Community Risk Assessment

STANDARDS OF COVER DEPLOYMENT ANALYSIS

July
2022

City of
La Verne
FIRE DEPARTMENT

AP TRITON
VISION · INNOVATION · SOLUTIONS

Contents

Acknowledgments

AP Triton Consulting wishes to extend its sincere appreciation to the City Council, the members of the La Verne Fire Department, and its community, whose contributions and assistance made this project possible.

*Our sincere appreciation is extended to e**ach of you...***

Tim Hepburn
Mayor

Muir Davis
Mayor Pro Tem

Robin Carder
Council Member

Rick Crosby
Council Member

Wendy M. Lau
Council Member

...and each of the firefighters, officers, and support staff who daily serve the citizens and visitors of the City of La Verne and the surrounding communities

Introduction

The City of La Verne Fire Department (LVFD) contracted with AP Triton, LLC in July 2021, to conduct a Center for Public Safety Excellence, 6th Edition-compliant, Community Risk Assessment: Standards of Cover report.

Shortly after commencing work on the study, the City's newly appointed Fire Chief took office and began proposing several positive changes that if implemented would affect staffing and deployment; specifically, re-opening Station #3, re-implementation the second ambulance, deployment of the Quint, and implementation of a full-time Ambulance/Operator program. As this project reflects a "snapshot in time," the analysis conducted related to staffing and deployment and contained in this study, does not reflect these changes.

Triton analyzed the data provided by LVFD and others to determine the current levels of response performance. From this analysis, Triton identified factors influencing risk, response performance, and identified opportunities for delivery system improvement. 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*.

Section I:
COMMUNITY RISK ASSESSMENT

Description of the Community

The City of La Verne (City) was founded in 1887 as Lordsburg, after its founder, promoter I.W. Lord. It was incorporated in 1906, and in 1917 the name was changed to La Verne. The City is located in Los Angeles County, approximately 30 miles east of Los Angeles, located in the San Gabriel Valley. It is surrounded by other communities, including San Dimas, Claremont, and Pomona. To the north, La Verne is bound by the foothills of the San Gabriel Mountains.

The City provides a full range of services, including police, fire, water, streets, planning, parks, and community services. There is a balanced mix of commercial and industrial areas contributing to the overall fiscal health of the City.[1]

Transportation within the City includes Interstate 210, which transects the City in an East to West direction, and there is rail access to Metrolink, Amtrak, and a commuter Gold Line with stations in La Verne. The City's streets are well thought out, providing access to all areas of the City.

The City has a total area of 8.562 square miles with a population of 31,334 (2020).[2]

The City has a Mayor-City Council form of government and is divided into five districts with the Mayor's seat rotated among council members. The City is managed by a professional City Manager.

The City has a Mission Statement indicating the City strives to maintain a full range of efficient municipal services to preserve its hometown charm and quality of life while being responsive to the community's current and emerging needs. The City has also established strategic values to include: Service, Hometown Virtues, Quality of Life, Responsiveness, Sound Leadership, Prudent Financial Management, Teamwork, and Pride.[3]

The community supports local businesses and has emphasized retail and commercial activity. There are a number of business parks with a sound infrastructure supporting that business. The City is equally supportive of public safety, with a police and fire department well-equipped and trained to respond to the community's needs and maintain a high quality of life for its citizens.

Zoning for La Verne ranges from agriculture, residential neighborhoods of varying densities, shopping centers, and light to heavy industrial, all covered by locally placed fire stations with additional resources available by mutual aid responses from surrounding jurisdictions.[4] The City and Fire have mutual aid agreements with the Consolidated Fire Protection District of Los Angeles County Fire Department and the United States Forest Service. The current Consolidated Fire Protection District aid agreement is circa 2004, and entails very minimal auto-aid, but is primarily mutual aid

The City of La Verne is situated in a transportation corridor with truck, train, and general aviation airport facilities readily available, supporting the economic vitality of the community. The infrastructure, including water, sewer, gas, and electricity, supports commercial and residential needs.

The community supports a robust educational community, consisting of the University of La Verne's undergraduate and graduate programs and 18 public and private schools.

The City has top-quality living with several parks, a Community Center, several golf courses, and facilities for the elder living in the form of a retirement community and low-level senior care facility.[5]

The City has engaged in Strategic Planning with an articulated vision that it intends to continue to be a leader in municipal planning. The City engages in bi-annual planning processes as a dynamic document to define its mission, establish its fