completed by these facilities and approved by CFD.

Figure 52: Childcare Facilities



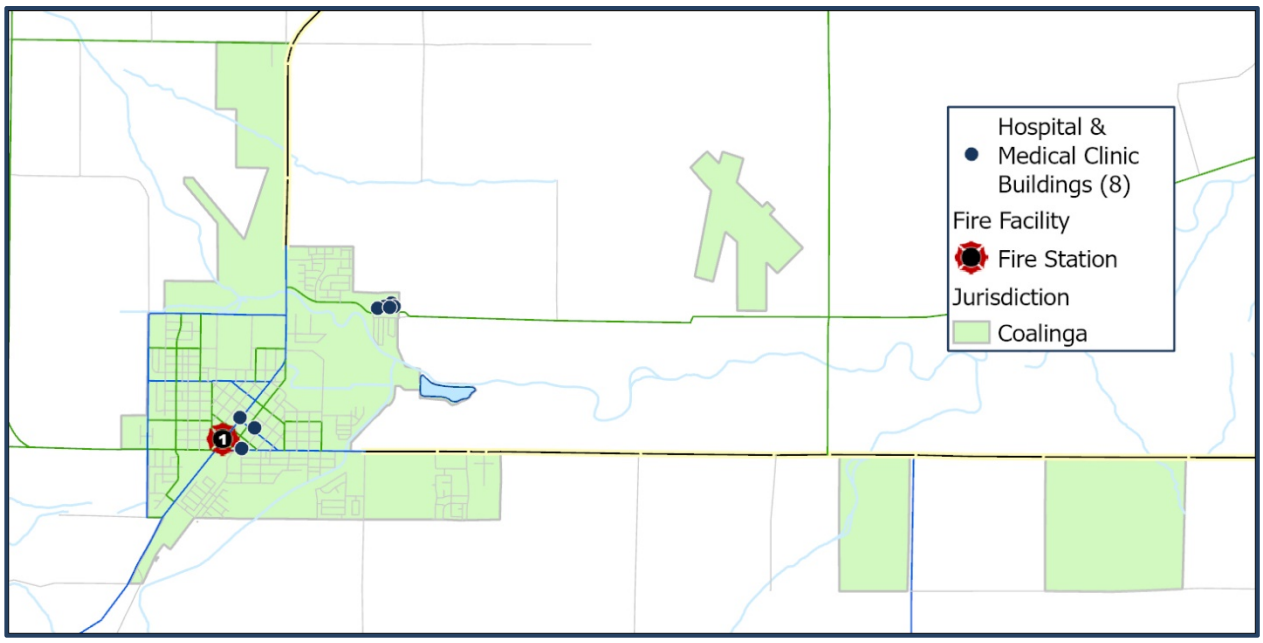
Hospitals & Medical Facilities

Providing medical care in the community is a primary service for those people requiring medical attention. These types of facilities include hospitals and clinics. Patients in these facilities may need special assistance during an emergency, which creates unique life safety risks. Hospitals or institutional facilities have more life safety and building code requirements than medical clinics, which may be classified as a business. Built-in fire protection systems such as fire sprinklers and alarm systems are required for hospitals and provide additional safety measures to protect the occupants.

The Coalinga Medical Center provides essential health care services to the community, including an emergency department, radiology, respiratory therapy, laboratory, and skilled nursing services.

The State of California operates a maximum security self-contained psychiatric hospital east of the city. The hospital has 1,286 beds, treats different mental illness levels, and employs more than 2,200 people providing 24-hour services. The facility is protected by the Pleasant Valley State Prison's on-site fire department, which is also contracted by the State to provide EMS coverage. CFD will respond as a mutual or automatic aid department for a fire incident.

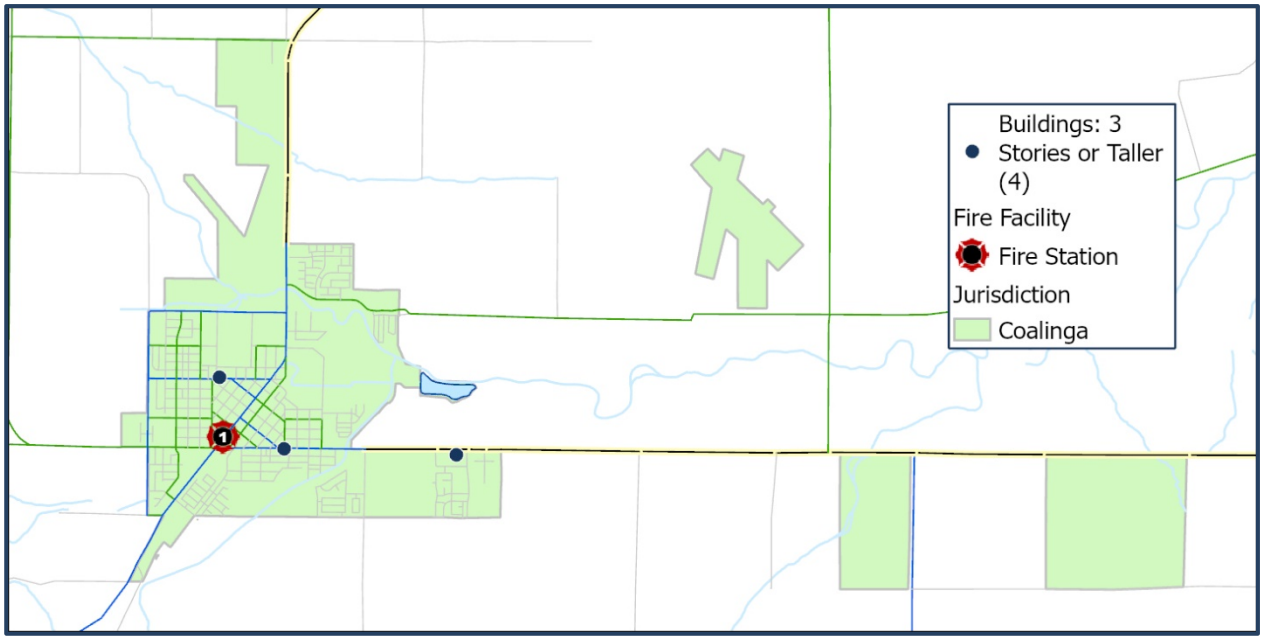
Figure 53: Medical Care Facilities



Buildings Three Stories or Greater

Structures that are three or more stories in height may require an aerial apparatus with an elevated master stream. A ladder truck may be necessary to access these higher buildings' upper floors or roofs since most ground ladders cannot reach these heights.The Insurance Service Office reviews the coverage area for all buildings within 2.5 miles for a ladder truck.

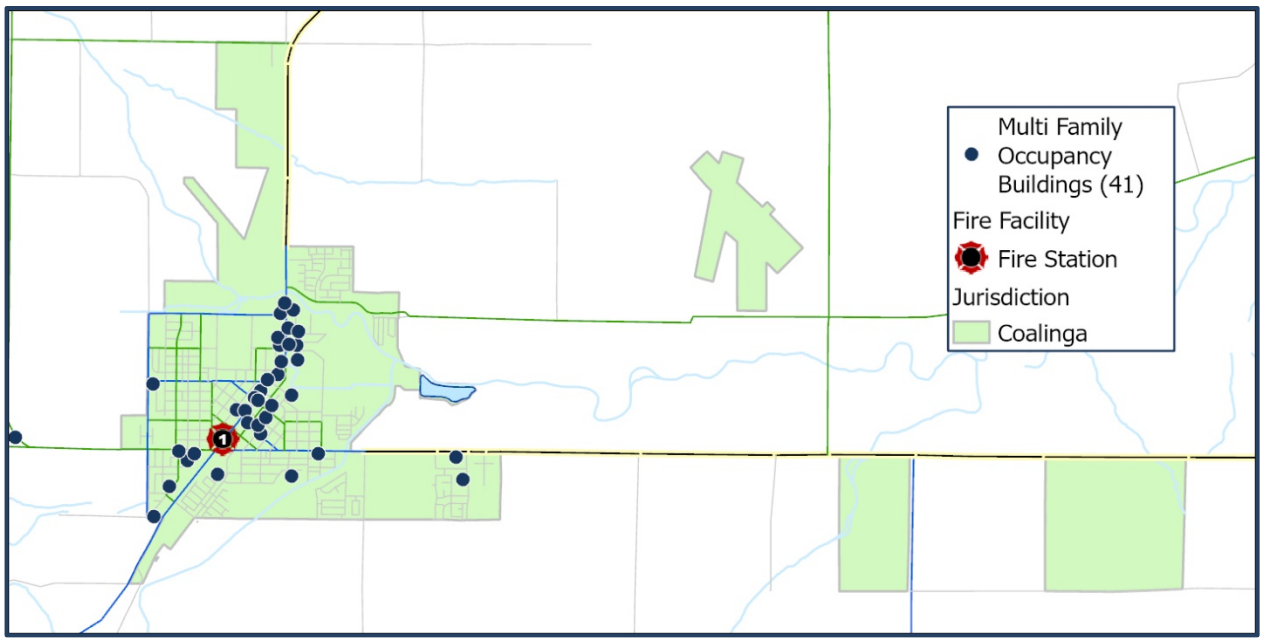
Figure 54: Buildings Three or More Stories in Height



Multi-Family Housing

Multi-family residential properties create a higher risk for occupants than most commercial buildings. These locations can create special hazards and increase the chance of fire fatalities and represent numerous risks such as occupants with accessibility issues or buildings built without fire sprinkler protection. The common areas of these occupancies are required to be inspected annually to ensure fire code compliance.

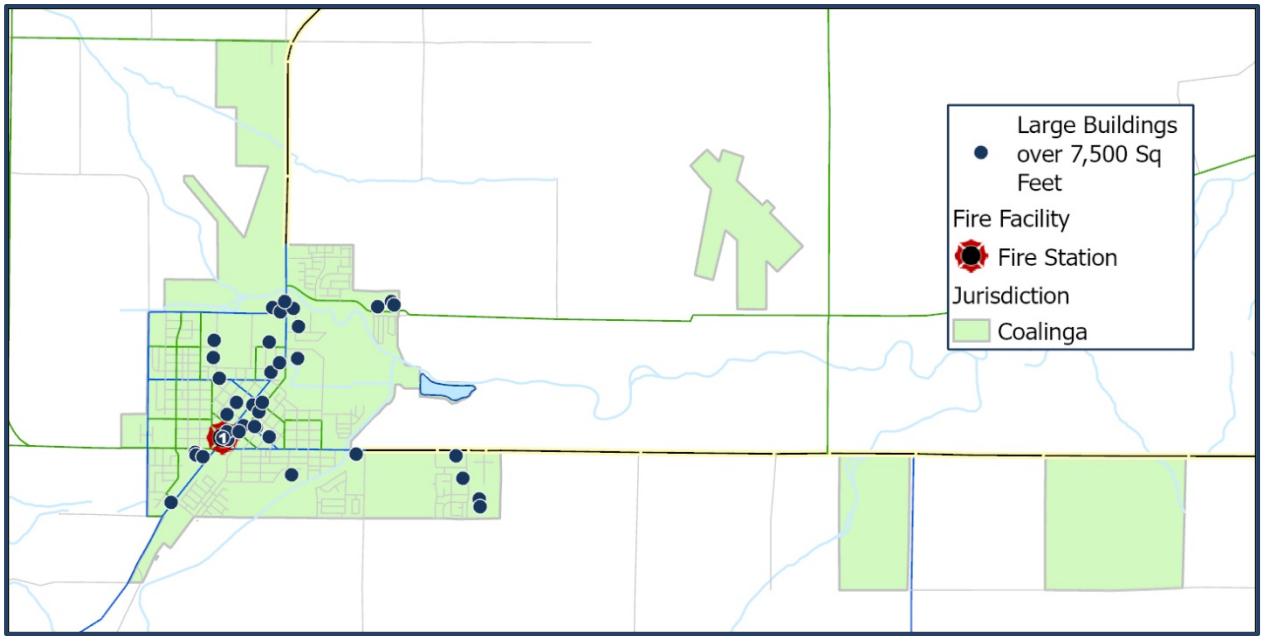
Figure 55: Multi-Family Occupancies



Large Square Footage Buildings

Large buildings, such as warehouses, strip malls, and large "box" stores, need greater volumes of water for firefighting and require more firefighters to advance hose lines long distances into the building. Although the number of large square footage buildings is low, the fire flow may be greater for smaller buildings because of construction type, distance to exposures, and lack of built-in fire protection systems, such as fire sprinklers. The following figure is based on ISO data and shows the locations for buildings 7,500 square feet and larger.

Figure 56: Building Square Footage Greater than 7,500 Square Feet



Detention Facilities

Facilities that house people in detention centers pose a specific challenge for emergency responders. The buildings are considered secure, and special protection is required to ensure the safety of those people being detained, as well as the responders. The amount of combustible material is considered minimal, but the smoke produced can travel faster than the fire and create an uninhabitable atmosphere.

The State of California operates the Pleasant Valley State Prison on 640 acres east of Coalinga. In September 2020, the prison held 2,841 inmates, with 1,165 employees.[14] The prison has a fire truck at the site, which is staffed by a captain and inmates. These firefighters provide the initial response and are supplemented by CAL FIRE and CFD.

The California State Hospital is a secured facility located beside the prison. The fire department from the Pleasant Valley State Prison responds to incidents at this facility and will call for Fresno County and CFD assistance if necessary.

Coalinga Police Department has a 24-hour jail and can house up to four inmates.

Critical Infrastructure

The term *critical infrastructure and key resources* (CIKR) describes resources essential for the functioning of a society and economy. Critical infrastructure is defined as a structure "whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof." There are sixteen defined Critical Infrastructure Sectors (CIS):[15]

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

Figure 57: Critical Facilities

Type	Number
Airport	1
Detention Center	2
Fire Department Stations	1
Health Care Facilities	6
Law Enforcement Facilities	1
Maintenance Yards	1
Residential Elderly Facilities	2
Public Library	1
Schools	8
Public Utilities	1
Total:	**24**

Communications

The ability to notify emergency responders of incidents requires essential facilities to receive and transmit alarms to the appropriate agency. CFD receives alarm notifications from Fresno County Fire Protection District (FCFPD). American Ambulance Service dispatches emergency medical services (EMS).

Fire and EMS-related incidents may originate at Coalinga Police Department (CPD) since they are the primary Public Safety Answering Point (PSAP) for 9-1-1 in Coalinga. These calls for service are transferred to FCFPD to dispatch CFD. CPD has one telecommunicator assigned to each 12-hour shift that operates from 6:00 am–6:00 pm. This PSAP uses Priority Dispatch for fire, EMS, and law enforcement to assist the telecommunicators when processing a call to 9-1-1. If there is a Coalinga PSAP failure, calls are forwarded to Fresno County Sheriff's Department for dispatching. There is no backup PSAP in Coalinga, but they can use the Fire Department's radio/engineer's office if necessary.

FCFPD Dispatch Center provides service to 15 agencies, and the current location is 27 years old. The Center has two telecommunicators and one supervisor on each 12-hour shift, and they operate a peak shift from 11:00 am–6:00 pm. There is no backup dispatch center, but a mobile command center can be placed into service if needed during a failure. The Center's continuity of operations plan has designated cellular phones that are used if it needs to be evacuated or a failure occurs. The Center uses the Voiance Interpretation Network for translation services for people with limited English proficiency.

Other types of communications are important to the community, such as cellular phones, Voice over Internet Protocol (VoIP) telephone systems, and transmission lines from the local telephone company. Each of these systems allows the public to notify emergency services of an incident. When there is a failure of these essential communication systems, the community is impacted when an emergency occurs. Internet services are now considered essential for the public, commercial establishments, and emergency services to conduct business daily.

Energy

The ability to provide sustained energy is necessary for many in the communities. These services include electrical, natural gas, or propane. Previously discussed community services, from communications to traffic signals to normal operations, require energy use. Whether it is electricity generation and transmission systems, fuel distribution and storage tanks, or natural gas pipelines and regulator stations, the community depends on energy sources. Electrical power is provided by Pacific Gas and Electrical (PG&E). PG&E operates a 60 kV high-voltage transmission line that follows Hwy 33 to S. Merced Avenue and Lucille Avenue.

PG&E may implement Public Safety Power Shutoffs during red flag warnings, high winds (> 25 mph or gusts above 45 mph), low humidity, or when PG&E observes an issue to prevent a fire from igniting because of powers lines causing a spark, even in locations not considered at risk. These shutoffs are normally temporary. PG&E provides alerts for customers prior to power being shut off, but the customer must sign up for texts, phone messages, or email notifications.[16] If these shutoffs occur, CFD must be prepared if their station is impacted or understand how the community may be affected.

Natural gas is provided by the City of Coalinga, which operates the local distribution system for residential and commercial use.

Water Distribution

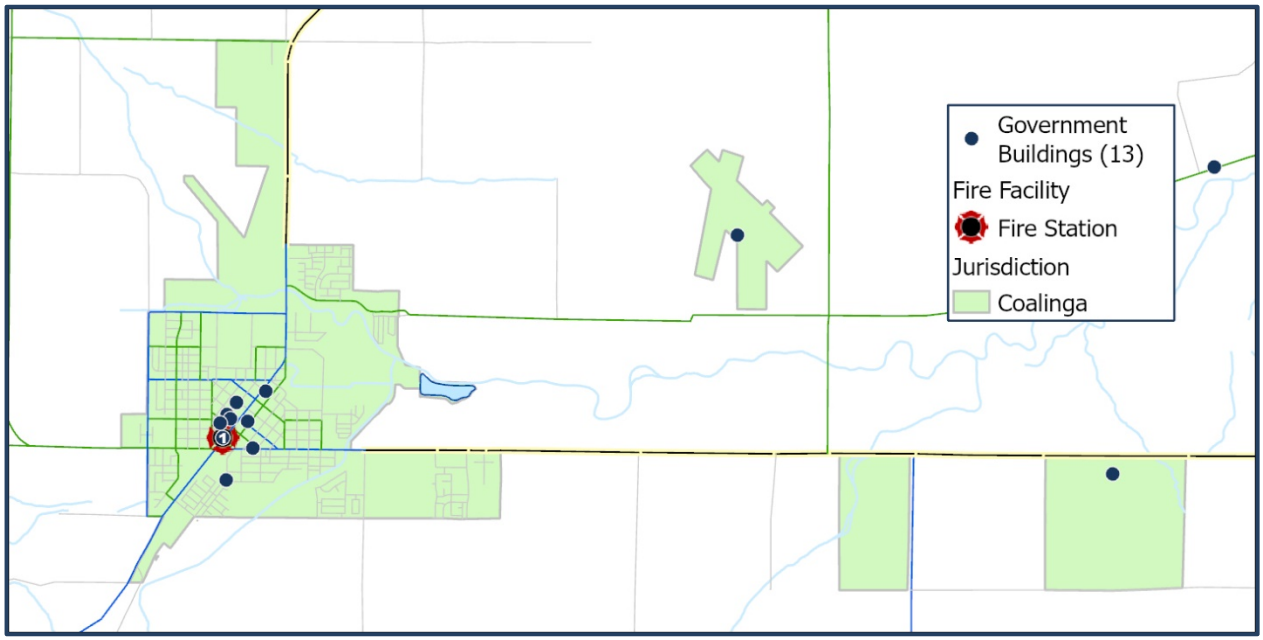
The City of Coalinga provides potable water services for the community and fire protection needs and receives its water supply from the California Aqueduct. The water is diverted for approximately 12 miles through the Coalinga Canal. It is treated using a conventional water treatment system that can produce a maximum of 16 million gallons per day.[17] The treated water is pumped to five storage reservoirs strategically located throughout the water system's service area. The water system provides water to various types of customers, including the Pleasant Valley State Prison and Coalinga State Hospital, the two largest water consumers.

Hydrants are inspected by CFD annually, and all repairs are completed by the City of Coalinga Public Works Department. According to the most recent ISO inspections, there are 573 hydrants in the city.

Governmental Buildings

Public services and government buildings are typically located close to their customers. The buildings are considered a part of the critical infrastructure needed to operate local, state, or Federal government services. In Coalinga, these include the Police Department, City Hall, and Fresno County Social Services.

Figure 58: Governmental Buildings



Comparison of Fire Risk in Other Communities

Reviewing data from CFD and recent reports from the NFPA, Triton compared fire risks with similar size communities wheredata was available. This information can vary from year to year based on the number of incidents and should only be used for benchmarking or illustrative purposes.

Fire Loss

In 2019, fire departments in the United States responded to more than an estimated 1.3 million fires and 3,700 civilian fire deaths. Property damage was estimated at $14.8 billion. The NFPA report stated that only one in five fires involved a one- or two-family or multi-family dwelling, but 65% of the civilian fire deaths occurred in these occupancies. Nationwide, the dollar loss from fires was 24% lower after adjustment for inflation since 1980.

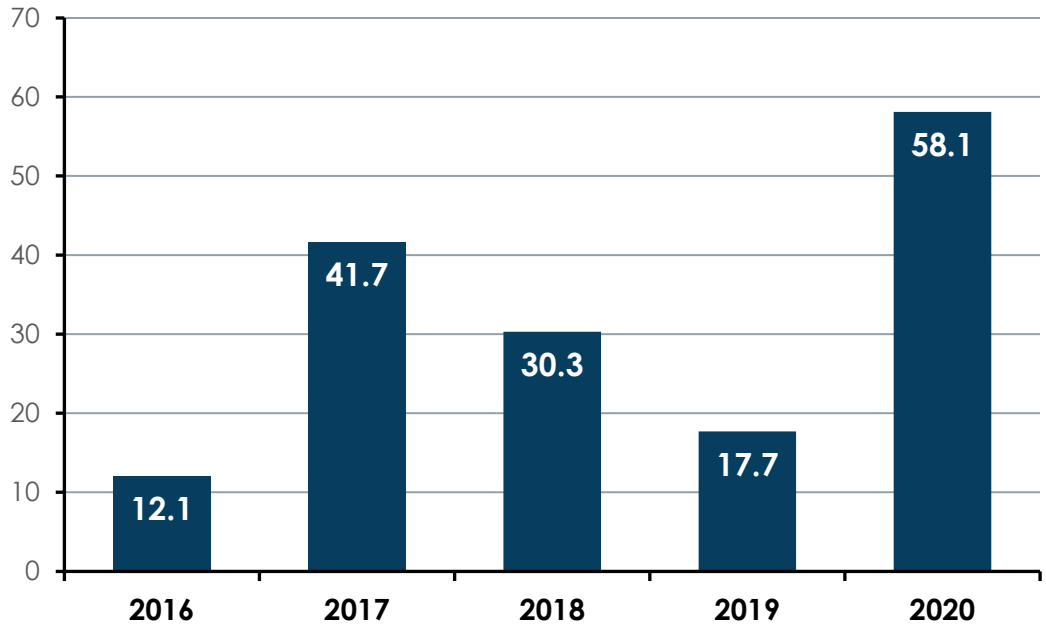
Figure 59: CFD Number of Fires & Loss per Capita Population 10,000–24,999 (2019)

Location	No. Fires per 1,000 Population	Property Loss per Capita
Coalinga	4.6	$13.99
United States	3.8	$45.64

Intentionally Set Fires

Intentionally set fires, in many cases considered as arson, is defined as "any willful or malicious burning or attempt to burn, with or without intent to defraud, a dwelling house, public building, motor vehicle or aircraft, personal property of another."[18] The number of intentionally set fires increased dramatically during 2020 from 2019 after decreasing the two previous years. This increase should be analyzed to determine why and if preventative measures can be implemented to reduce this number. Analysis should include the type and location, and if caused by juveniles. Analysis will also identify opportunities for CFD to implement specific programs to reduce the number of intentionally set fires.

Figure 60: Intentionally Set Fires per 100,000 Population



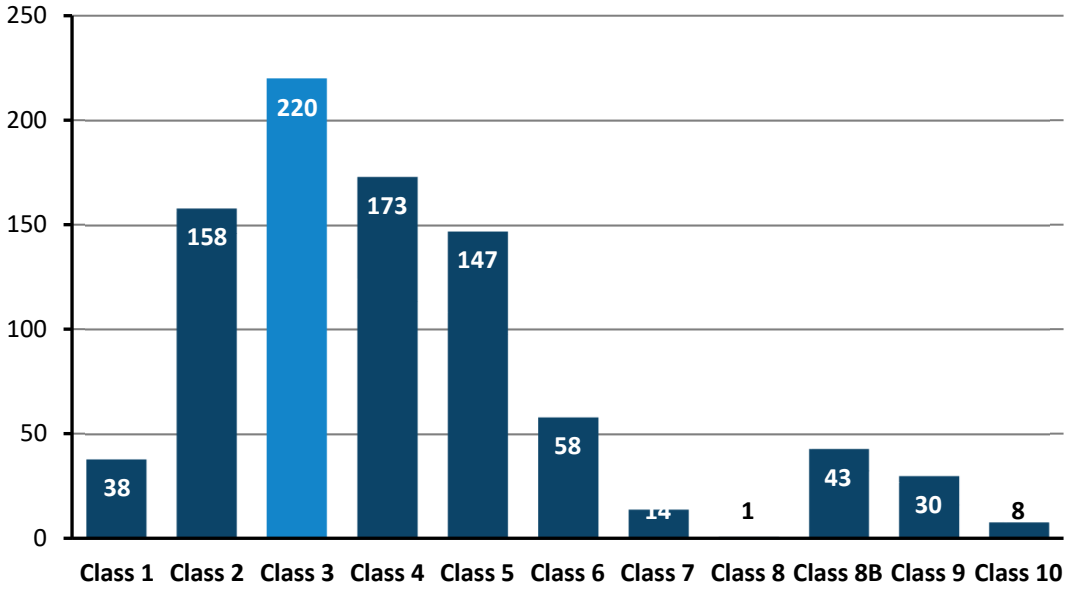
ISO Fire Protection Class Rating

The Insurance Services Office, Inc. (ISO) is an independent company that collects and analyzes data about municipal fire suppression efforts in communities throughout the United States. According to their report, the ISO's Public Protection Classification program, or PPC,® "is a proven and reliable predictor of future fire losses." All other factors being equal, commercial property insurance rates are expected to be lower in areas with lower (better) ISO PPC Class ratings.

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

In 2018, the City of Coalinga was assigned an ISO classification of Class 3. Coalinga is one of 220 communities out of 890 communities surveyed across the State to achieve a Class 3 rating, as shown in the following figure. Areas for improvement include the Fire Department for company personnel (6.8 out of 15) and training (2.44 out of 9), Community Risk Reduction credit for fire prevention and code enforcement (1.58 out of 2.2), and public fire safety education (1.21 out of 2.2).

Figure 61: Comparison of ISO Class Ratings–California



Section III:
STANDARDS OF COVER

Historic System Response Workload

Operational Performance Standards

Likely the most noticeable component of an emergency services delivery system is that of response time performance. Policymakers and citizens want to know how quickly they can expect services in the event of an emergency.

What may be the most accepted response time performance standards for fire departments are found in the recommended benchmarks developed by the National Fire Protection Association (NFPA) or Center for Public Safety Excellence (CPSE), Commission on Fire Accreditation International (CFAI). Other standards exist with organizations such as the Commission on Accreditation of Ambulance Services (CAAS). In most national standards, the total response time (TRT) is defined and comprised of several components:

- *Alarm Handling (or call processing) Time*: The time interval between when a dispatcher answers the 9-1-1 call and resources are dispatched.
- *Turnout Time:* The interval between the time a unit is dispatched and the time the unit goes en route.
- *Travel Time:* The interval between when a unit begins to respond and the time the unit arrives at the incident.
- *Total Response Time:* The combination of Alarm Handling Time, Turnout Time, and Travel Time.

When historical Alarm Handling data is unavailable for analysis by the fire department, response performance is based on the interval between the time the unit was notified of an incident until the time the unit arrives at the incident. In these cases, this is often referred to as Response Time (as opposed to Total Response Time).

Some fire departments continue to use "average" response performance measures since the term is commonly used and widely understood. The reason for not using the average for performance standards is that it may not accurately reflect the entire dataset. Data outliers can skew the results. Most progressive systems use the "fractile" method of analyzing response performance. This method uses percentile measurements (usually the 90th percentile) and is a better measure. They show that the large majority of the data set has achieved a particular level of performance.

NFPA/CFAI Recommended Standards

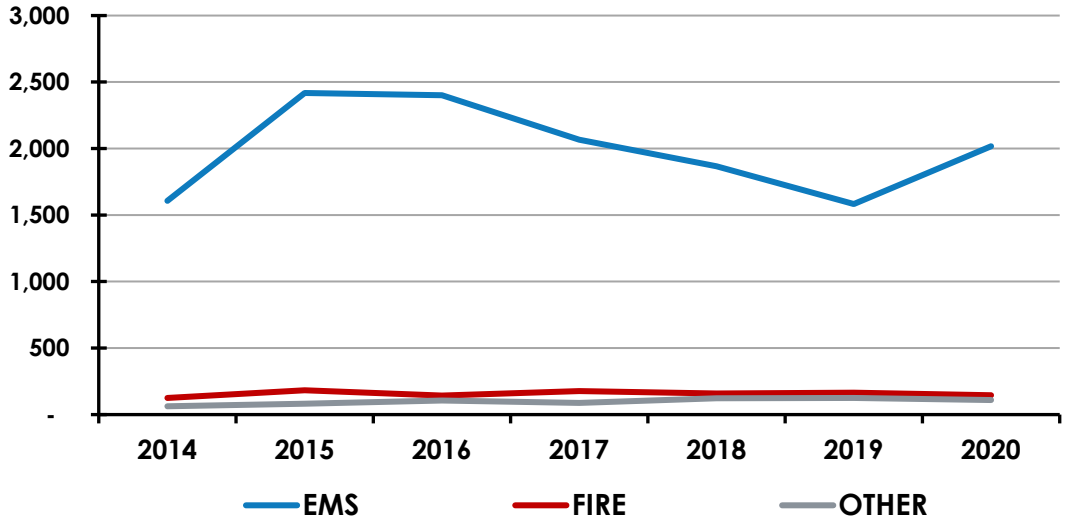
CFAI relies on many of the NFPA standards) for response times, as well as its recommendations.[19] For staffed stations, the benchmark recommendations are as follows:

- Alarm Handling Time: 60 seconds or less at 95% (CFAI lists this at 90%)20
- Turnout Time: EMS—60 seconds or less at 90%; Fires & Special Operations—80 seconds or less at 90%21
- Travel Time:
  - Urban (first unit)—4 minutes or less at 90%
  - Suburban (first unit)—5 minutes or less at 90%
  - Rural (first unit)—10 minutes or less at 90%

Historic Response Workload

Before a comprehensive response time analysis is conducted, it is essential to first examine the workload (service demand) that a fire department experiences. Higher service demands can strain a department's resources and may result in a negative effect on response time performance.

Figure 62: CFD Response Workload (2014–2020)

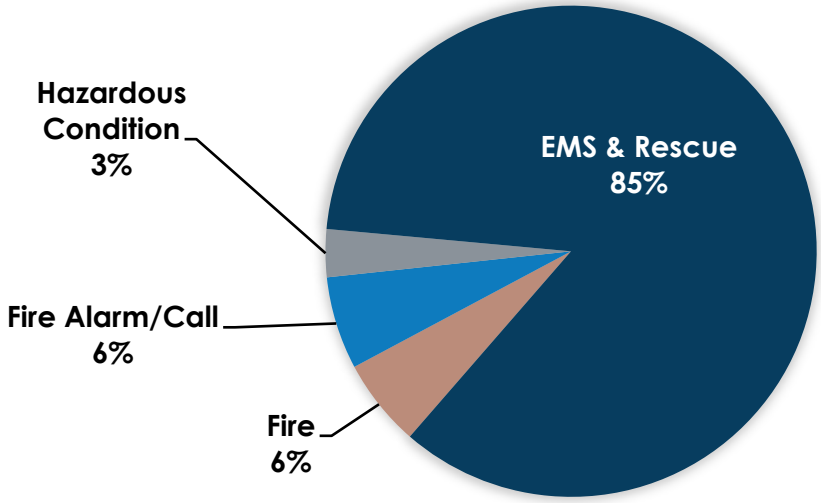


The preceding figure reflects the total response workload over the last seven years. The workload was relatively unchanged until 2018 when a decrease in incidents of 9.7% was experienced. The 2018 decrease in unit responses was, per CFD, attributed to a lack of staffing. The 2018 response reduction was followed by an additional 15.2% drop in incidents in 2019. This change is primarily driven by a decrease in emergency medical type incidents; however, other incident types increased in 2018 and 2019.

In 2020, the Coalinga Fire Department experienced a 21.5% increase in responses, primarily driven by emergency medical type incidents. The community utilization rate of services in 2020 was 124 incidents per 1,000 population. Urban communities typically range between 70 and 120 incidents per 1,000 population.

During 2020, CFD responded to 1,016 priority incidents that were inside the City boundaries. The following figure shows responses by type of incident during 2020. Emergency medical type responses (EMS and motor vehicle accidents) are the most common at nearly 85% of total responses. Several agencies track motor vehicle accidents separate from emergency medical responses. CFD does not, which can result in a skewed view of call percentages.

Figure 63: CFD Responses by Incident Type (2020)



The Coalinga emergency response areas were evaluated for emergency incidents for the years 2018, 2019, and 2020. There is a 10% increase in emergency incident volume in this time frame (non-emergency and pre-scheduled interfacility requests were not evaluated).

The following figure explores the distribution of emergency incidents by jurisdiction, which reveals over 20% of Coalinga's emergency incident activity is outside the City limits, but within their EMS response area.

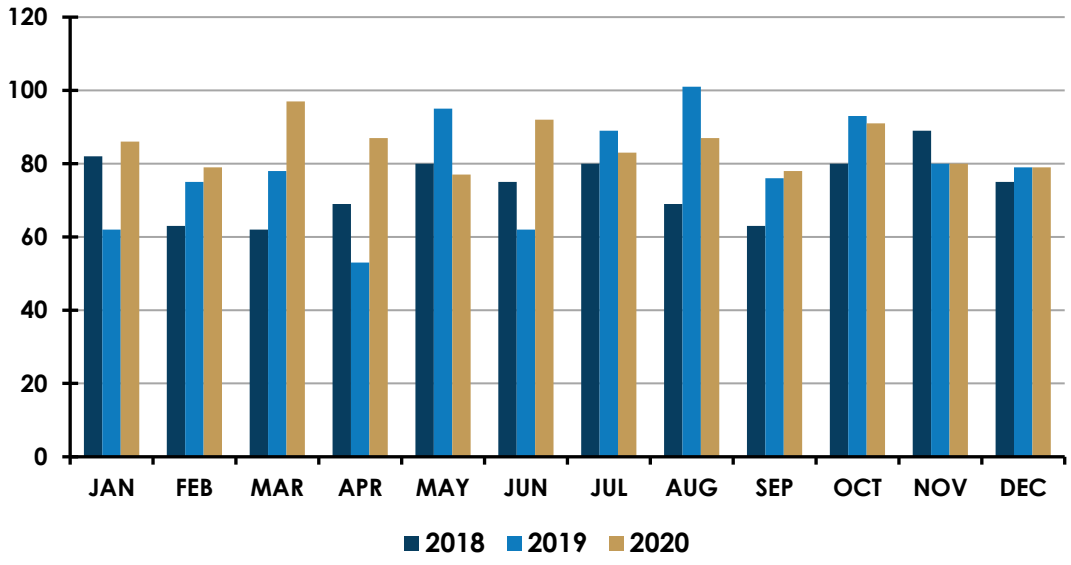
Figure 64: Emergency Incident Distribution (2018–2020)

Service Area	2018	2019	2020	Totals
Ambulance Area	152	110	137	**399**
Coalinga	887	943	1,016	**2,846**
Huron	34	46	45	**125**
Outside of Jurisdiction	17	8	12	**37**
Totals:	**1,090**	**1,107**	**1,210**	**3,407**

Temporal Analysis

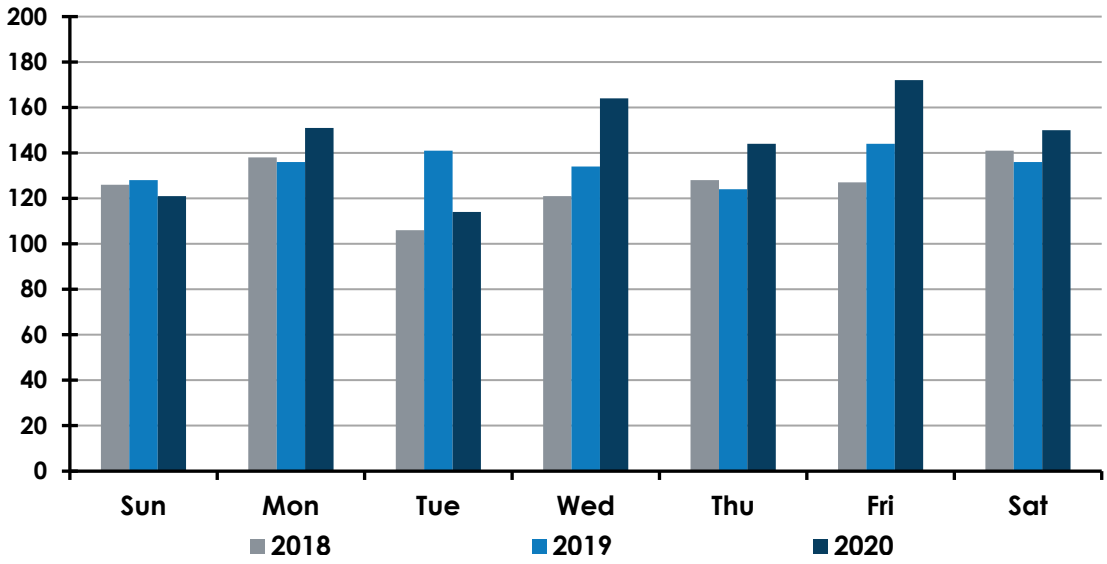
A review of incidents by time of occurrence also reveals when the most significant response demand is occurring. The following figures show how activity and demand change for CFD based on various measures of time. The following figure shows response activity during 2018, 2019, and 2020 (study period) by month. There is some variation by month; however, no seasonal pattern is apparent between the years.

Figure 65: Monthly Emergency Response Workload



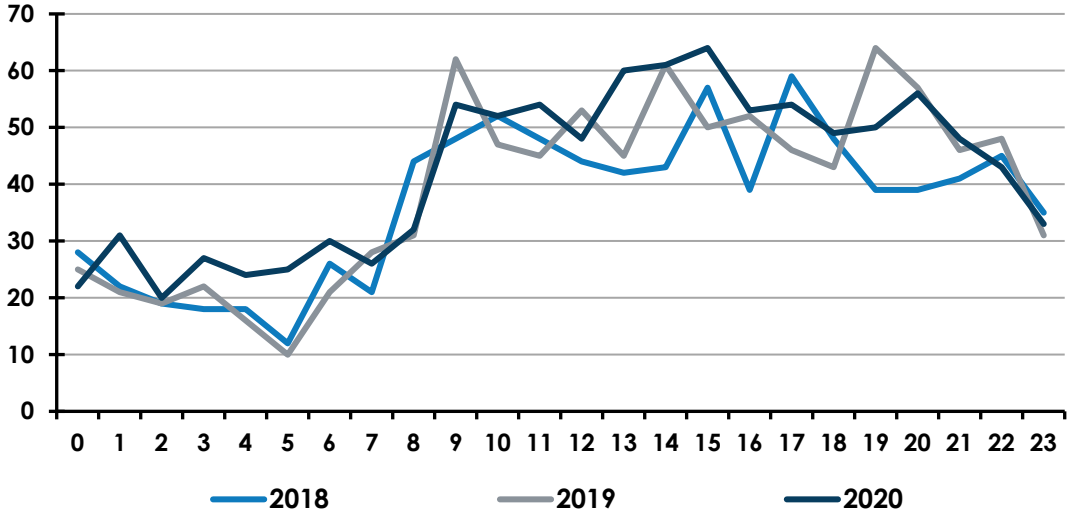
The response workload can also be compared by the day of the week. Higher volumes occurred on the weekend in 2020. However, there is not a significant amount of variation.

Figure 66: Daily Emergency Response Workload



The time analysis that typically shows significant variation is response activity by the hour of the day. Response workload directly correlates with the activity of people, with workload increasing during daytime hours and decreasing during nighttime hours, as shown in the following figure. Incident activity is at its highest between 9:00 am and 9:00 pm.

Figure 67: Hourly Emergency Response Workload

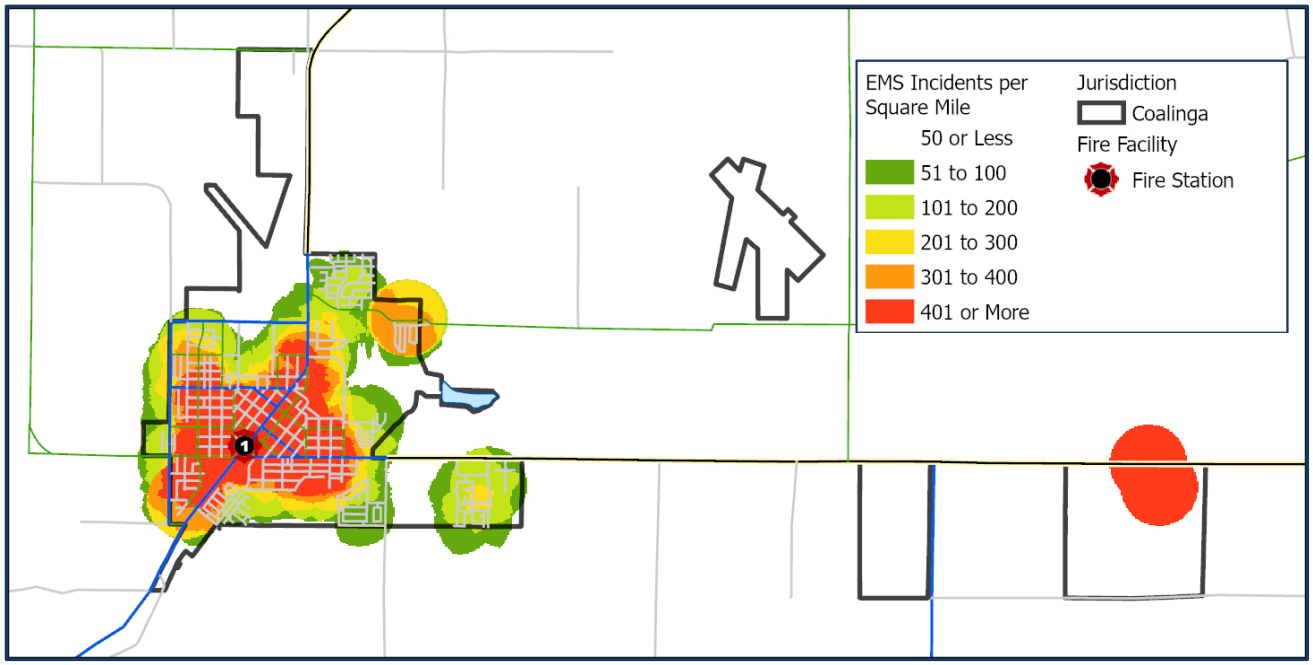


Spatial Analysis

In addition to the temporal analysis, it is useful to examine the geographic distribution of service demand. The following figures indicate the distribution of emergency incidents in CFD during 2020.

The first figure displays the number of incidents per square mile within various parts of the City. The greatest service demand occurs around Coalinga Fire Station 1. A significant amount of demand can be seen in the State Prison and State Hospital areas.

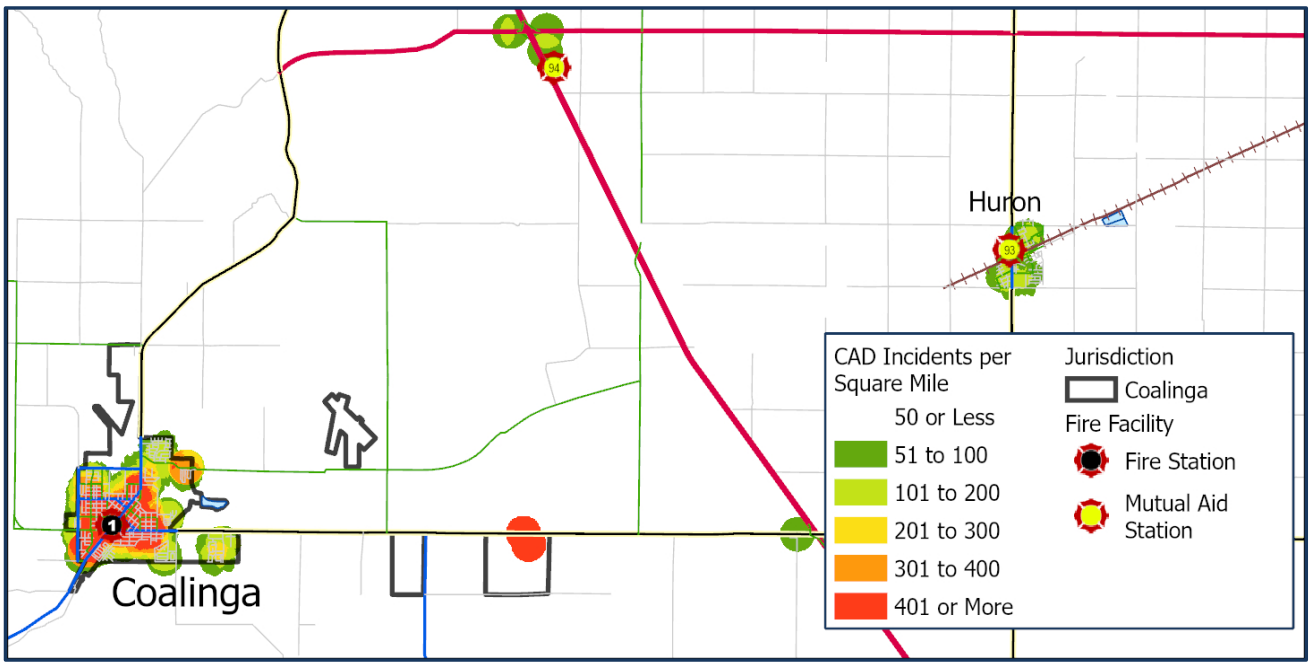
Figure 68: Coalinga Service Demand Density (2020)



It is also useful to understand how other regional areas use Coalinga resources. The following figure highlights the broader service area where service demand occurs. The following figure highlights the activity in the Huron/CAL FIRE Station 93 and Station 94 area on Interstate 5 and reflects incident density within the City and regionally as part of the ambulance response area.

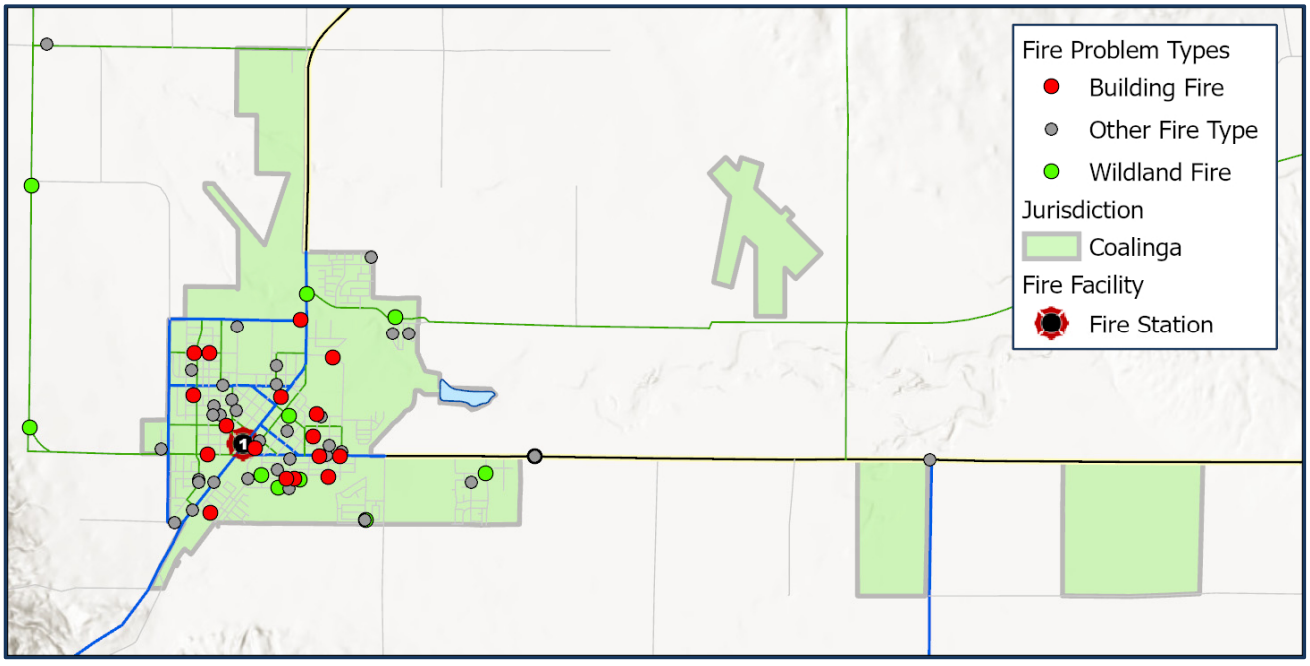
The following figure reflects incident density within the city and regionally as part of the Ambulance Response area.

Figure 69: Study Area Service Demand Density (2020)



The following figure displays the locations and types of fires occurring within the CFD service area during 2020.

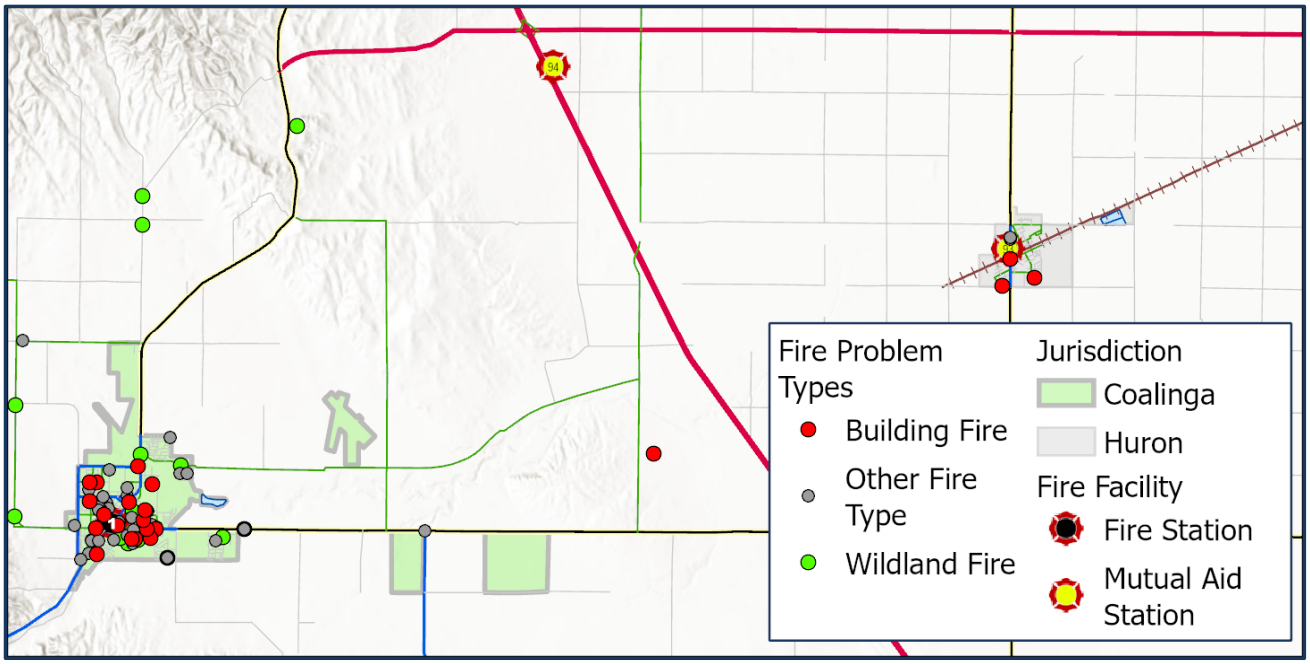
Figure 70: Coalinga Fires by Type (2020)



The preceding figure illustrates that fire incidents are generally distributed throughout the developed area of the City.

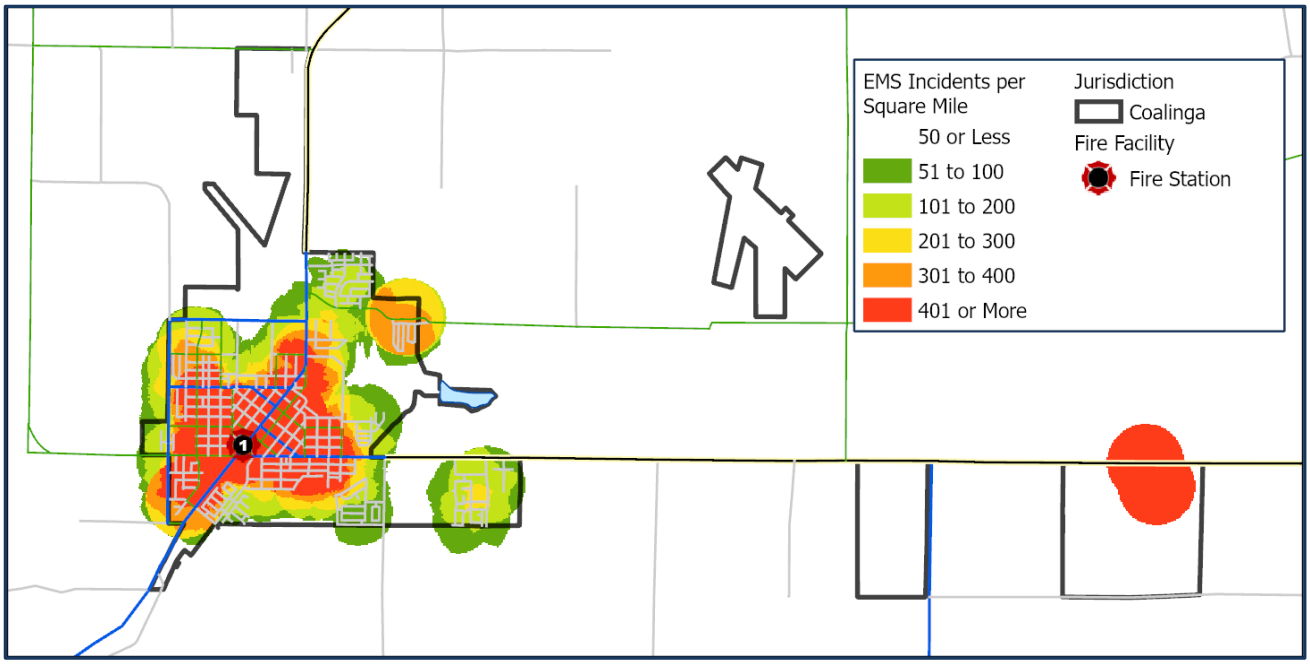
The next figure displays a distribution of fire incidents, both within the City of Coalinga and other jurisdictions. A number of wildland fires are located in the foothills of the San Benito Mountain Natural Area and Los Gatos Park, as well as structure fire responses in Huron. While this figure shows that most activity occurs within the City boundaries, some mutual aid responses are far outside the City.

Figure 71: Study Area Fires (2020)



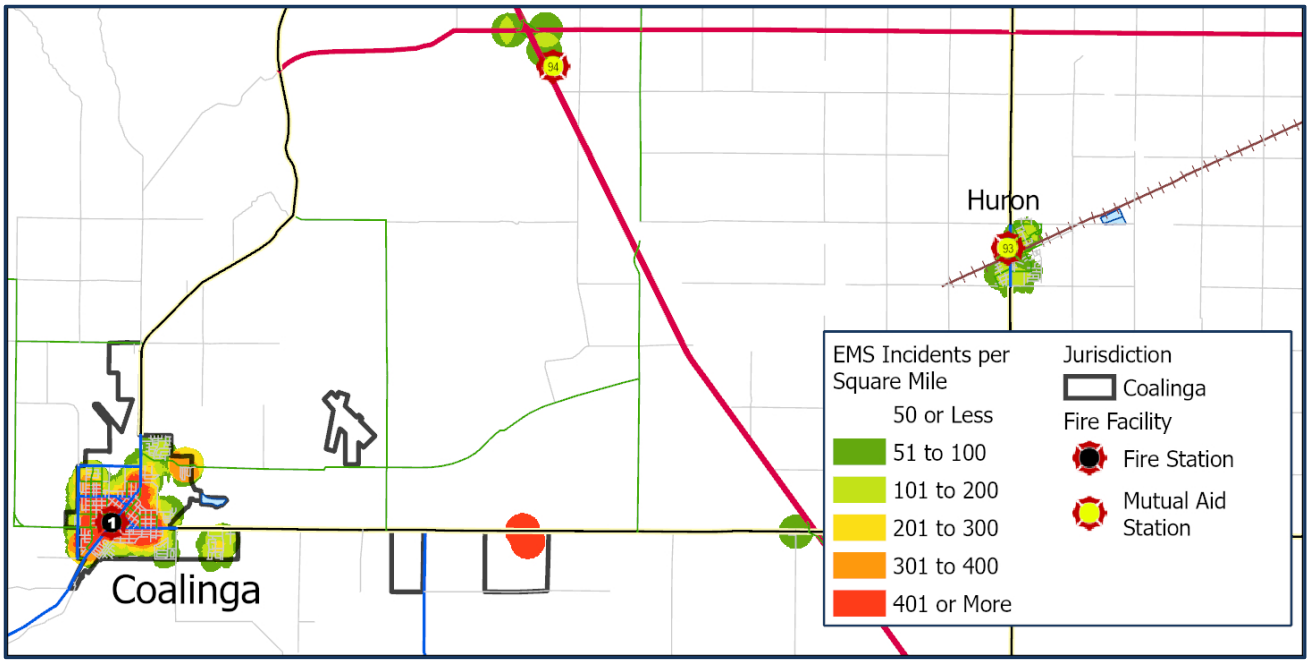
Emergency medical incidents typically occur in greater concentration in areas of higher population density. The following figure displays emergency medical incidents per square mile during 2020. Incident concentration follows population density. The density area around the State Prison and State Hospital are again apparent in the southeast corner.

Figure 72: Coalinga EMS Incidents per Square Mile (2020)



A similar comparison for emergency medical incidents highlights the resource requirements inside and outside the City in this higher-scale view of the study area.

Figure 73: Study Area EMS Incidents per Square Mile (2020)



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 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 remote unit will need to be dispatched, increasing response times.

Response Unit Workload

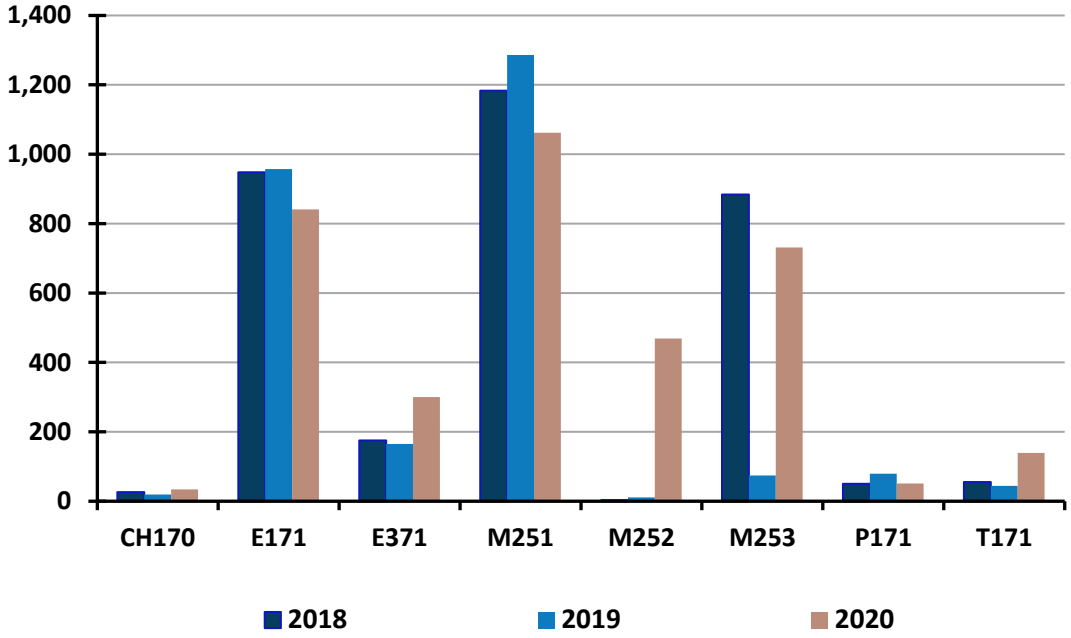
The workload for individual response units during the study period is shown in the figure below. The individual response unit workload can be greater than the incident workload. Many incidents, such as structure fires, require more than one response unit.

Figure 74: Response Count by Unit per Year

Unit	2018	2019	2020	Totals
CH170	26	19	34	**79**
E171	948	957	841	**2,746**
E371	175	165	300	**640**
M251	1,183	1,286	1,062	**3,531**
M252	3	11	469	**483**
M253	884	74	731	**1,689**
P171	50	79	51	**180**
T171	55	44	139	**238**
Totals:	**3,324**	**2,635**	**3,627**	**9,586**

The next figure displays the unit activity for all Coalinga units for 2018 through 2020. This is a raw count of all unit responses, including all emergency and non-emergency requests for service. E171 and M271 are the busiest units.

Figure 75: Response Unit Workload



The amount of time a given unit is committed to an incident is also a critical 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 76: Average Time Committed to an Incident by Unit

Unit	2018	2019	2020
Chief 170	42:25	45:14	31:00
Engine 171	26:37	30:06	23:35
Engine 371	26:09	46:15	58:15
Paramedic 251	12:40	21:44	31:40
Paramedic 252	13:41	33:49	22:41
Paramedic 253	25:25	28:41	21:45
Patrol 171	48:27	47:39	06:53
Truck 171	22:36	24:38	24:57

Times are in minutes:seconds

Unit Hour Utilization

Unit hour utilization is an important workload indicator and 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 a 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 a critical statistic to monitor for those fire agencies using percentile-based performance standards, as does CFD. In CFD's case, where performance is measured at the 90th percentile, a response unit with greater than 10% utilization will not provide an on-time response to its 90% target even if the response is its only activity.

Paramedic 251 analysis identified 254 responses with a committed time over 4 hours. On January 8, 2019, an incident was recorded with a nearly 15 hour committed time. This data is skewed in such a fashion that it is not possible to present accurate unit hour utilization. Some responses were recorded as spanning multiple days. These long-committed time responses were mainly medical; however, some were listed as Mutual Aid Provided. The figure below shows the data anomalies discovered and a large number of cumulative hours calculated. The Department explained this anomaly as mostly long turnaround times by the ambulance units during transport. Some transports have had a 6+ hour duration of unit committed time.

Figure 77: Response Unit Total Time Committed

Unit	2018	2019	2020
CH170	18:23:00	14:19:30	17:34:03
E171	420:34:05	480:00:25	330:36:28
E371	76:16:32	127:11:37	291:15:49
M251	2615:45:09	3356:50:45	2684:32:35
M252	0:41:03	39:11:57	1115:20:56
M253	2142:31:54	183:22:07	1727:00:00
P171	40:22:35	62:43:56	566:51:26
T171	20:42:44	18:03:42	57:47:34

Times are in hours:minutes:seconds

Stations that may be available to provide mutual aid are listed in the figure below. A brief description of resources each station could commit to support an incident is in the Suitability column. The availability of mutual aid units and their relative availability and travel time should be considered when assessing the ability to assemble an effective response force.

The figure below provides a description of the nearest fire stations and staff that could potentially be provided to Coalinga if necessary. The column labeled Suitability describes why these stations were not used in calculations. Combined with Coalinga's six on-duty staff, the assembly of an effective fire fighting force can only be achieved if Cal Fire engines are staffed and in the area. Other stations cannot respond to Coalinga in the required time.

Figure 78: Mutual Aid Resources

Department & Address[A]	Engines	Aerials	Other	TOTALS	Suitability
CAL Fire, State Operations, 25600 Jayne Ave, Coalinga (only available during fire season, April–Nov)	2	0	0	**8**	Not reliably staffed, not used for analysis
Fresno County Fire/CAL Fire, District Operations, Station 93. 36421 S. Lassen, Huron	1	0	1[B]	**2**	More than 10 minutes travel
Fresno County Fire/CAL Fire, District Operations, St. 94. 24125 W. Dorris, Coalinga	1	0	0	**2**	More than 10 minutes travel
Pleasant Valley Prison E176, 24863 W. Jayne Ave, Coalinga	1	0	0	**5**	More than 10 minutes travel
Totals:	**5**	**0**	**1**	**17**	

[A]None of the units/departments listed appeared as Radio Names in the data provided by dispatch.

[B]Water Tender cross-staffed.

Population & Incident Workload Projections

The most significant predictor of future incident workload is population; 100% of requests for emergency medical services are people-driven. The National Fire Protection Association reports that approximately 70% 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 population of the City of Coalinga is 17,199.[22]According to the population forecast provided by the city, Coalinga's population is projected to grow to 21,537 by 2050.[23]

The current fire department's service utilization rate is 124 incidents per 1,000 population. The total utilization rate has increased by 20.96% over the last seven years, from a low of 102 (2019) per 1,000 to a max of 151(2015) per 1,000.

The figure below provides a comparison of different call types, Fire, EMS, and Other. The trend shows that incidents are decreasing over the 7-year period.

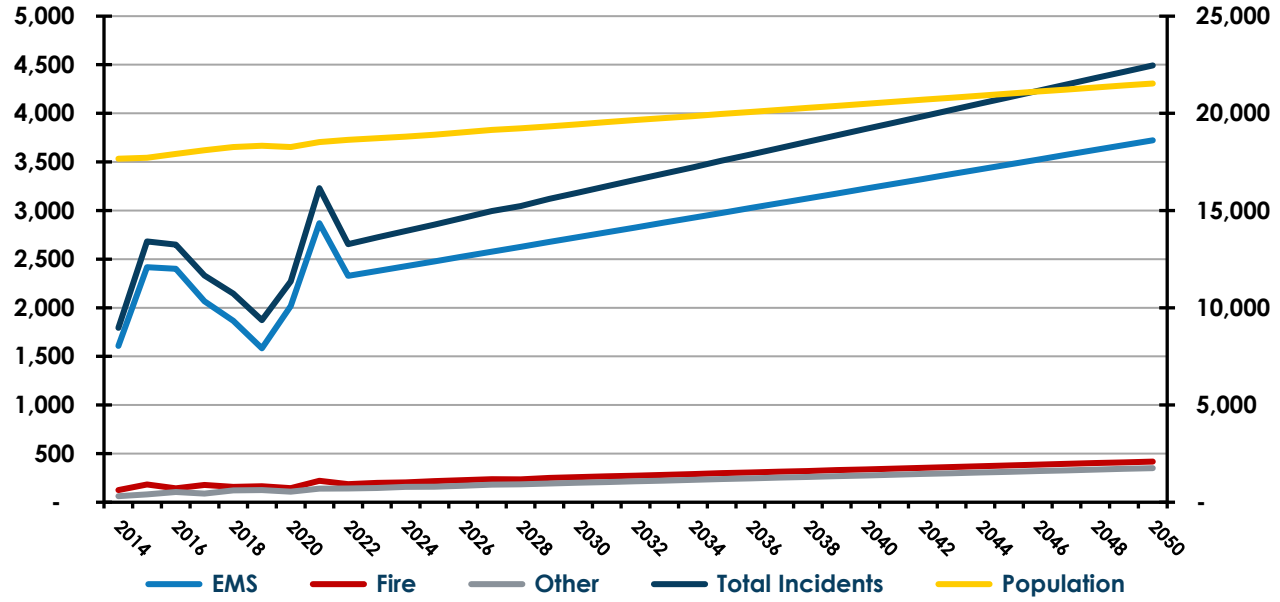
The drop in recorded responses can be attributed to a lower staffing level during 2018–2019. Per CFD, the department did not have the required resources to handle all the requests that it potentially could have.

Should the utilization growth rate of the past seven years continue, the total utilization rate could reach 209 incidents per 1,000 population by 2050. The increased utilization rate, plus expected population growth, will increase the CFD's workload to as many as 4,400 incidents by the year 2050, driven primarily by requests for emergency medical services. Population could grow from the current 18,263 to a predicted 21,537 (a 15.2% increase). The following figure shows the forecasted increases in population, EMS, Fire, and Other call types through 2050. The straight-line forecast shows a steady increase in all of these parameters.

Forecasting future developments based on past experience, particularly in Coalinga in 2018-2019, when staffing was below normal levels, can result in a skewed prediction of how much activity will be encountered in future years. The trend line above is decreasing, but if these two years had maintained normal levels, this trend line would have been flat or increasing.

The predicted increase in Population vs. Incident responses was based only on 2014–2018 as a baseline, which shows a potential steady increase in both population and incidents through 2050.

Figure 79: Projected Population Increase vs. Incident Responses (2014–2050)



The following figure is a table from the 2009 Coalinga General Plan (2025), which predicted a 140% increase in dwelling units with a population forecast of 32,535 in 2025. The amount of population may have been overestimated related to the maximum buildout potential.

Figure 80: Utilization Growth

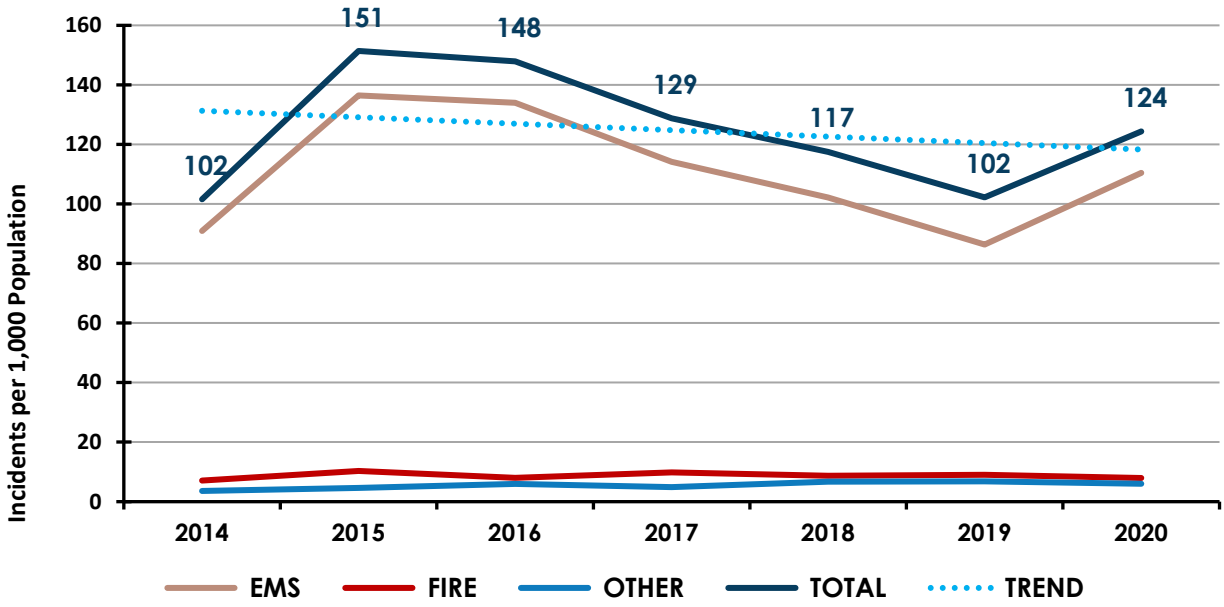


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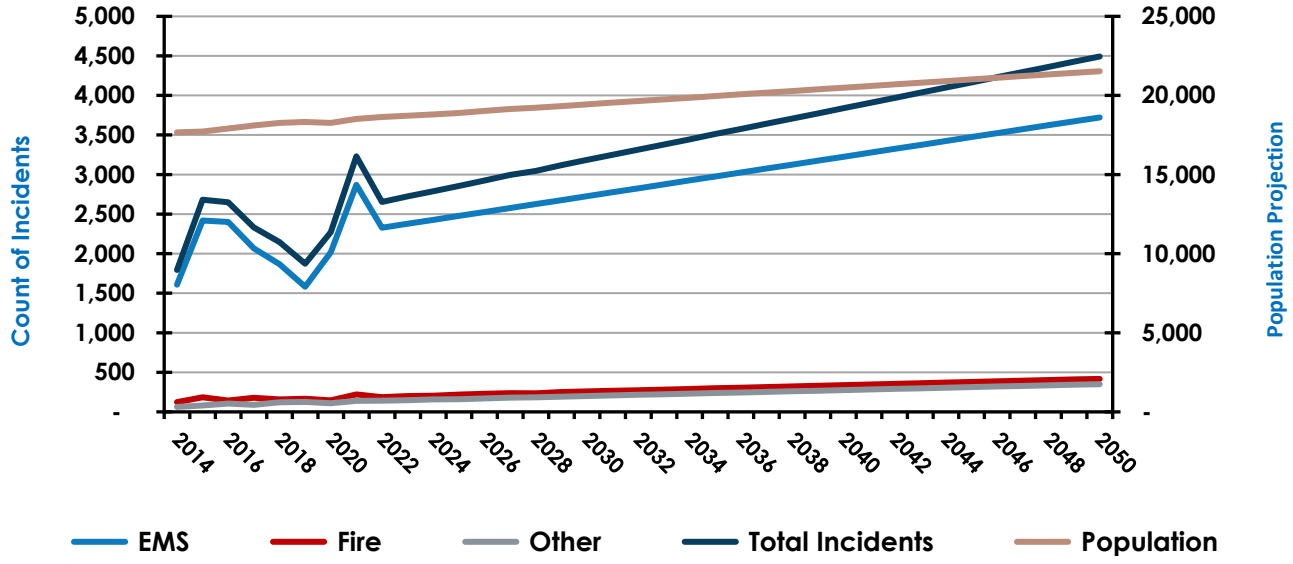
Figure 81: Projected Increase in Population vs. Incident Responses (2014–2050)



The following figure is a table from the 2009 Coalinga General Plan (2025), which predicted a 140% increase in dwelling units with a population forecast of 32,535 in 2025.[24] The amount of population has been overestimated in the maximum buildout potential tables. It is unlikely that the population will reach this level by 2025.

Figure 82: Residential Forecast from Coalinga General Plan

Land Use	DU's[1]	City Limits			Future Growth Area (SOI)			TOTAL		
		Acres[3]	DU's	Pop.[2]	Acres[3]	DU's	Pop.	Acres	DU's	Pop.
Residential Ranchette (RR)	0.1	0	0	0	523	52	156	523	52	156
Residential Estate (RE)	2	30	60	180	464	928	2,784	494	988	2,964
Residential Single Family (RSF)	5	681	3,405	10,215	2,393	11,960	35,880	3,074	15,365	46,095
Residential Medium Density (RMD)	15	171	2,565	7,695	168	2,520	7,560	339	5,085	15,255
Residential High Density (R	25	168	4,200	12,600	31	775	2,325	199	4,975	14,925
Mixed Use	15	41	615	1,845	0	0	0	41	615	1,845
TOTAL	**N/A**	**1,091**	**10,845**	**32,535**	**3,579**	**16,235**	**48,705**	**4,670**	**27,080**	**81,240**

Source: PMC, Land Use Diagram GIS layer (land_use_diagram.shp) June 2009

Notes: 1. Maximum number of Dwelling Units allowed by this element.
2. Population estimates assume 3.0 persons per household.
3. Average is rounded up fro GIS calculations (land_use_diagram.shp) June 2009

The following figure is an image of nonresidential buildout forecasts from the 2009 Coalinga General Plan (2025).[25] This table shows a current commercial employee count of 8,868 with a projection of 27,060 fueled by future growth areas. This is a nearly 300% growth forecast. The amount of commercial employee population may have been overestimated in the maximum buildout potential tables. Based on the actual population levels, it is unlikely that the commercial employee densities will reach this level by 2025.

Figure 83: Commercial & Other Forecasts from Coalinga General Plan

Land Use	City Limits		Future Growth Area		Total	
	Acres[1]	Employees	Acres[1]	Employees	Acres[1]	Employees
Commercial General (CG)	96	384	70	280	166	664
Commercial Service (CS)	99	396	89	356	188	752
Manufacturing/Business (MB)	299	1,196	1,375	5,500	1,674	6,696
Public Facilities (PF)	1,219	4,876	1,131	4,524	2,350	9,400
Recreation (REC)	145	580	660	2,640	805	3,220
Open Space and Conservation (OS)	264	1,056	980	3,920	1,244	4,976
Agriculture (AG)	95	380	243	972	338	1,352
TOTAL	**2,217**	**8,868**	**4,548**	**18,192**	**6,765**	**27,060**

Source: PMC, Existing Land Use Map (PMC, Land_Use_GP.shp) June 2009
Notes: 1. Average is rounded up from GIS Calculations (land_use_diagram.shp) June 2009
2. Assumes 4.0 employees per acre of land.

Review of Historical System Performance

Incident data for the period between January 1, 2018, and December 31, 2020 (study period) was evaluated in detail to determine CFD's current performance. Data was obtained from Fresno County Fire Protection District (FCFPD) Dispatch Center's computer-aided dispatch system. Records provided from CFD's Fire RMS and ESO Patient Care reports were not comprehensive enough nor contained sufficient data for analysis.

Only priority incidents occurring within the CFD city service area are included in the analysis. Priority incidents involve emergencies to which the fire department initiated a "Code 3" (using warning lights and sirens) response (887 incidents during 2018, 943 during 2019, and 1,016 during 2020). Non-emergency public assistance requests were excluded. Incidents in Huron and other parts of the ambulance response zones were excluded, as were all out of jurisdiction incidents.

Performance is reported based on the initial type of incident as dispatched. Three categories have been used to report performance:

- Fire—Responses to a report of fire or other hazardous incidents.
- Emergency medical—All emergency medical incidents.
- Other—Any other incident to which the fire department responded with lights and sirens.

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

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

CFD's response performance was compared to NFPA goals. These goals match those found in the national consensus standard for response performance; the NFPA *Standard 1710: Standard for the Organization & Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2020 Edition.

The Dispatch Center's performance was compared to the standards found in the *NFPA Standard 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2019 Edition.

The following figure summarizes the performance standards found in the National Fire Protection Association (NFPA) documents.

Figure 84: Summary of CFD Performance Goals

Incident Interval	Performance Goal
9-1-1 call answering time (time from first ring to answer).	Within 15 seconds, 90% of the time
Call processing time (time from acceptance at dispatch until notification of response units).	Within 60 seconds, 90% of the time
Turnout time (time from notification of personnel until initiation of movement towards incident). Fire & special operations incidents* EMS & other emergency incidents**	Within 80 seconds, 90% of the time* Within 60 seconds, 90% of the time**
First unit travel time (time from initiation of response until arrival of first unit at incident).	Within 4 minutes, 90% of the time
First unit response time (time from dispatch until arrival of first unit at incident). Fire & special operations incidents* EMS & other emergency incidents**	Within 5 minutes, 20 seconds, 90% of the time* Within 5 minutes, 90% of the time**
Full effective response force travel time (time from dispatch until all units arrive at incident. Response resources needed for a low-rise building fires are used for the evaluation.)	Within 9 minutes, 20 seconds, 90% of the time

In keeping with *NFPA Standards 1710* and *1221* and CFD's performance goals, all response time elements are reported at a given percentile. Percentile 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% of the times were at or less than the result. Only 10% were longer.

Percentile differs greatly from average. Averaging calculates response times by adding all response times together and dividing the total number of minutes by the total number of responses (mean average). Measuring and reporting average response times is not recommended. 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 CFD's performance goals.

Detection

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

Call Processing

Most emergency incidents are reported by telephone *(landline or cellular)* to the 9-1-1 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 9-1-1 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."

The Coalinga Fire Department receives alarm notifications from the Fresno County Fire Protection District (FCFPD) and American Ambulance for EMS (for additional details regarding ambulance call processing, refer to the ambulance call processing overview later in this report). Occasionally, calls are routed from the California Highway Patrol or Fresno County Sheriff's Department.

Fire and EMS-related incidents may originate at Coalinga Police Department (CPD) since they are the primary Public Safety Answering Point (PSAP) for 9-1-1 in Coalinga. The calls are then transferred to the appropriate dispatch center.

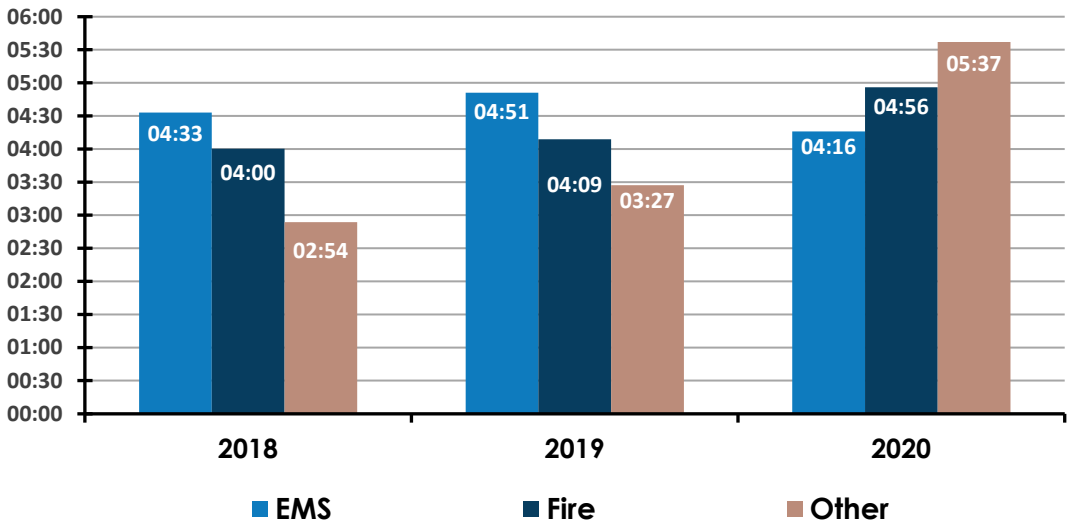
National Fire Protection Association Standard 1221 recommends that 9-1-1 calls be answered within 15 seconds, 90% of the time (within 20 seconds, 95% of the time). FCFPD has not reported call answer performance times, so this time performance parameter was not evaluated.

The second part of call processing time, dispatch time, begins when the call is received at the dispatch center (FCFPD) and ends when response units are notified of the incident. This PSAP uses Priority Dispatch for fire, EMS, and law enforcement to assist the telecommunicators when processing a call to 9-1-1.

NFPA standards prescribe that this phase should occur within 60 seconds, 90% of the time for most emergency call types. The following figure illustrates performance by FCFPD from the time it receives the call until it notifies response units. Overall performance during 2020 was measured at within 4 minutes, 22 seconds, 90% of the time.

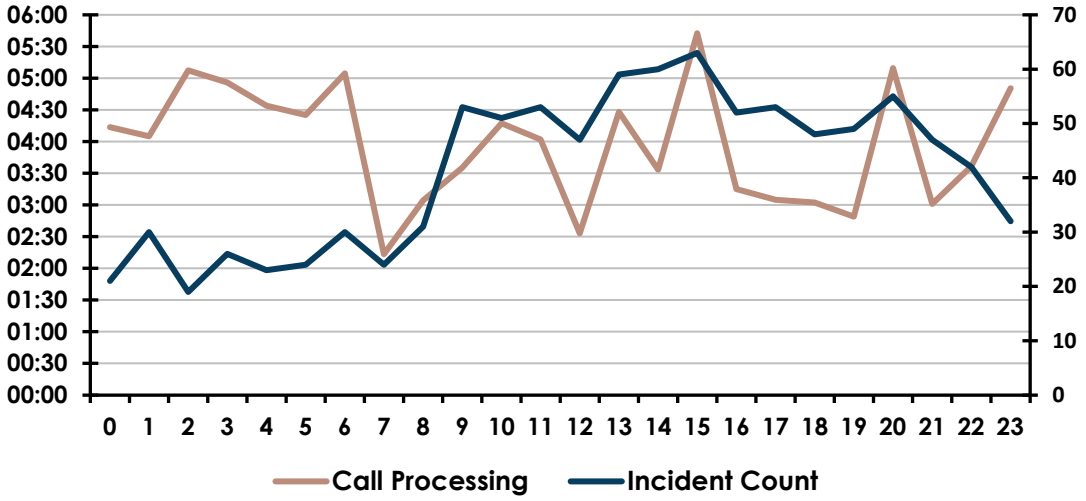
Examination of the FCFPD data is concerning because only 690 out of 2,847 (or roughly 24.2%) of all possible incidents provided valid call process times. The remaining 2,157 incidents were either outside of the valid range or were at zero.

Figure 85: FCFPD Dispatch Time Performance (Call Processing)



The workload at the FCFPD Dispatch Center can influence call processing performance. The following figure illustrates performance at different times of the day compared to the Fire Department's response workload. It appears that workload may be impacting the FCFPD Dispatch Center's performance. There is an early morning performance shift that is not as effective per incident as during higher volume periods. The call process percentile varies widely.

Figure 86: Call Processing Time by Hour of the Day (2020)

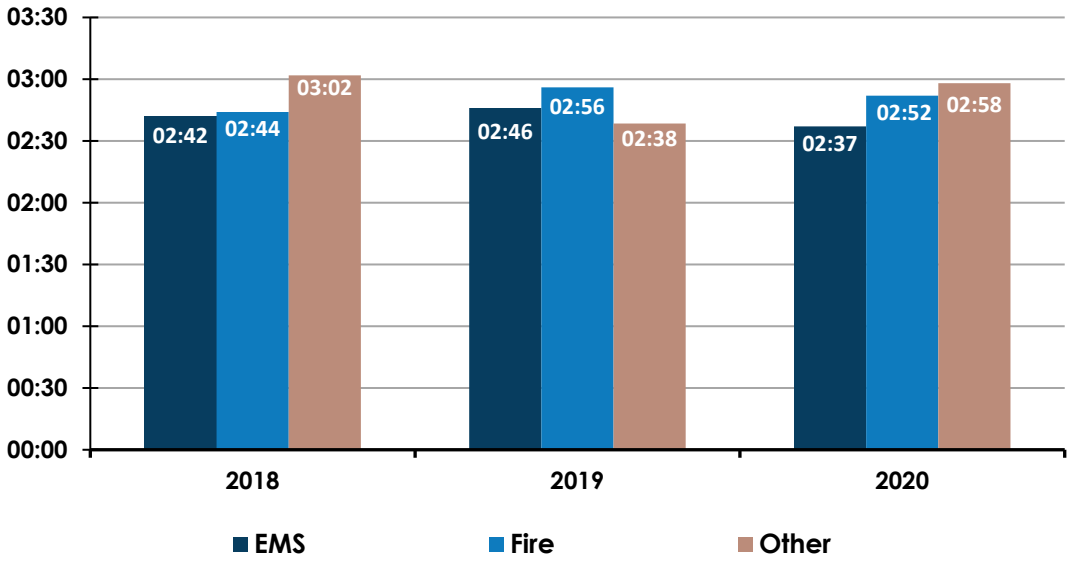


Turnout Time

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 moving towards the incident location. Personnel must don appropriate personal protective equipment (PPE), assemble on the response vehicle, and initiate travel to the incident. Good training and proper fire station design can minimize the time required for this step.

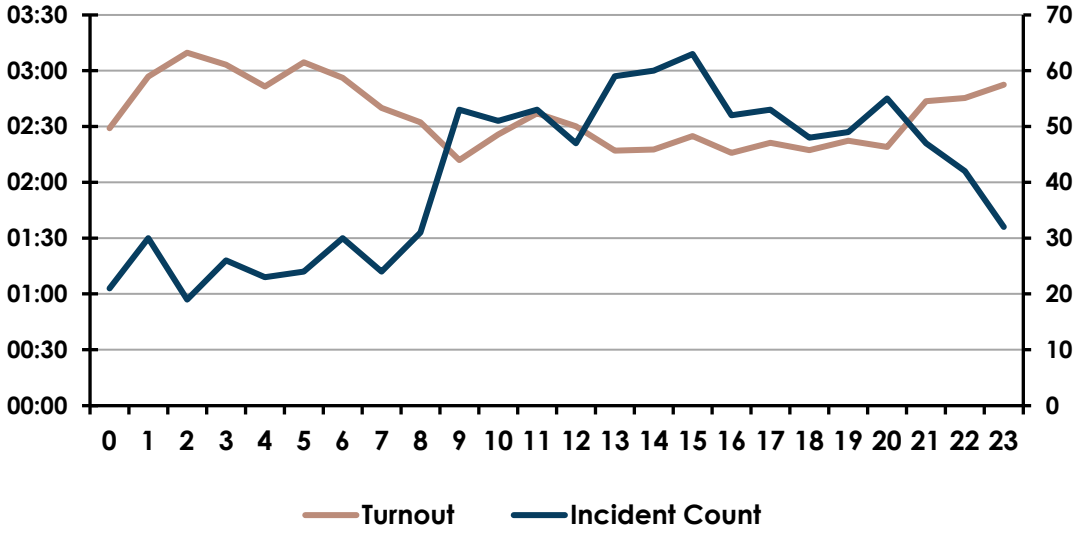
The performance goal for turnout time is within 80 seconds, 90% of the time for fire and special operations incidents, within 60 seconds, 90% of the time for all other priority emergency incidents. The following figure lists turnout time for all incidents as well as specific incident types. Turnout times for all incident types exceed standards. During 2020, turnout time for fire incidents was within 2 minutes, 52 seconds, 90% of the time, within 2 minutes, 37 seconds, 90% of the time for EMS incidents, and within 2 minutes, 58 seconds, 90% of the time for other incidents.

Figure 87: Turnout Time Performance



Turnout time can vary by the hour of the day. In this case, turnout time varied by 58 seconds between the early morning hours and daytime hours.

Figure 88: Turnout Time by Hour of the Day (2020)

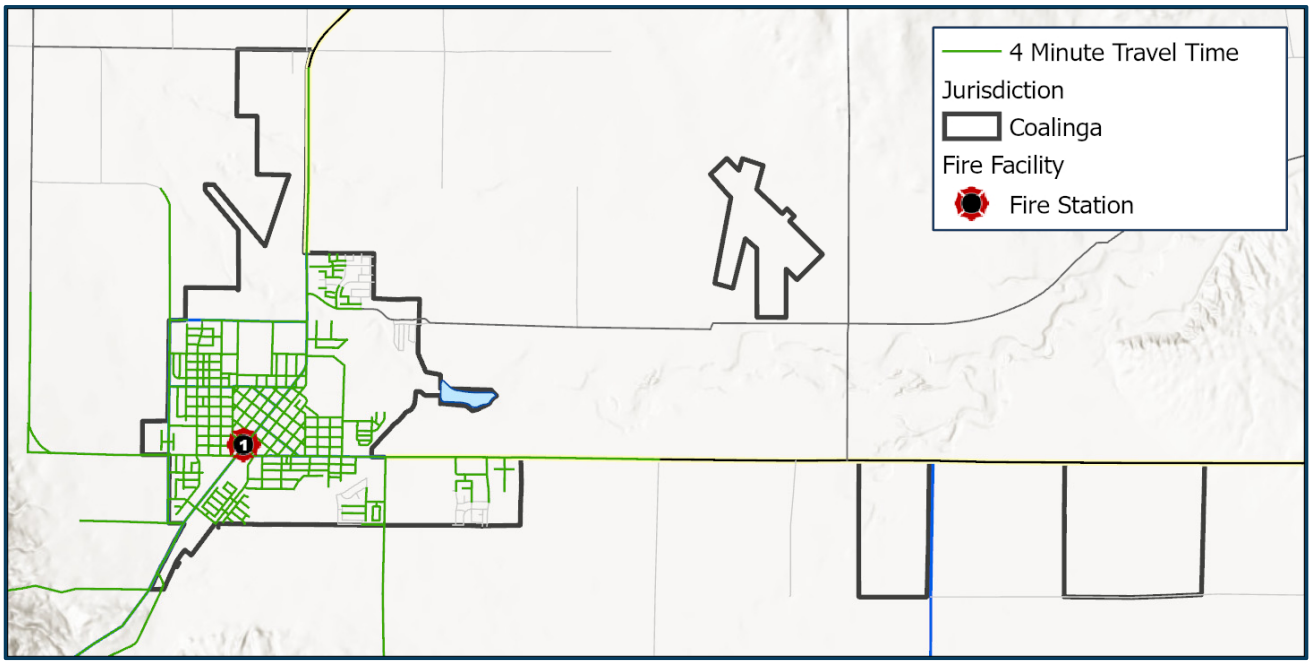


Distribution & Initial Arriving Unit Travel Time

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

The following figure illustrates the street sections that can be reached from the CFD fire station and neighboring stations in four minutes of travel time. It is based on posted road speeds modified to account for turning, stops, and acceleration.

Figure 89: Initial Unit 4-Minute Travel Time Capability—City of Coalinga



CFD responds to a broad area in southwest Fresno County. These areas include the community of Huron and several other unincorporated areas. Though not used for analysis, it is significant to understand the travel distances involved from the two mutual aid stations (93 and 94). As shown in the following figure, the nearest mutual aid stations are more than 10 minutes away.

Areas of Coalinga's jurisdiction, such as the Airport, Prison, and State hospital, are more than 10 minutes of estimated travel time from the fire station if the responding unit starts from CFD's station.

Figure 90: Predicted Travel Times to Study Area from CFD Station 1

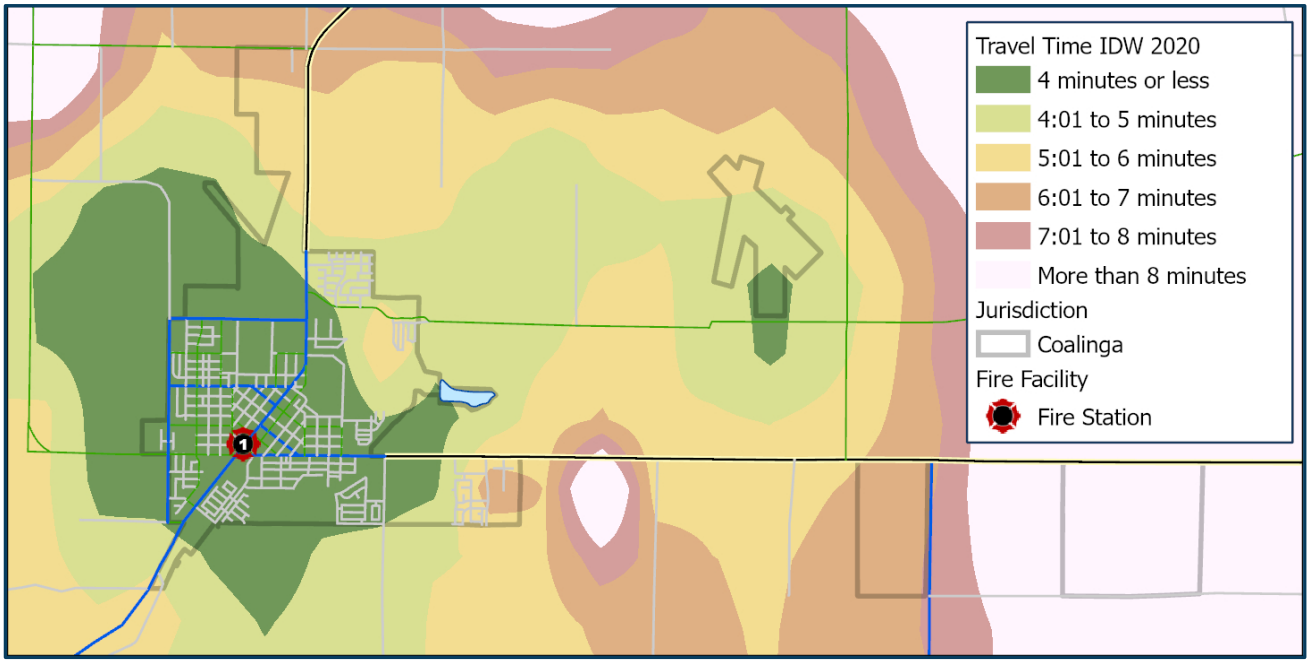
Travel Time Performance by Region

Travel time performance by region is variable and influenced by several 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's response 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 area that experiences the highest incident occurrence in Coalinga is well served by grid-patterned roadways, resulting in a 4-minute travel coverage for most of the City's populated area.

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.

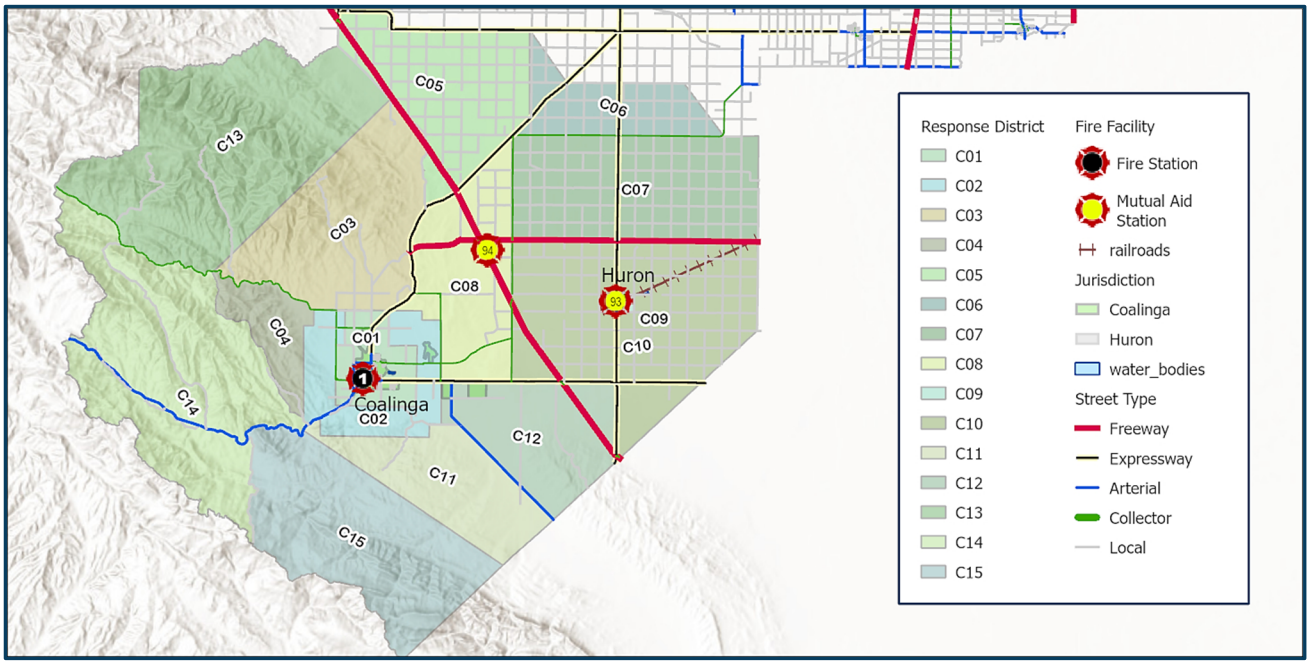
There is an anomaly near the airport and could indicate that the unit responded from a point other than the fire station. The actual experienced performance is consistent with the predicted travel time polygons in the figure above.

Figure 91: CFD Performance by Region



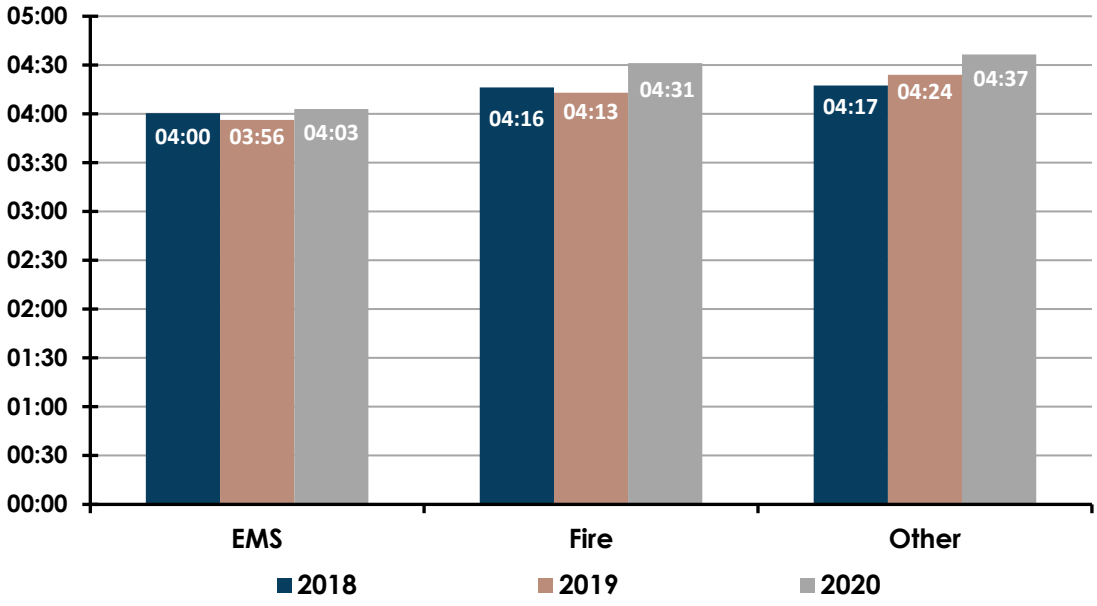
Ambulance responsibility areas are vast within Fresno County. Travel time was not evaluated in these areas. This figure is included to illustrate the extent of CFD's area of potential responsibility.

Figure 92: Ambulance Response Districts



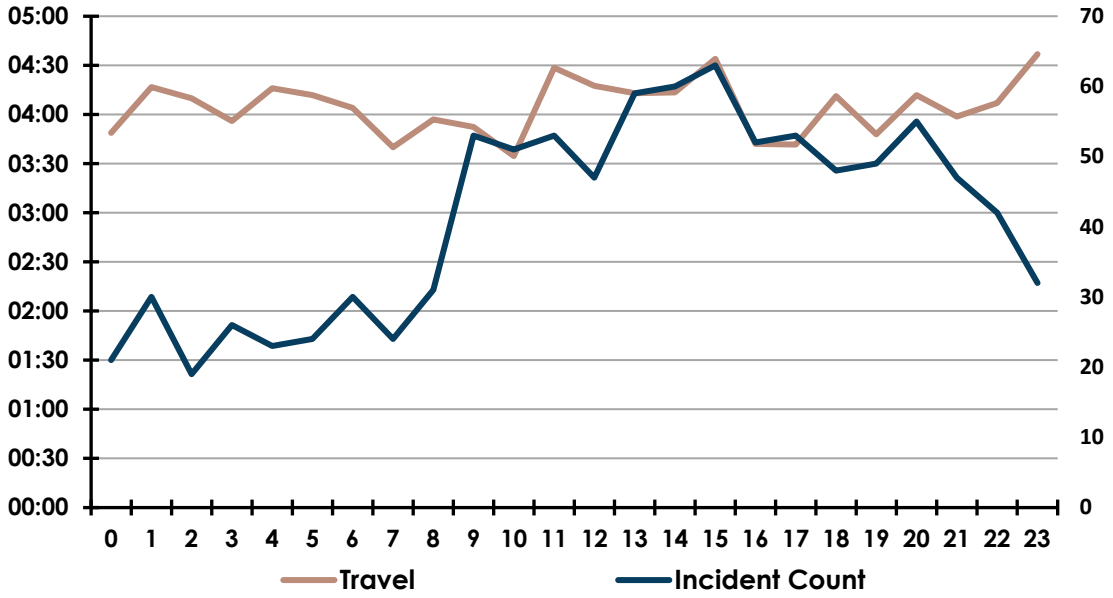
The following figure lists travel time for all priority incidents as well as specific incident types. CFD's travel times exceed its goal in all incident types. Travel time for all incidents during 2020 was within 4 minutes, 06 seconds, 90% of the time. EMS performance approaches the travel standard most closely.

Figure 93: Travel Time Performance—First Arriving Unit



Travel time can vary considerably by the time of the day. Heavy traffic during morning and evening rush hours can slow fire department response. Concurrent incidents can also increase travel time since units from more distant stations would need to respond. Traffic does not appear to be a factor here as daytime travel was shorter than nighttime.

Figure 94: Overall Travel Time & Incidents by Hour of Day—First Arriving Unit (2020)



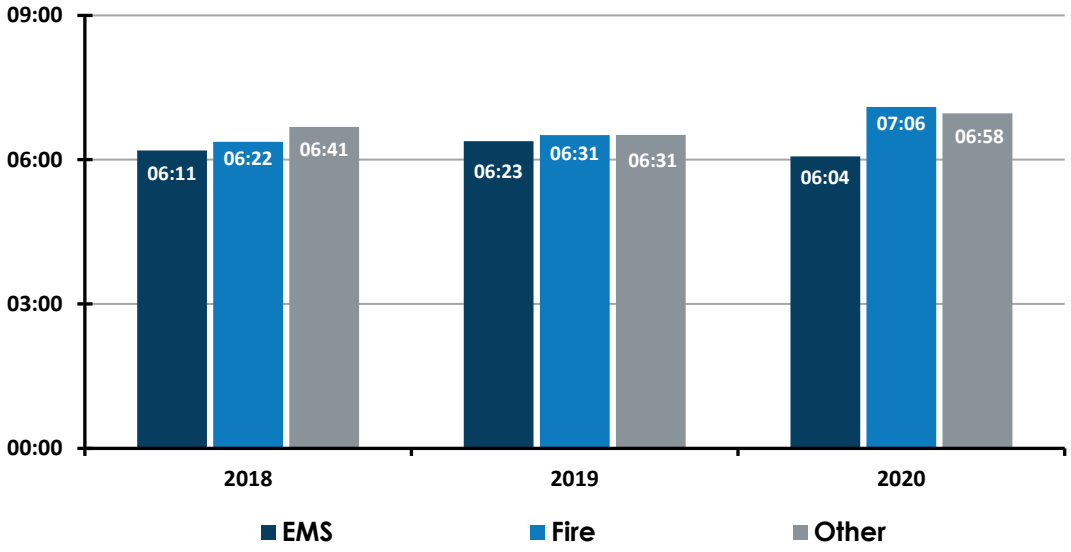
To provide an on-time response, a response unit must be within four travel minutes of the incident. Incidents were reviewed to identify how many occurred within four travel minutes of a fire station. During 2020, 696 of the 1,016 incidents within the City of Coalinga (68.5%) occurred within four travel minutes of the fire station.

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 performance goal for response time is within 5 minutes, 20 seconds, 90% of the time for fire and special operations incidents and within 5 minutes, 90% of the time for all other priority incidents.

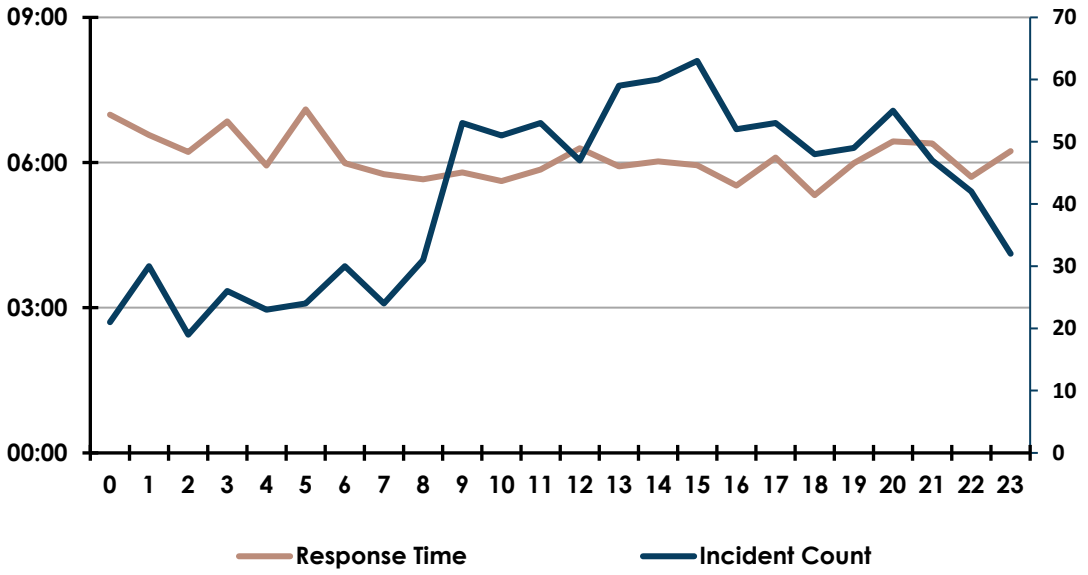
The following figure illustrates the response time for all priority incidents as well as specific incident types. Overall, response time for all priority incidents was within 6 minutes, 19 seconds, 90% of the time during 2020.

Figure 95: Response Time Performance—First Arriving Unit



The following figure shows response time and the number of incidents by the hour of the day for all incidents. Response time is slowest during the nighttime hours and fastest during the day. Generally, CFD's best response times occur during the period of the day when response activity is at its highest. The variation in response times is 1 minute 46 seconds between the shortest response hour and the longest response hour.

Figure 96: Hourly Response Time Performance (2020)

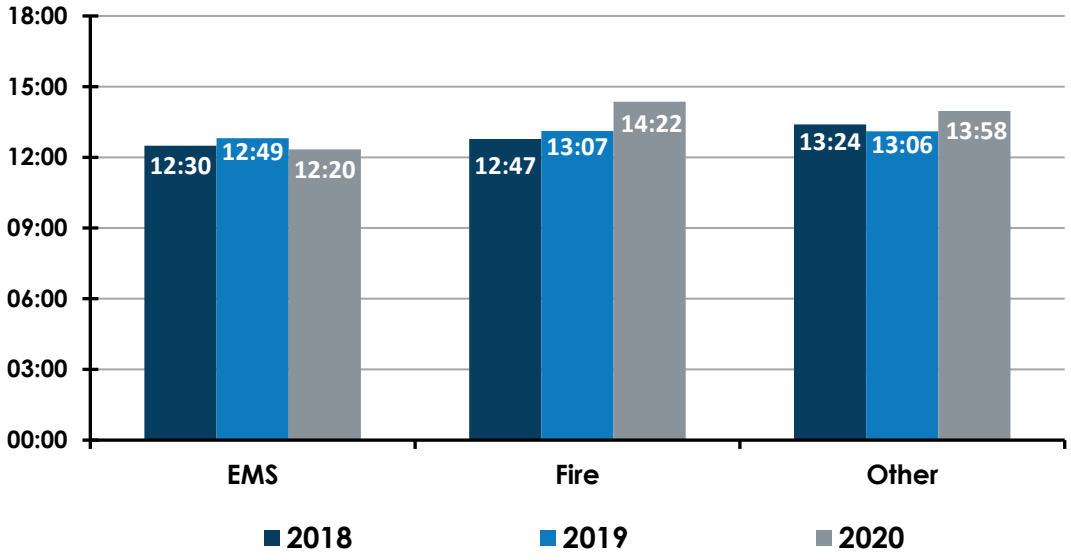


First Arriving Unit Received to Arrival Time

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 9-1-1. Received to arrival time combines call processing, turnout, and travel time. When the performance goals are combined, received to arrival time should be within 6 minutes, 20 seconds, 90% of the time for fire and special operations incidents, and within 6 minutes, 90% of the time for all other priority incidents.

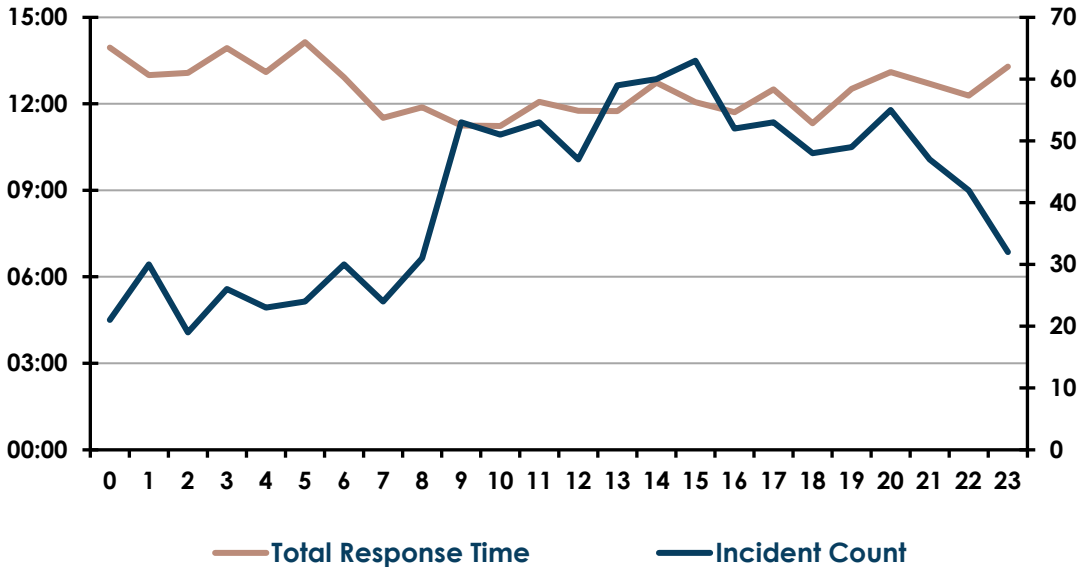
The next figure shows received to arrival performance for priority incidents within the City of Coalinga. Overall, received to arrival time was within 12 minutes, 40 seconds, 90% of the time during 2020.

Figure 97: Received to Arrival Time—First Arriving Unit



The next figure shows received to arrival performance by time of day also compared to incident activity by time of day. Received to arrival, from the customer's standpoint, is quickest during the day and slowest during the early morning hours.

Figure 98: Hourly Received to Arrival Performance (2020)



Concentration & Effective Response Force Capability Analysis

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

The response time goal for the delivery of the full ERF to a building fire is within 9 minutes, 20 seconds, 90% of the time. CFD has defined the minimum full effective response force for low-rise building fires as three fire engines, one truck, one medic, and one Chief with a total of 16 firefighters. Higher-risk fires require additional apparatus and personnel.

No data is available to identify building fires by type of risk (low-rise, high-risk commercial, etc.). All building fires have been evaluated using the low-rise effective response force criteria. The following figure illustrates effective response performance during the study period. The effective response force was not delivered to any building fires during the study period.

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

At no time did Coalinga deliver the target apparatus or number of firefighters to structure fires. The following figure describes the resources encountered in the structure fire data provided by FCFPD. The patterns of unit assignment and number of times these patterns were assigned are shown. The most common response patterns and number of times reported are:

- 1 Engine, 1 Ladder & 1 Chief (5)
- 2 Engines, 1 Chief (5)
- 2 Engines, 1 Medic (5)

Figure 99: Apparatus Assigned to Structure Fires (2018–2020)

Apparatus Pattern	2018	2019	2020	Totals
1E,1C			2	**2**
1E,1M	1			**1**
1E,1M,1C	1	2		**3**
1E,1M,1P,1T,1C			1	**1**
1E,1M,1T,1C		1	3	**4**
1E,1T	1			**1**
1E,1T,1C	3		2	**5**
1E,2M,1C			2	**2**
1E,2M,1T,1C			1	**1**
1M			1	**1**
1M,1T,1C			1	**1**
2E		1		**1**
2E,1C	3	1	1	**5**
2E,1M	3	2		**5**
2E,1M,1C		3		**3**
2E,1M,1T,1C			3	**3**
2E,2M,1C	1			**1**
Grand Totals:	**13**	**10**	**17**	**40**

C=Chief
E=Engine
M=Paramedic unit
P=Patrol
T=Ladder Truck

The following figure shows that the maximum number of staff assembled in the three-year study period was 11 firefighters on 4/24/2020. The majority of structure fire responses provided five to seven firefighters. Seven firefighters represent the entire on-duty staff of Coalinga.

Figure 100: Structure Fires Staff Assigned (2018–2020)—Part 1

Incident #	Date	Type	Staff	Apparatus	Goal Met
CAFKU000189	1/4/2018	FIRE, RESIDENTIAL	5	1E,1T,1C	NO
CAFKU000611	1/12/2018	FIRE, COMMERCIAL	7	2E,1M	NO
CAFKU000716	1/14/2018	FIRE, RESIDENTIAL	7	2E,1M	NO
CAFKU001522	1/30/2018	FIRE, RESIDENTIAL	5	1E,1T,1C	NO
CAFKU004443	3/30/2018	FIRE, RESIDENTIAL	4	1E,1T	NO
CAFKU005999	4/29/2018	FIRE, COMMERCIAL	7	1E,1T,1C	NO
CAFKU007250	5/24/2018	FIRE, RESIDENTIAL	9	2E,2M,1C	NO
CAFKU009647	7/4/2018	FIRE, RESIDENTIAL	4	1E,1M	NO
CAFKU012032	8/17/2018	FIRE, RESIDENTIAL	7	2E,1M	NO
CAFKU014131	9/25/2018	FIRE, MULTIFAMILY	5	2E,1C	NO
CAFKU016565	11/11/2018	FIRE, COMMERCIAL	5	2E,1C	NO
CAFKU018102	12/12/2018	FIRE, RESIDENTIAL	5	2E,1C	NO
CAFKU018102	12/12/2018	FIRE, RESIDENTIAL	7	1E,1M,1C	NO
CAFKU000904	1/19/2019	FIRE, MULTIFAMILY	7	2E,1M	NO
CAFKU001551	2/2/2019	FIRE, RESIDENTIAL	7	2E,1M,1C	NO
CAFKU001650		FIRE, COMMERCIAL	5	2E,1C	NO
CAFKU002106	2/15/2019	FIRE, COMMERCIAL	7	2E,1M,1C	NO
CAFKU002686	2/27/2019	FIRE, MULTIFAMILY	7	2E,1M,1C	NO
CAFKU004226	3/30/2019	FIRE, RESIDENTIAL	5	2E,1C	NO
CAFKU005140	4/17/2019	FIRE, RESIDENTIAL	4	2E	NO
CAFKU006119	5/5/2019	FIRE, RESIDENTIAL	7	2E,1M	NO
CAFKU007498	6/1/2019	FIRE, RESIDENTIAL	5	1E,1M,1C	NO
CAFKU012017	8/18/2019	FIRE, RESIDENTIAL	7	1E,1M,1T,1C	NO
CAFKU013650	9/15/2019	FIRE, COMMERCIAL	5	1E,1M,1C	NO
CAFKU001385	1/29/2020	FIRE, COMMERCIAL	9	2E,1M,1T,1C	NO
CAFKU001954	2/10/2020	FIRE, RESIDENTIAL	7	1E,1M,1T,1C	NO
CAFKU002731	2/25/2020	FIRE, MULTIFAMILY	9	1E,1M,1T,1C	NO

Figure 101: Structure Fires Staff Assigned (2018–2020)—Part 2

Incident #	Date	Type	Staff	Apparatus	Goal Met
CAFKU003629	3/13/2020	FIRE, RESIDENTIAL	7	1E,1M,1T,1C	NO
CAFKU003723	3/15/2020	FIRE, COMMERCIAL	9	1E,2M,1T,1C	NO
CAFKU005110	4/17/2020	FIRE, RESIDENTIAL	9	2E,1M,1T,1C	NO
CAFKU005414	4/24/2020	FIRE, RESIDENTIAL	11	1E,1M,1P,1T,1C	NO
CAFKU007686	6/6/2020	FIRE, RESIDENTIAL	5	1E,1T,1C	NO
CAFKU008794	6/24/2020	FIRE, RESIDENTIAL	5	1E,1T,1C	NO
CAFKU009500	7/4/2020	FIRE, RESIDENTIAL	5	2E,1C	NO
CAFKU011034	7/27/2020	FIRE, MULTIFAMILY	9	2E,1M,1T,1C	NO
CAFKU011359	8/1/2020	FIRE, COMMERCIAL	2	1M	NO
CAFKU014742	10/1/2020	FIRE, RESIDENTIAL	7	1E,2M,1C	NO
CAFKU016899	11/11/2020	FIRE, RESIDENTIAL	3	1E,1C	NO
CAFKU017069	11/14/2020	FIRE, RESIDENTIAL	5	1M,1T,1C	NO
CAFKU018707	12/15/2020	FIRE, RESIDENTIAL	3	1E,1C	NO
CAFKU018851	12/17/2020	FIRE, RESIDENTIAL	7	1E,2M,1C	NO

Second Unit Arrival Time

CFD has one fire engine staffed with two 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. Coalinga cross-staffs units with personnel from the ambulances—two for the ladder truck and two for one other unit. (Either reserve engine E371, Patrol 171, or the utility vehicle U171, depending on needs). If one of the ambulances is committed to a response and unavailable, four firefighters would still be present. Should both Paramedic 251 and Paramedic 252 be committed to incidents or on long-distance transports, this would limit the amount of fire-trained personnel available.

Figure 102: Assigned Units to Incidents of All Types (2018–2020)

No. of Units	2018	2019	2020
1	1,990	1,776	2,143
2	1,010	1,020	1,175
3	704	598	831
4	256	84	279
5	60	24	71
6	13	11	26
7	3		11
8	2		2
Totals:	**4,038**	**3,513**	**4,538**

Current staffing levels on engines require the arrival of a second response unit before CFD can initiate non-rescue interior firefighting activities. The nearest routinely staffed units are in Huron at Station 93 and Station 94. Both are more than 15 minutes travel time away. CAL FIRE and the prison fire apparatus could respond; however, the CAL FIRE Fresno King Unit is only available seasonally and if not committed to an incident (unlikely). It is unknown how long it would take the prison fire unit to clear the facility, but travel times are more than 10 minutes from that location to most of the City area.

Figure 103: Travel Time from Mutual Aid Station 93

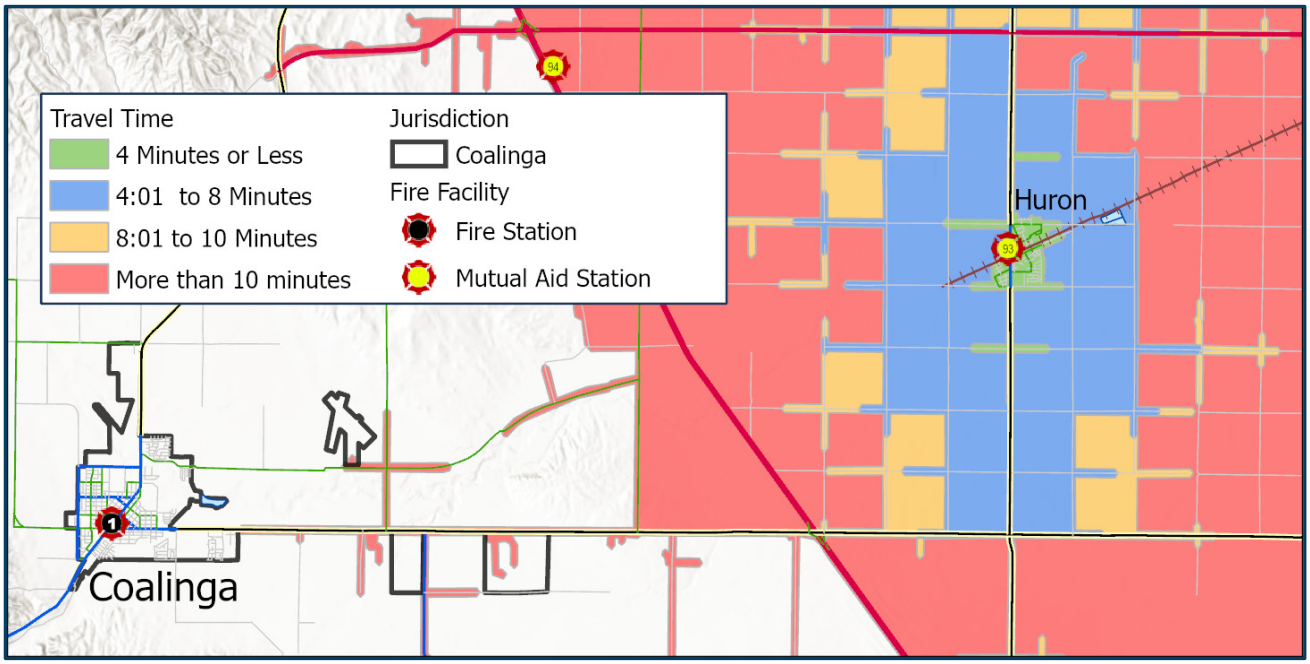
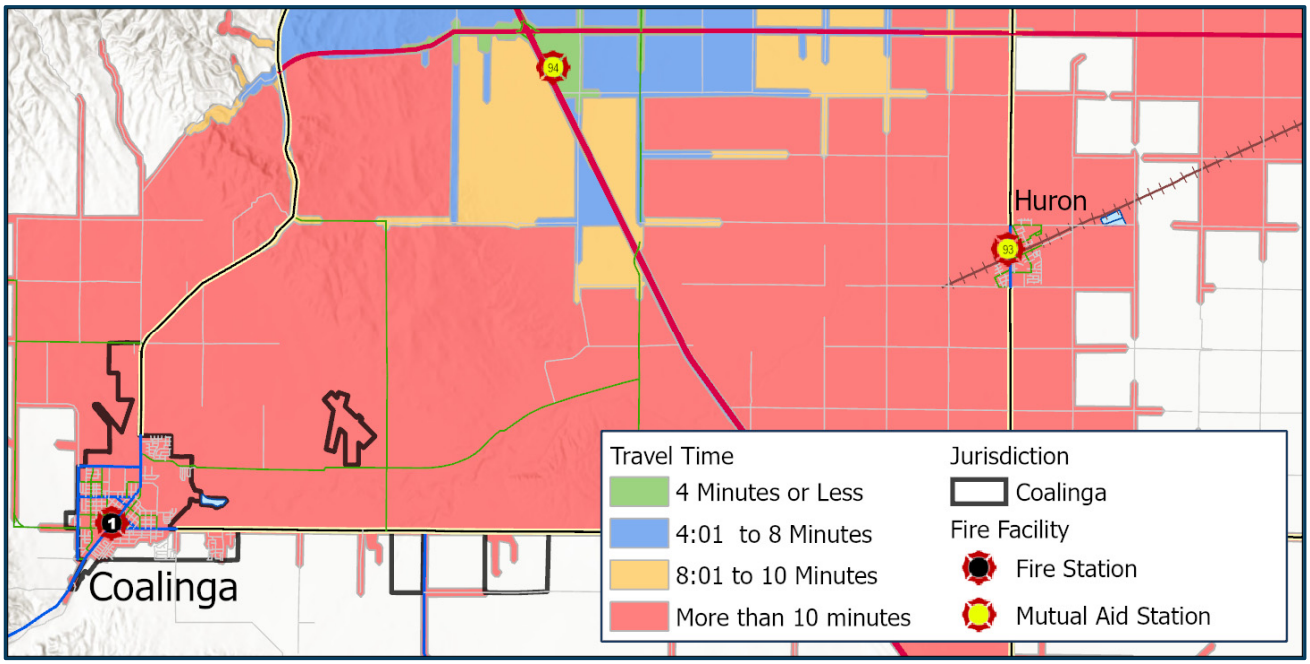


Figure 104: Travel Time from Mutual Aid Station 94



Incident data for building fires during the study period were reviewed to determine the time the second response unit arrived on the scene. Forty incidents were reviewed between January 1, 2018, and Dec 31, 2020.

There were 29 Incidents which included a second unit response time and these were used to evaluate response performance. According to the data, the second unit arrived on the scene of a structure fire within 7 minutes, 33 seconds, 90% of the time.

Incident Concurrency

When evaluating the effectiveness of any resource deployment plan, it is necessary to evaluate the workload of the individual response units to determine to what extent their availability for dispatch is affecting the response time performance. In the simplest terms, a response unit cannot make it to an incident across the street from its own station in four minutes if it is unavailable to be dispatched to that incident because it is committed to another call.

Concurrency

One way to look at resource workload is to examine the number of times multiple incidents happen within the same time frame. Incidents during the study period were examined to determine the frequency of concurrent incidents. This is important because concurrent incidents can stretch available resources and delay response to other emergencies. This factor significantly impacts total response times to emergencies in the jurisdiction.

The following figure shows the number of times that one or more incidents occurred concurrently (in the same hour). This shows that 1,258 times during 2020, only one incident was in progress at a time. However, 820 times, there were two incidents in progress in the same hour; 176 times, there were three incidents in progress at the same time; two times, there were five incidents in progress at the same time; and one time, there were six incidents in progress at the same time.

Figure 105: Incident Concurrency (2018–2020)

No. of Incidents	2018	2019	2020
One Incident	1,300	1,364	1,258
Two Incidents	708	478	820
Three Incidents	131	31	176
Four Incidents	6	1	14
Five Incidents	1	0	2
Six Incidents	0	0	1

It is also useful to review the number of times one or more response units are committed to incidents at the same time. Since CFD operated four response units during the study period, including an engine, a chief, and two ambulances response units from other agencies were included. The following table shows the number of times one or more CFD and other agency response units were committed to incidents. This data includes all responses inside and outside Coalinga, including to Huron and Out of Jurisdiction incidents. This table does not include the units CLG-ALL and CLGPD (Coalinga PD). All incident types and levels of priority are included.

It is common for multiple response units to be simultaneously committed to incidents, with two and three concurrent responses occurring regularly.

It is concerning that 73 times in 2020, the number of units responding exceeded the amount that Coalinga can staff with on-duty personnel. In several instances, the same unit identifier was listed twice on the same incident. This could mean that a unit was assigned, cleared, or was canceled, then recalled to the incident.

Figure 106: Unit Concurrency All Areas/Types (2018–2020)

No. of Incidents	2018	2019	2020
One Incident	1,209	1,283	1,126
Two Incidents	1,221	1,049	1,372
Three Incidents	635	229	792
Four Incidents	193	65	240
Five Incidents	53	8	73
Six Incidents	11	1	26
Seven or More	3	1	21

Huron Ambulance Response District Analysis

During Triton's review of CFD's performance, it was noted that CFD's EMS response area includes the community of Huron. Based on the analysis, Coalinga's ambulance units are rarely available to respond to requests for service in this area. As a result of CFDs' lack of availability, American Ambulance Service communications (EMS) dispatches other resources (instead of Coalinga), as shown in the following figure.

Figure 107: Ambulance Activity in Huron (2018–2020)

Agency	2018	2019	2020	Totals
American Ambulance–BLS			2	**2**
American Ambulance–Kings	521	566	555	**1,642**
American Ambulance–Metro	10	17	4	**31**
American Ambulance–Rural	1		1	**2**
Coalinga Fire Department	41	49	90	**180**
Totals:	**573**	**632**	**652**	**1,857**

The figure clearly shows that there was a large number of ambulance responses that were routed to American ambulances due to CFD's inability to respond. The majority, 1,642, were assigned to Kings County American ambulance units, which is exceedingly far away in response time. The King County's ambulances are based in Avenal, far to the south of Huron.

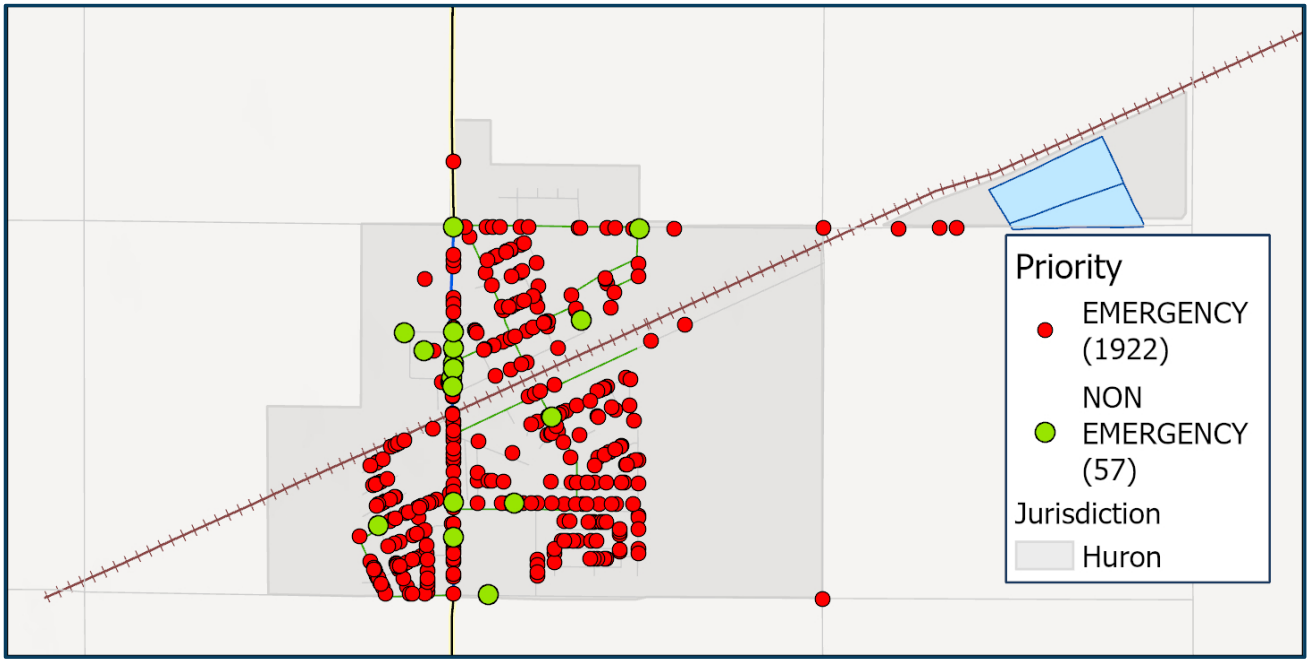
While the provided data does not allow for examining what responses were advanced life support (ALS) versus basic life support (BLS), it is possible to determine the mix of emergency to non-emergency incidents in this time. Priorities 1, 2, and 3 are emergency. All others represent non-emergency requests. The figure below shows this distribution of call priorities from 2018–2020.

Figure 108: Huron Ambulance Response by Priority

Priority	2018	2019	2020	Totals
Emergency	562	618	620	**1,800**
Non-Emergency	11	14	32	**57**
Totals:	**573**	**632**	**652**	**1,857**

The responses can be represented spatially, with the bulk of non-emergency requests occurring along one roadway. In the following figure, the red dots represent emergency responses and the green dots non-emergency responses from 2018–2020.

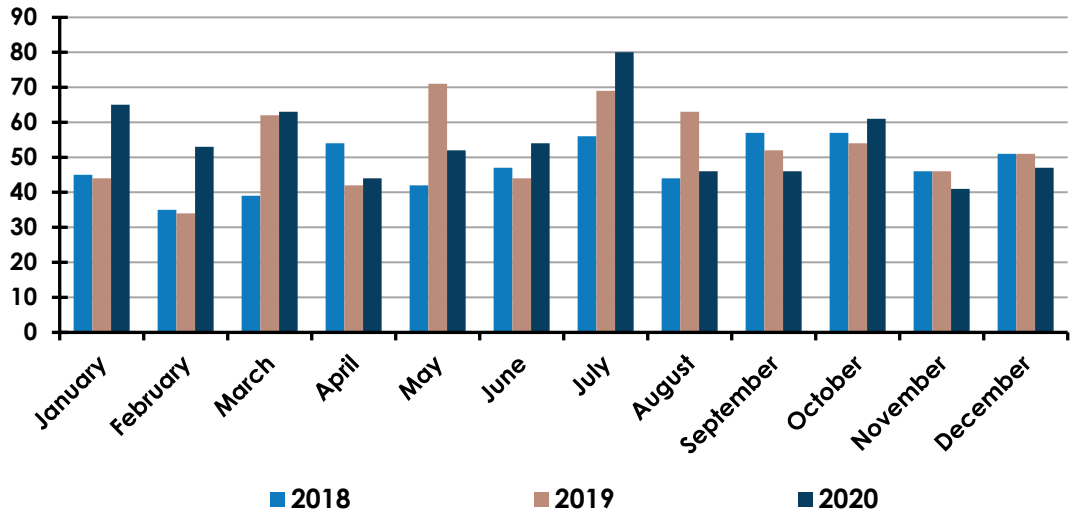
Figure 109: Service Demand by Priority



Temporal Analysis

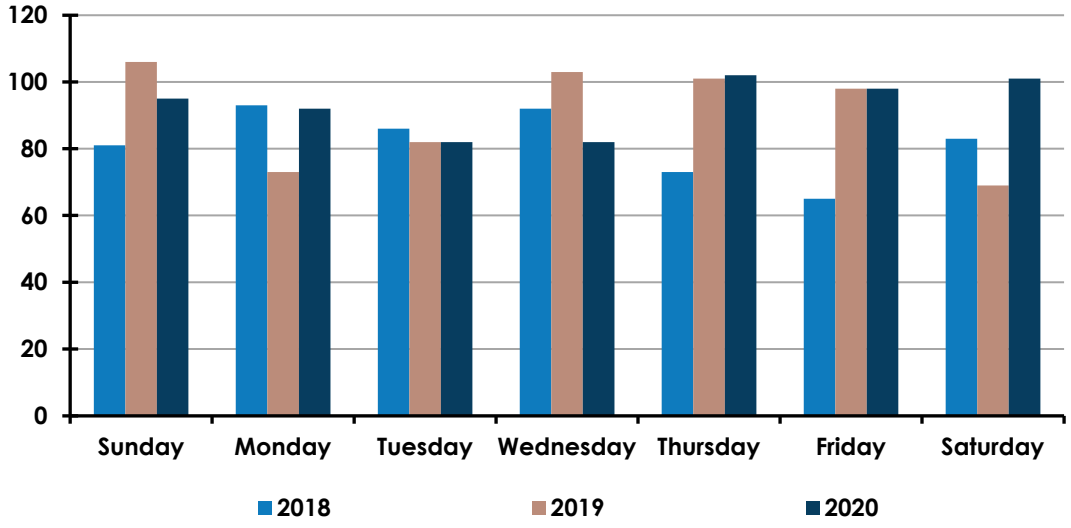
A review of ambulance incidents in Huron by time of occurrence also reveals when the most significant response demand is occurring. The following figures show how activity and demand change for all agencies based on various measures of time. The following figure shows response activity during 2018, 2019, and 2020 (study period) by month. There is some variation by month. However, no seasonal pattern is apparent between the years analyzed.

Figure 110: Huron Ambulance Monthly Response Workload (2018–2020)



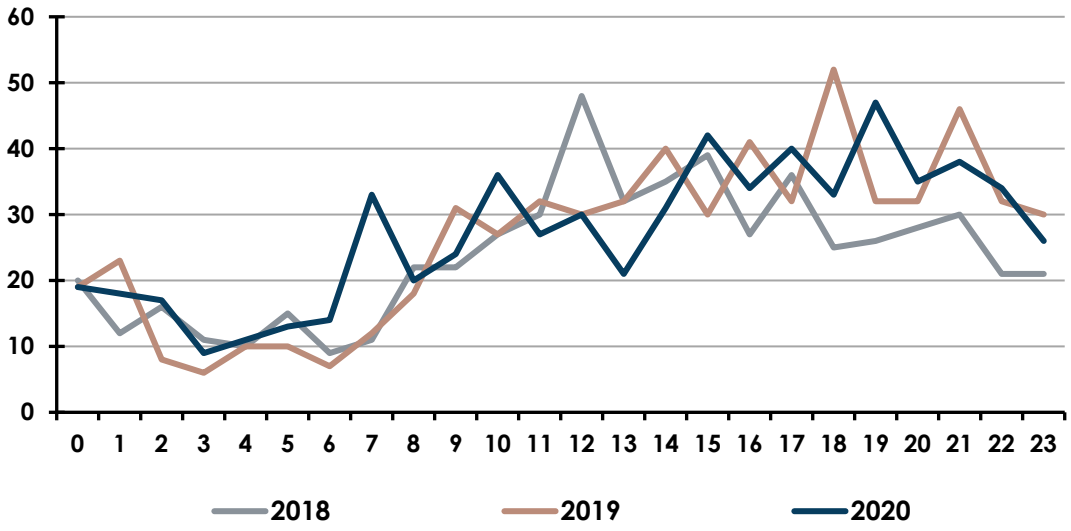
The Huron ambulance response workload can also be compared by the day of the week. Higher volumes occurred on the weekend in 2020; however, there is not a significant amount of variation. The lower 2018 responses are partially explained by the reduced staffing provided by Coalinga. The next figure provides a comparison of week day demand for services.

Figure 111: Huron Ambulance Daily Response Workload (2018–2020)



The time analysis shows significant variation in response activity by the hour of the day. Response workload directly correlates with the activity of people, with workload increasing during daytime hours and decreasing during nighttime hours, as shown in the following figure. Incident activity is at its highest between 9:00 am and 9:00 pm.

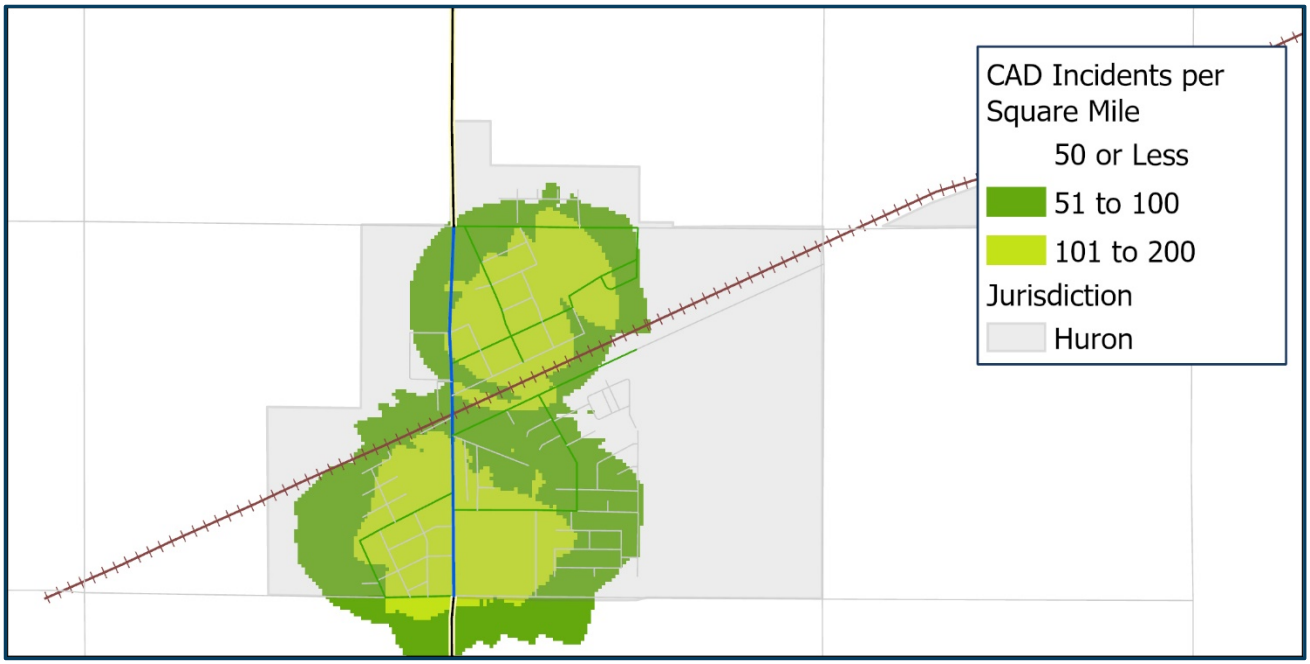
Figure 112: Huron Ambulance Hourly Workload (2018–2020)



Spatial Analysis

In addition to the temporal analysis, it is useful to examine the geographic distribution of service demand. The following figures indicate the distribution of incidents in Huron between 2018 and 2020. There are two distinct areas of higher incident density to the northeast and southwest.

Figure 113: Huron Ambulance Service Demand Density (2018–2020)



American Ambulance Call Processing

Most emergency incidents are reported by telephone *(landline or cellular)* to the 9-1-1 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 9-1-1 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."

The Coalinga Fire Department receives ambulance notifications from American Ambulance Service.

EMS-related incidents may originate at Coalinga Police Department (CPD) since they are the primary Public Safety Answering Point (PSAP) for 9-1-1 in Coalinga.

Part of call processing time, dispatch time, begins when the call is received at the dispatch center (American) and ends when response units are notified of the incident. This Secondary Public Safety Answering Point (PSAP) uses the Priority Dispatch system for EMS incident processing and categorization. The application of algorithmic questioning procedures can lengthen call process times.

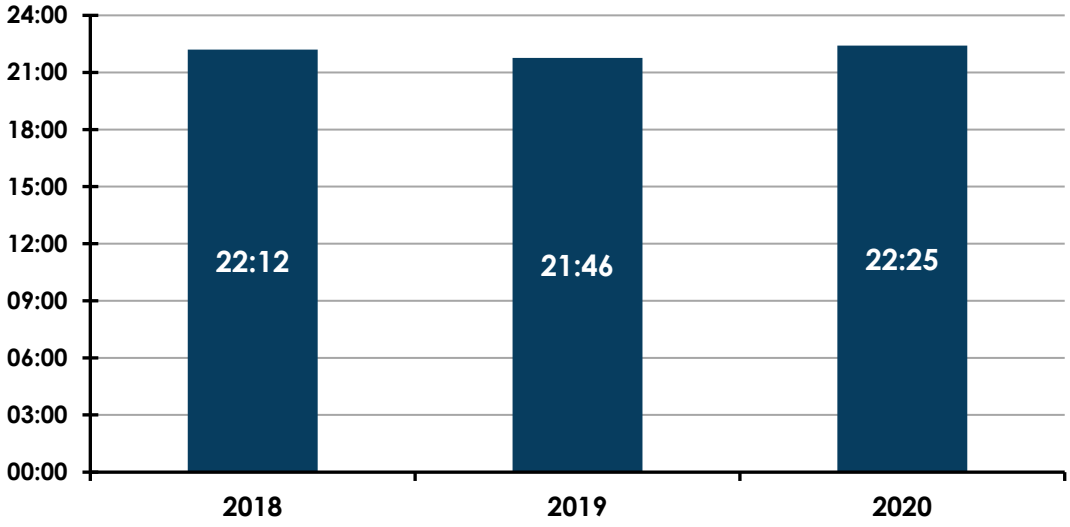
NFPA standards prescribe that this phase should occur within 60 seconds, 90% of the time for most emergency call types. Overall performance during 2020 was within 2 minutes, 51 seconds, 90% of the time. These results are beyond the NFPA target of 60 seconds.

The following figure illustrates the areas that can be reached from the CFD fire station and neighboring stations in ten minutes of travel time. It is based on posted road speeds modified to account for turning, stops, and acceleration. It is not possible for a CFD unit to reach Huron in the NFPA target of 4 minutes.

Figure 114: Initial Unit Travel Times from Coalinga Station 1

Travel times from each of the agency response units varies, but the American Kings ambulance is responding from the adjoining county to the south, from Avenal. Travel times were dangerously long, resulting in a 22-minute, 25-second travel 90% of the time in 2020.

Figure 115: Huron All Agency Travel Time Performance (2018–2020)

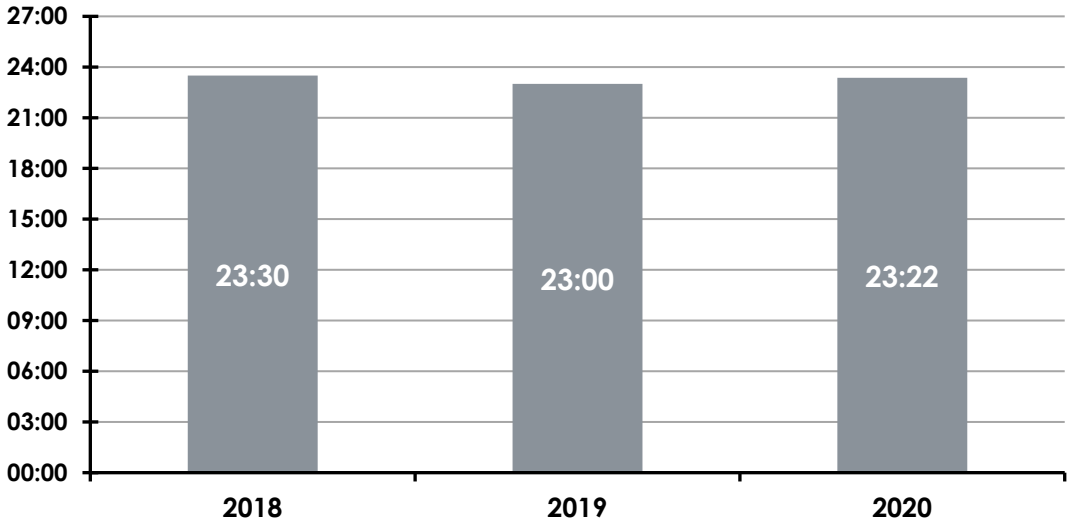


First Arriving Unit Response Time

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 performance goal for response time is within 5 minutes, 20 seconds, 90% of the time for fire and special operations incidents, and within 5 minutes, 90% of the time for all other priority incidents. Provided the distances between origin points and response destination, this goal is currently not obtainable.

The following figure illustrates the response time for all priority incidents. Overall, response time for all priority incidents was within 23 minutes, 19 seconds, 90% of the time during 2020.

Figure 116: Huron Initial Response Time Performance (2018–2020)

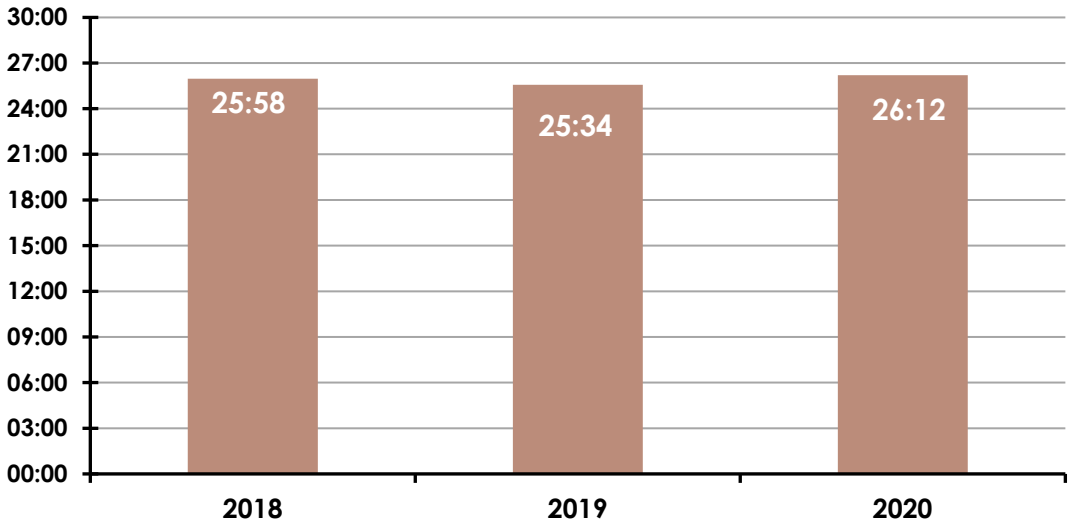


First Arriving Unit Received to Arrival Time

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 9-1-1. Received to arrival time combines call processing, turnout, and travel time. When the performance goals are combined, received to arrival time should be within 6 minutes, 90% of the time for all EMS incidents. Considering the distances involved, the amount of time required for call processing, and lengthy turnout times, this goal is currently not achievable.

The next figure shows received to arrival performance for priority incidents within the city of Huron. Overall, received to arrival time was within 26 minutes, 12 seconds, 90% of the time during 2020.

Figure 117: Huron Received to Arrival Time—First Arriving Unit (2018–2020)



Performance Objectives & Measures

Dynamics of Fire in Buildings

Predictably, most fires within buildings develop predictably unless influenced by highly flammable material. Ignition, or the beginning of a fire, starts the sequence of events. It may take several minutes or even hours from the time of ignition until a flame is visible. This smoldering stage is very dangerous, especially during times when people are sleeping, because large amounts of highly toxic smoke may be generated during this phase.

Once flames do appear, the sequence continues rapidly. Combustible materials adjacent to the flame heat and ignite, which, in turn, heats and ignites other adjacent materials if sufficient oxygen is present. As the objects burn, heated gases accumulate at the ceiling of the room. Some of the gases are flammable and highly toxic.

The spread of the fire from this point continues quickly. Soon, the flammable gases at the ceiling, as well as other combustible material in the room of origin, reach ignition temperature. At that point, an event termed "flashover" occurs: the gases and other material ignite, which, in turn, ignites everything in the room. Once flashover occurs, damage caused by the fire is significant, and the environment within the room can no longer support human life. Flashover usually occurs about five to eight minutes from the appearance of flame in typically furnished and ventilated buildings. Because flashover has such a dramatic influence on the outcome of a fire event, the goal of any fire agency is to apply water to fire before flashover occurs.

Although modern codes tend to make fires in newer structures more infrequent, today's energy-efficient construction (designed to hold heat during the winter) also tends to confine the heat of hostile fire. In addition, research has shown that modern furnishings generally ignite more quickly and burn hotter (due to synthetics). In the 1970s, scientists at the National Institute of Standards and Technology found that after a fire broke out, building occupants had about 17 minutes to escape before being overcome by heat and smoke. Today, that estimate is as short as three minutes.The necessity of effective early warning (smoke alarms), early suppression (fire sprinklers), and firefighters arriving on the scene of a fire in the shortest span of time is more critical now than ever.

The prompt arrival of at least four personnel is critical for structure fires. Federal regulations (CFR 1910.120) require that personnel entering a building involved in a fire must be in groups of two. Further, before personnel can enter a building to extinguish a fire, at least two personnel must be on scene and assigned to conduct search and rescue in case the fire attack crew becomes trapped. This is referred to as the two-in, two-out rule.

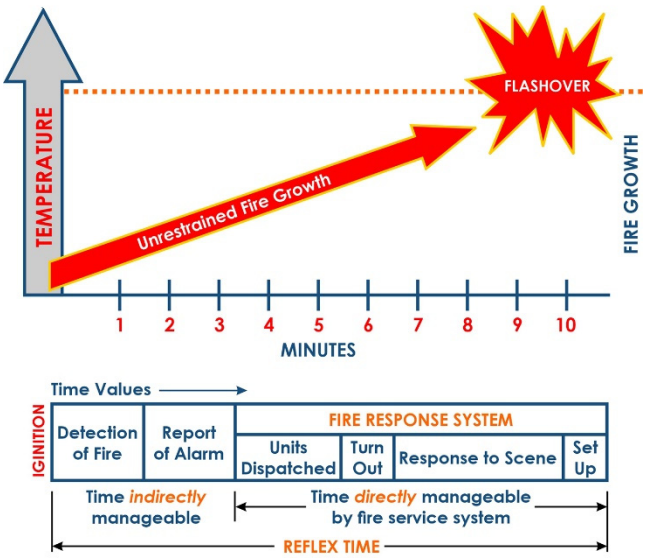
However, if it is *known* that victims are trapped inside the building, a rescue attempt can be performed without additional personnel ready to intervene outside the structure. Further, there is no requirement that all four arrive on the same response vehicle. Many fire departments rely on more than one unit arriving to initiate an interior fire attack.

Perhaps as important as preventing flashover is the need to control a fire before it does damage to the structural framing of a building. Materials used to construct buildings today are often less fire-resistive than the heavy structural construction of older frame buildings. Roof trusses and floor joists are commonly made with lighter materials that are more easily weakened by the effects of fire. "Lightweight" roof trusses fail after five to seven minutes of direct flame impingement. Plywood I-beam joists can fail after as little as three minutes of flame contact. This creates a dangerous environment for firefighters.

In addition, the contents of buildings today have a much greater potential for heat production than in the past. The widespread use of plastics in furnishings and other building contents rapidly accelerates fire spread and increases the amount of water needed to control a fire effectively. All of these factors make the need for early application of water essential to a successful fire outcome.

The following figure illustrates the sequence of events during the growth of a structure fire.

Figure 118: Fire Growth versus Reflex Time



As is apparent by this description of the sequence of events, the application of water in time to prevent flashover is a serious challenge for any fire department. It is critical, though, as studies of historical fire losses can demonstrate.

The National Fire Protection Association found that fires contained to the room of origin (typically extinguished prior to or immediately following flashover) had significantly lower rates of death, injury, and property loss when compared to fires that had an opportunity to spread beyond the room of origin (typically extinguished post-flashover). As evidenced in the following figure, fire losses, casualties, and deaths rise significantly as the extent of fire damage increases.

Figure 119: Fire Extension in Residential Structures—United States (2011–2015)

— Rates per 1,000 Fires —

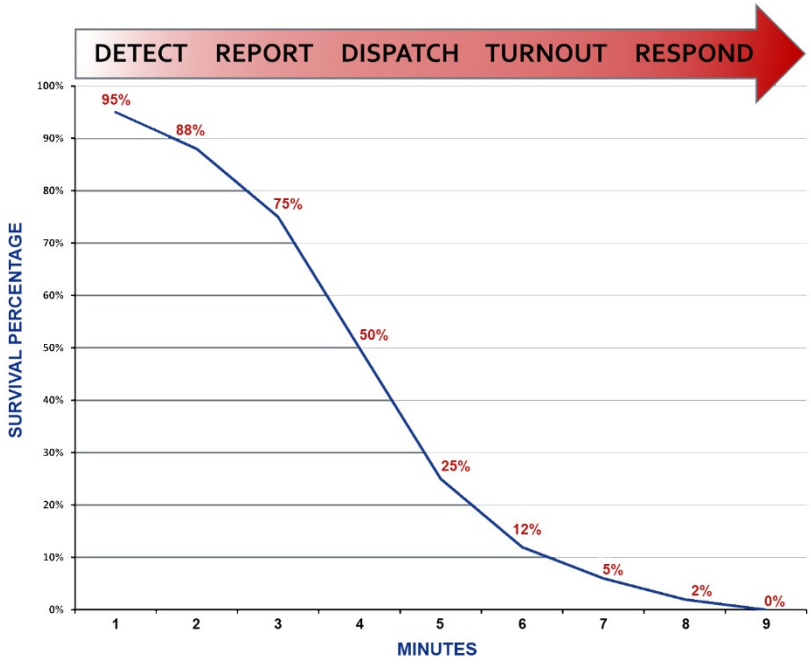
Extension	Civilian Deaths	Civilian Injuries	Average Dollar Loss per Fire
Confined to room or origin or smaller	1.8	24.8	$4,200
Confined to floor of origin	15.8	81.4	$36,300
Confined to building of origin or larger	24.0	57.6	$67,600

Emergency Medical Event Sequence

Cardiac arrest is the most significant life-threatening medical event in emergency medicine today. A victim of cardiac arrest has mere minutes in which to receive lifesaving care if there is to be any hope for resuscitation. The American Heart Association (AHA) issued a set of cardiopulmonary resuscitation guidelines designed to streamline emergency procedures for heart attack victims and to increase the likelihood of survival. The AHA guidelines include goals for the application of cardiac defibrillation to cardiac arrest victims. Cardiac arrest survival chances fall by 7 to 10% for every minute between collapse and defibrillation. Consequently, the AHA recommends cardiac defibrillation within five minutes of cardiac arrest.

As with fires, the sequence of events that lead to emergency cardiac care can be graphically illustrated, as in the following figure.

Figure 120: Cardiac Arrest Sequence



The percentage of opportunity for recovery from cardiac arrest drops quickly as time progresses. The stages of medical response are very similar to the components described for a fire response. Recent research stresses the importance of rapid cardiac defibrillation and administration of certain medications as a means of improving the opportunity for successful resuscitation and survival.

People, Tools, & Time

Time matters a great deal in the achievement of an effective outcome to an emergency event. Time, however, is not the only factor. Delivering sufficient numbers of properly trained, appropriately equipped personnel within the critical time period completes the equation.

For medical emergencies, this can vary based on the nature of the emergency. Many medical emergencies are not time-critical. However, for serious trauma, cardiac arrest, or conditions that may lead to cardiac arrest, a rapid response is essential.

Equally critical is delivering enough personnel to the scene to perform all of the concurrent tasks required to deliver quality emergency care. For a cardiac arrest, this can be up to six personnel; two to perform CPR, two to set up and operate advanced medical equipment, one to record the actions taken by emergency care workers, and one to direct patient care.

Thus, for a medical emergency, the real test of performance is the time it takes to provide the personnel and equipment needed to deal effectively with the patient's condition, not necessarily the time it takes for the first person to arrive.

Fire emergencies are even more resource-critical. Again, the true test of performance is the time it takes to deliver sufficient personnel to initiate the application of water to a fire. This is the only practical method to reverse the continuing internal temperature increases and ultimately prevent flashover. The arrival of one person with a portable radio does not provide fire intervention capability and should not be counted as "arrival" by the fire department.

Overview of Compliance Methodology

The preceding sections of this report provide detailed analyses of the historical performance of the Coalinga Fire Department. For this analyses to prove beneficial to the agency and policymakers, continued analysis should be performed on a routine basis. The collection of data for system analysis is essential to monitoring current performance and adapting the systems to the trends portrayed by the data and analytics of such. The type of data and how it is collected are critical elements to being able to effectively and efficiently evaluate what the agency is doing and how it is performing.

CFD is committed to a continual process of analyzing and evaluating actual performance against the adopted standards of cover and will enhance the data collection procedures of field operations personnel. A periodic review of the Department's records management system reports will be necessary to ensure compliance and reliability of data. Compliance methodology is an essential process for organizations seeking continuous improvement in service to the Community.

Compliance Model

Compliance is best achieved through a systematic approach. Best practice organizations utilize various models to seek compliance, including the following five-step compliance model.

Figure 121: Five-Step Compliance Model

Phase 1—Establish, Review, & Adapt Performance Metrics

Complete the initial Standards of Cover process. Conduct a full review of the performance measures every five years:

- Identify services provided
- Define levels of service
- Categorize levels of risk
- Develop performance objectives and measures:
  - By incident type
  - By geographic demand zone
  - Distribution (first on scene)
  - Concentration (arrival of full first alarm)
- Annual review and evaluation:
  - Performance by unit
  - Performance by first due
  - Overall performance
  - Review of performance by governing body
  - Adjustment of performance standards by governing body as necessary
- A five-year update of Standards of Cover:
  - Performance by unit
  - Performance by first due
  - Full effective response force
  - Overall performance
  - Adoption of performance measures by the governing body
- Establish management processes to deal with future changes in the service area

Phase 2—Determine Types and Methods of Data Collection

- Performance measures are applied to the actual service provided:
  - System level
  - First Due Area level
  - Unit level
  - Full effective response force (ERF)
- Methods of collecting data:
  - Report Management System
  - Personnel responsible for collecting and submitting data

- Quality Assurance program
- Timeline for data submittal

Phase 3—Communicate and Train the Organization

- Communicate expectations:
  - Explain the method of measuring compliance with personnel who are expected to perform services
  - Provide feedback mechanisms through quality assurance processes
  - Define the consequences of noncompliance, both organizationally and for personnel management
- Train personnel:
  - Provide appropriate levels of training/direction for all affected personnel
  - Communicate consequences of noncompliance
  - Adapt business processes, business application systems, and technical infrastructure as necessary to comply

Phase 4—Evaluate the Metrics

Develop and deploy verification tools and/or techniques that can be used by sub-sections of the organization on an ongoing basis to verify that they are meeting the requirements:

- Monthly evaluation:
  - Performance by unit
  - Overall performance
  - Review of performance by division/section management
- Quarterly evaluation:
  - Performance by unit
  - Performance by first due
  - Overall performance
  - Review of performance by executive management
- Annual Reporting:
  - Performance by unit
  - Performance by first due
  - Overall performance
  - Review of performance by executive management

Phase 5—Develop Compliance Strategies

Determine gaps and opportunities:

- Determine what needs to be done to close the gaps
- Determine if resources can/should be reallocated
- Seek alternative methods to provide service at the desired level
- Develop budget estimates as necessary that provide a full benefit analysis
- Seek additional funding commitment as necessary

Section IV:
OVERALL EVALUATION, CONCLUSIONS, & RECOMMENDATIONS

Overall Evaluation

This Community Assessment: Standards of Cover is based on the CPSE Standards of Cover, 6th Edition. It required the completion of an intensive analysis of all aspects of the CFD deployment policies. The analysis used various tools to review historical performance, evaluate risk, validate response coverage, and define critical tasking and alarm assignments. The analysis relied on the experience of staff and their historical perspective combined with historical incident data captured by both the dispatch centers and CFD's in-house records management system.

The Description of Community Served section provided a general overview of the organization, including governance, lines of authority, finance, and capital and human resources, as well as an overview of the service area, including population and geography, served. The Review of Services Provided section detailed the core services the organization provides based on general resource/asset capability and staffing.

An overview of the community was provided to identify the risks and challenges faced by the Fire Department. Geospatial characteristics, topographic and weather hazards, transportation network risks, physical assets, and critical infrastructure were reviewed and then identified medical incidents, structure fires, and rescues as the primary risks within the community. As a factor of risk, community populations and demographics were evaluated against historical and projected service demand. Population and service demand has increased over the past decade and will continue to increase in the future. Evaluating risk using advanced GIS provided an increased understanding of community risk factors and provides the background fo an improved deployment policy.

During the analysis of service level goals, critical tasking assignments were completed for incident types ranging from a basic medical emergency to a high-rise structure fire. Critical tasking required a review of on-scene staffing requirements to mitigate the effects of an emergency. These tasks ultimately determine the resource allocation necessary to achieve a successful operation. The results of the analysis indicate that a low-rise building fire required a minimum of 16 personnel.

The review of historical system performance evaluated each component of the emergency incident sequence—these included call processing, turnout, and travel times. Beyond the response time of the initial arriving units, the additional components of concentration and the effective response force, reliability, and call concurrency were evaluated.

Findings

The analyses completed during this study revealed a number of important findings. These include the following:

- Recent year's General Fund revenues have exceeded General Fund expenditures.
- General Fund revenues have increased over the past few years and have improved significantly with the voter approval of the Measure J transaction tax additional source of revenue.
- Revenue growth does not appear to match expenditure growth resulting in structural deficits in future years.
- An adopted, city-wide capital improvement program, including the fire department, does not exist, resulting in capital expenditures being made when funding is available.
- The age of CFD's ladder truck far exceeds the recommended replacement cycle.
- The EMS Service has been unable to respond to all calls within its service area, losing access to a significant amount of funding.
- The Fire Department has deployed a third ambulance to provide increased service in the community.
- A wildland urban interface program has not been established for low ground cover types of fires.
- There is not a comprehensive fire and life safety inspection program for commercial businesses.
- CFD had difficulty providing a useful set of data for analysis. The disparate sources of information (FCFPD Dispatch Center and American Ambulance Dispatch) provided different levels of detail.
- FCFPD provided the most comprehensive data; however, non-CFD units were recorded in the data.
- Units from the CAL FIRE Kings Station and the Pleasant Valley Prison do not appear in the data provided by the FCFPD.
- CFD advised that there is no computer-aided dispatch feed of information into their record system (ESO), so times are manually transcribed.

- Address designation in CAD data is inconsistent. Sometimes street names contain street types (e.g., AVE, ST). At other times for the same street or intersection, they do not.
- The FCFPD Dispatch provided data that often was truncated. Some of the street types and city locations were cut off, which presented difficulty for geocoding.
- Call processing times were longer than the NFPA recommended time for an emergency.
- FCFPD-provided data is incomplete. Only 690 incidents provided valid call process times out of 2,847, or roughly 24.2% of all possible incidents.
- For the call processing times that were evaluated, the performance was 4 minutes, 16 seconds for EMS incidents and 4 minutes, 56 seconds for Fire incidents. This is well outside the NFPA recommended 64 seconds 90% of the time for answering the phone, collection/entry of data. and the alerting of responding units (dispatch).
- The data contains a significant reduction in requests for service in 2018 and 2019. When asked about this decline, CFD reported that they had reduced staffing to such a degree that requests were turned away during this period.
- CFD identified that the number of staff required to perform critical tasks at the scene of a low-risk structure fire is sixteen. CFD has seven personnel on duty - two on the engine, two on each of the paramedic units, and one chief. The remaining staffing has to come from outside sources (Pleasant Valley Prison and CAL FIRE's King station); however, these resources are far away and providing the required staff levels is not assured.
- Turnout (reaction) times were longer than NFPA's recommended time for an emergency and PPE required call types.
- For the call processing times that were evaluated, the performance was 2 minutes, 37 seconds for EMS incidents and 2:52 for Fire incidents. This is well outside the NFPA recommended 80 seconds for Fire incident types and 60 seconds for all other emergency call types.
- There are a significant number of requests for service in the City of Huron (Response District C09) that were responded to by American Ambulance units. The bulk of these ambulance requests were fulfilled by the American Ambulance and the Kings County unit from Avenal.
- Response times into Huron were over 25 minutes, 90% of the time.

Fire Station Findings

- The Fire Department Training Room is used as the City Emergency Operations Center. As a result, this eliminates room for a Fire Department Operations Center during a disaster.
- The dormitories need refurbishing to include accommodations for bathroom and shower facilities that enable gender segregation.
- A door in the dormitory area (referred to as the 2nd exit door) is blocked, unmarked, and the exit stairs do not meet building code requirements.
- The diesel exhaust emissions system in the apparatus room is inefficient and was nonoperational during our inspection.
- Firefighter protective gear is stored in the apparatus bay with no protection from exhaust emissions.

Recommendations

Based on the analyses and considering community expectations, recommendations are offered to assist the Department with strategic planning and improve fire and emergency services to the community. Triton does not expect that CFD will implement all recommendations in the short term. Some may wait until economic conditions allow their implementation. All of the recommendations offered chart a course to improved capability and service.

Short-Term Recommendations

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

Recommendation S-1: Develop a proactive wildland urban interface educational program.

CFD should develop proactive educational programs relating to wildland urban interface outreach and weed abatement. Small fires can occur and potentially damage properties if proper mitigation efforts are not implemented, even in areas of the City where the risk is low. Currently, this type of program is not available unless requested by the property owner.

Estimated Cost to Implement: *Staff time for development, training, implementation, and inspections.*

Recommendation S-2: Develop a comprehensive fire and life safety commercial inspection program.

Currently, the Fire Chief is responsible for fire and life safety inspection. An inspection program should be established to ensure all properties requiring annual inspections by the State of California are completed. A comprehensive record management system to collect information during the inspection should be utilized to track each occupancy, violation found, and staff activity.

Estimated cost to implement: *Cost of training Staff time to conduct the inspections.*

Recommendation S-3: Closely monitor the performance of the Dispatch Center(s)

CFD needs to develop a closer relationship with the Dispatch Centers so that FCFPD and American Ambulance Dispatch centers understand the importance of performance measuring and improvement.

Estimated cost to Implement: *Staff time.*

Recommendation S-4: Reduce the turnout time interval.

Turnout time is the period between when dispatchers notify response personnel of the incident and when response crews begin to travel towards the incident location. The recommended performance goal for turnout time is within 80 seconds, 90 percent of the time for fire and special operations incidents, and within 60 seconds, 90 percent of the time for all other incidents.

A review of fire station design should also be conducted to identify and remove impediments to a quick response. This can include station alerting systems, pathways from quarters to apparatus, and the like.

Department management should regularly prepare information that describes current turnout time performance by individual response crews (by shift and by unit). Performance expectations should be reinforced and periodic monitoring conducted to determine if improvements are being made and sustained. Response personnel should avoid activities that extend turnout times. Response personnel must make serious efforts to improve their turnout time performance for the benefit of the community.

Estimated cost to Implement**:** *Dependent upon the cost of improvements to or modifications of internal pathways for rapid egress.*

Recommendation S-5: Convert the existing single-role-staffed ambulance unit to two 12-hour units

Expand the capacity of the EMS service by using peak-hour 12-hour units to respond to areas in C01, C12, and the Huron area. The conversion would improve service to the Huron area and enhance revenues.

Estimated cost to Implement: *The following figure projects the results of adding a fourth ambulance unit but reducing the deployment hours to 12 hours per day for both the third and fourth ambulance units. The additional revenue streams are indicated in the year they begin and are subsequently included in the Ambulance Revenue line. The IGT transfers are adjusted to maintain the General Fund subsidy at $1,600,000 annually.*

Figure 122: Projected Changes from IGT Reserve Balances

Revenue/Expense	Revised 20/21	Projected 21/22	Projected 22/23	Projected 23/24	Projected 24/25	Projected 25/26
Ambulance Receipts	1,550,000	1,813,173	2,224,021	2,268,502	2,313,872	2,360,149
GEMT Reimbursement	—	—	—	—	—	—
Transfers In from IGT	574,087	846,257	1,014,442	1,192,146	1,379,884	1,578,185
Fresno Ambulance	45,000	45,000	45,000	45,000	45,000	45,000
Other Revenues	21,100	21,100	21,100	21,100	21,100	21,100
Original Budget	2,190,187	—	—	—	—	—
Additional EMS Revenues–Third Unit	227,621	—	—	—	—	—
Additional EMS Revenues–Fourth Unit	—	367,240	—	—	—	—
Projected Revenues:	**$2,417,808**	**3,092,770**	**$3,304,563**	**$3,562,748**	**$3,759,856**	**$4,004,434**
Salaries & Wages	2,190,788	2,305,804	2,426,859	2,554,269	2,688,368	2,829,508
Employee Benefits	1,033,704	1,128,324	1,172,576	1,218,920	1,267,461	1,318,306
Services, Supplies, & Other	548,400	564,852	581,798	599,251	617,229	635,746
Capital Outlay	60,000	60,000	60,000	60,000	60,000	60,000
Original Budget	3,832,892	—	—	—	—	—
Third Ambulance Costs	262,528	316,895	331,665	347,154	363,399	380,437
Fourth Ambulance Costs		316,895	331,665	347,154	363,399	380,437
Total Expenditures:	**$4,095,420**	**$4,692,770**	**$4,904,563**	**$5,126,748**	**$5,359,856**	**$5,604,434**
Cash (Required) from GF:	**(1,677,612)**	**(1,600,000)**	**(1,600,000)**	**(1,600,000)**	**(1,600,000)**	**(1,600,000)**

Recommendation S-6: Evaluate the adoption of cost recovery fees for certain services.

It is becoming more common for fire service providers to implement cost recovery fees such as fire and EMS first response cost recovery and others. CFD should evaluate which services could be eligible for some level of cost recovery. After that, an analysis can be completed on the potential additional annual revenue. In the event fees are adopted, the Department should also consider developing a billing and collection process.

Estimated cost to implement: *Minimal staff time would be required to identify potential services for fee recovery. If consultant assistance is preferred for future potential revenue projections, there would be an associated fee projected to be $10.000 to 15,000. If billing and collections cannot be completed in-house, a portion of the fee revenue would need to be designated for this service.*

Mid-Term Recommendations

The mid-term strategies are progressive enhancements of the current conditions. Many will likely require two to three years to accomplish.

Recommendation M-1: Consider adding career staff to stabilize scheduling and enhance crew safety and effectiveness.

Creating a deployment model is critical to the safe operation for the entire crew—the recommendation to deploy two 12-hour per day medic units, as depicted in the short-term recommendation S-5. Continuing to transfer funds from the IGT Reserve account at a higher level should provide the necessary funding to add the third firefighter per shift.

Estimated cost to Implement: *The costs of implementing a third firefighter per shift are identified in the following figure.*

Figure 123: Cost of Firefighter/EMT for Third Position Per Shift

Description	Hours	Pay Rate	Total Wages
Firefighter/EMT	2,912	$19.79	$57,641
Total Salaries per Shift:			**$57,641**
Number of shifts			3
Total salaries			$172,923
Staffing factor			1.15
Total Salaries:			**$198,861**
Payroll taxes			15,376
Retirement			25,956
Insurance			15,213
Worker's compensation			18,892
Total Benefits:			**$75,437**
Total Salaries & Benefits:			**$274,298**

The following figure calculates the impact of adding the fourth medic unit, reducing the hours of the third medic unit to 12 hours per day, seven days per week, as identified in Figure S-5, and adding a third firefighter to each shift to increase the safety of personnel during emergency operations and to provide better service to the community.

Funding for these costs are provided by increased EMS revenues from C01, C12, plus the Huron area and also contemplates transfers from the IGT Reserve account in the amount of the costs to staff the two single-role medic units and 25% of the salary and benefit costs of the existing (prior to the additional two medic units) fire department staffing. This recommendation results in reduced General Fund subsidy costs for the first four years of the forecast period while increasing firefighter safety.

Figure 124: Forecast Revenues & Expenses with Two 12-Hour Additional Ambulance Units

Revenue/Expense	Revised 20/21	Projected 21/22	Projected 22/23	Projected 23/24	Projected 24/25	Projected 25/26
Ambulance Receipts	1,550,000	1,813,173	2,224,021	2,268,502	2,313,872	2,360,149
GEMT Reimbursement	—	—	—	—	—	—
Transfers In from IGT (Figure 125)	574,087	1,492,322	1,563,189	1,637,605	1,715,755	1,797,827
Fresno Ambulance	45,000	45,000	45,000	45,000	45,000	45,000
Other Revenues	21,100	21,100	21,100	21,100	21,100	21,100
Original Budget	2,190,187	—	—	—	—	—
Additional EMS Revenues–Third Unit	227,621	—	—	—	—	—
Additional EMS Revenues–Fourth Unit	—	367,240	—	—	—	—
Projected Revenues:	**$2,417,808**	**$3,738,835**	**$3,853,310**	**$3,972,207**	**$4,095,727**	**$4,224,076**
Salaries & Wages	2,190,788	2,305,804	2,426,859	2,554,269	2,688,368	2,829,508
Employee Benefits	1,033,704	1,128,324	1,172,576	1,218,920	1,267,461	1,318,306
Services, Supp., Other	548,400	564,852	581,798	599,251	617,229	635,746
Capital Outlay	60,000	60,000	60,000	60,000	60,000	60,000
Original Budget	3,832,892	—	—	—	—	—
Third Ambulance Costs	262,528	316,895	331,665	347,154	363,399	380,437
Fourth Ambulance	—	316,895	331,665	347,154	363,399	380,437
Third Firefighter Costs	—	274,298	286,711	299,748	313,440	330,674
Total Expenditures:	**$4,095,420**	**$4,967,068**	**$5,191,274**	**$5,426,496**	**5,673,296**	**$5,935,108**
Cash (Required) from General Fund:	**(1,677,612)**	**(1,228,233)**	**(1,337,964)**	**(1,454,289)**	**(1,577,569)**	**(1,711,032)**

The following figure assumes no revenue growth in IGT revenues from Medi-Cal and tracks the reserve balance based on the revised transfer from the IGT Reserve fund based on funding the two single-role medic units and 25% of the salary and benefit costs of the existing (prior to the addition of the two medic units) fire department staffing model.

Figure 125: Calculation of IGT Reserve Balances (FY 21–FY 25)

Revenue/Expenses	Projected 20/21	Projected 21/22	Projected 22/23	Projected 23/24	Projected 24/25	Projected 25/26
IGT Revenues from Medi-Cal		1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Interest income	500	1,000	1,000	1,000	1,000	1,000
Total Revenues:	**500**	**1,501,000**	**1,501,000**	**1,501,000**	**1,501,000**	**1,501,000**
Current Salaries	—	2,305,804	2,426,859	2,554,269	2,688,368	2,829,508
Current Benefits	—	1,128,324	1,172,576	1,218,920	1,267,461	1,318,306
Total Salaries & Benefits	—	3,434,128	3,599,435	3,773.189	3,955,829	4,147,814
Total Salaries & Benefits Related to EMS @ 25%	—	858,532	899,859	943,297	988,957	1,036,953
Single Purpose Medic Unit 1	574,087	316,895	331,665	347,154	363,399	380,437
Single Purpose Medic Unit 2	—	316,895	331,665	347,154	363,399	380,437
Transfers to Fund 416:	**574,087**	**1,492,322**	**1,563,189**	**1,637,605**	**1,715,755**	**1,797,827**
Increase (Decrease)	(573,587)	8,678	(62,189)	(136,605)	(214,755)	(296,827)
Beginning Reserves	4,124,372	3,550,785	3,559,463	3,497,274	3,360,669	3,145,914
Ending Reserves:	**3,550,785**	**3,559,463**	**3,497,274**	**3,360,669**	**3,145,914**	**2,849,087**

Recommendation M-2: Develop a comprehensive pre-incident planning program.

CFD should implement a formalized and continuous pre-incident program for all personnel to assist in identifying potential hazards within the community, as recommended within NFPA 1620: *Standard for Pre-Incident planning.*

Estimated cost to implement: *Staff time.*

Recommendation M-3: Develop a Department Specific Capital Improvement Program (CIP).

The CIP should be specific to Department assets, including facilities, apparatus, land acquisition, and other major capital projects. Adopting a multi-year CIP provides the Department with a tool to properly anticipate and financially prepare for capital needs.

Estimated cost to implement: *The cost estimate is unknown; however, may require staff time or consultant assistance for development. Program implementation would be confirmed each year through the annual budget allocation process.*

Recommendation M-4: Acquire a new Ladder Truck.
Consideration should be given to replacing the existing Ladder Truck with a new unit and placing the current one in reserve.

Estimated cost to implement: Approximately $1.5 million depending on the addition of equipment. The Department may wish to utilize a capital lease program to minimize the initial budget impact. Annual lease payments, based on a 10-year amortization period at a 2% interest rate, would be approximately $167,000.

Long-Term Recommendations

The short- and mid-term strategies discussed will move the organization forward substantially. A longer-term, high-level view of future needs is also important to provide a "big picture" view of how the organization may continue with future initiatives. Primarily, long-term strategies are centered around community growth and related workload and how both impact the future deployment of personnel.

Recommendation L-1: Plan for facility remodel/expansion to maintain a high degree of safety, efficiency, long-term sustainability, and effectiveness.

The CFD should plan for and direct funding for a Fire Department facility project with the following considerations:

- Remodel the station dormitory area to accommodate gender segregation and additional full-time staffing.
- Addition of room(s) for a reserve firefighter sleeper program.
- Construct the facility to house the fire department vehicles inside to prolong the life cycle of the vehicles and equipment and to secure the equipment and supplies located on the vehicles.

If construction or remodel of the existing station site is not possible, the station location should be considered for relocation utilizing GIS analysis.

Estimated cost to Implement: *Construction costs are estimated to be $650 per square foot for new construction and $250–$450 per square foot for remodeling.*

Recommendation L-2: Develop a formalized planning process.

CFD should initiate a master plan, a 15 to 20-year plan that will help guide the efforts of the CFD and assist in identifying the framework under which subsequent actions and planning activities will be developed.

Estimated cost to Implement: *Staff time or consultant assistance for development. If a consultant is needed cost could be $35,000 to $45,000.*

Section V:
APPENDICES

Appendix A: Detailed Stakeholder Input

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

As discussed previously, the information solicited and provided during this process was in the form of "people inputs" (stakeholders individually responding to our questions), some of which are perceptions reported by stakeholders. All information was accepted at face value without an in-depth investigation of its origination or reliability. The project team reviewed the information for consistency and frequency of comment to identify specific patterns and/or trends. Multiple sources confirmed the observations, and the information provided was significant enough to be included within this report. Based on the information reviewed, the team identified a series of observations, recommendations, and needs and confirmed with multiple sources that all was significant enough to be included within this report Stakeholders were identified within the following groups: Elected Officials, Department Heads, Business Community Leaders, Citizens, Company Officers, association leadership Rank & File, and Administrative Staff.

Company Officers, Administration, Labor Leaders, Rank & File

What Strengths contribute to the success of the Fire Department?

- The Chief empowers all of us by giving us responsibilities.
- The Department's finances are up to date and correct.
- The Chief delegates responsibilities and allows crews to do their jobs.

What do you believe the Fire Department does well?

- All of the Department's Engineers are Paramedics.
- The current working atmosphere invites a culture of wanting to come to work.
- Problem solving; we do it well.
- We have resiliency.
- The Fire Department has a vision and are adding younger Firefighters.
- We have cohesive relationships from the top to the bottom.
- We can fix anything and do it efficiently.
- Family environment.

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

- Update the building
- Move forward with the non-safety program
- Increase staffing
- Expand training
- New apparatus
- New equipment
- Addition of another Fire Station

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

- Fire and Life Safety Inspections
- Pre fire planning
- Identifying target hazards
- Public Relations
- Staffing issues
- Complying with NFPA Standards

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

- Building maintenance
- Apparatus / Equipment
- Lack of a Master Plan/our vision for the future
- Cohesive communication with other agencies
- Staffing
- Retention

If you could change one thing in the Fire Department, what would it be?

- A "non safety program" to make training available for the Firefighters
- Triple the current budget for Training
- Additional training opportunities
- Good leadership, setting goals, and achieving them

- The *missed calls* in town due to the ambulances being tied up
- Budget needs to increase in order to add full time personnel and meet the public's demands

How would you describe the level of emergency services provided by this Fire Department?

- A "7" out of "10"
- We do very well
- Customer Service Excellence
- We do a good job with what we have when compared to the number of staffing

Elected Officials, City Management & Department Heads

What strengths contribute to the success of the Fire Department?

- Good staffing
- Healthy Budget
- Long Term Plan
- Established Goals
- Moving departments forward
- The Fire Department is being run the way it should be run
- Responding to calls in timely manner
- Community interaction and support
- They are hard workers
- Extremely good with medical responses/calls

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

- The Fire Department's ISO rating is not known
- Work with the City Council to obtain support to Increase staffing levels
- Utilize the services the local hospital in Coalinga offers
- Control of the Fire Department's overtime
- Hire more full-time personnel in order to meet the demand for services
- Due to Coalinga's location, recruitment is extremely difficult
- It is an on-going struggle to hire full time Firefighters, which results in overtime

What opportunities, in your view, area available to improve the service and capabilities of the Fire Department?

- Parking lot fencing and securing access to the Fire Department due to the units that are stored outside.
- City Council has approved the cannabis industry to conduct business in Coalinga by developing and approving a "Commercial Cannabis Operations Regulations" program. The program is monitored by the Community Development Department and the Police Department. The goal is to balance the needs of patients and caregivers and at the same time, promote health, safety and welfare to residents and businesses within the City's limits.
- The City is bringing in more revenue due to the commercial cannabis industry which increases the City's revenue.
- The way they are doing it now; Firefighters are not always on the ambulance.
- Previous Fire Chief conducted the inspections. Currently, one Engineer is doing the inspections as requested by the Fire Chief and is aiming toward Prevention.
- Up to date equipment, apparatus. They respond to wildland fires; need appropriate apparatus, 3rd ambulance staffing staffed; increase staffing.
- The community is growing and in order to meet the demands for the Fire Department's services, they need to upgrade their equipment and trucks.
- Increasing billing for services and additional revenue.

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

- Safety equipment
- Vehicles
- Ambulances
- Fire Prevention
- Staffing, equipment and response times (which have improved since the new Chief was hired)
- Overtime
- Modernization of the facility is needed
- Staffing levels need to be increased when compared to the demand for service
- Inadequate and outdated equipment such as vehicles, self-contained breathing apparatus, and overall condition of the fire house

If you could change one thing in the Fire Department, what would it be?

- Staffing
- Overtime costs
- Hire six more staff

How would you describe the level of services provided by the Fire Department?

- The City has always supported the Fire Department
- Seasoned Firefighters are top notch; new Firefighters are learning from them
- They are hard workers, serving the City with the best of their ability every day
- A great group of safety officers!
- Pleased with the new Chief
- Our town loves this Fire Department
- They are compassionate
- They do a phenomenal job
- The Fire Department are great players in being a part of a bigger picture

Business & Community Groups

Describe your expectations of the Fire Department.

- The Fire Department be supportive of the community.
- The expectations of the business community is more-than-likely minimal.
- Secure enough staffing to maintain ambulance ability.
- Presence of the Firefighters at public events.

Which of these expectations are not being met to your satisfaction?

- Expectations are being met; they do a wonderful job.
- When Firefighters staff the ambulances, there is a concern for a reduction in available services they commonly respond to.

What do you think the Fire Department is doing particularly well?

- Correspondence to the public is solid.
- There has not been a moment when we have had to think twice about what they are doing.
- Receptiveness.

Are there services that you think the Fire Department should be providing that they are not providing now?

- In 2019, there was an attempt to initiate an Explorers Program; this Program would benefit the City as well as the Fire Department.
- Educating students via the Regional Occupational Program.

Are there services the Fire Department is providing that you think should be discontinued or done differently?

- No

When you dial 9-1-1 to report an emergency, how long should it take for help to arrive?

- 5 to 10 minutes

Does that expectation change depending on where in the community you are located?

- Absolutely

Do you believe the first arriving response units should be staffed and equipped to take the appropriate actions given the emergency?

- Yes, always be fully staffed.

Appendix B: Table of Figures

Appendix C: References

[1] www.co.fresno.ca.us/home/showpublishdocument?id=42362.

[2] PowerPoint presentation to City Council by Chief DuPuis.

[3] Quality Improvement for the Fire and Emergency Services.

[4] State of California, Department of Finance website.

[5] *National Fire Protection Association, 2007; Urban Fire Safety Project, Emmitsburg, MD.*

[6] U.S Census Bureau.

[7] Fresno County Multi-Hazard Mitigation Plan, April 2018

[8] Earthquake Shaking Potential for California (revised 2016), California Geological Survey.

[9] CAL FIRE Fire Hazard Severity Zones Maps website.

[10] United States Army Corps of Engineers.

[11] Fresno County Multi-Hazard Mitigation Plan, Annex B: City of Coalinga, April 2018.

[12] Caltrans, Traffic Census Program website

[13] Vision 20/20 website.

[14] California Department of Corrections & Rehabilitation website.

[15] United States Department of Homeland Security website.

[16] PG&E website.

[17] City of Coalinga 2015 Urban Water Management Plan.

[18] Crime Data Explorer, Federal Bureau of Investigation.

[19] CPSE, Commission on Fire Accreditation International, Fire & Emergency Services Self-Assessment Manual, 9th ed.

[20] NFPA 1221:Standard for the Installation, Maintenance, & Use of Emergency Services Communications Systems, 2019 Edition.

[21] NFPA 1710: Standard for the Organization & Deployment of Fire Suppression Operations, Emergency Medical Operations, & Special Operations to the Public by Career Fire Departments.

[22] This figure obtained from the American Community Survey and is an estimate. It does not use 2020 Census data because it was not yet released.

[23] Forecast using 2014–2017. 2018 experienced a drop in incidents which could skew results.

[24] Coalinga General Plan (2025) *ca.* 2009.

[25] Ibid.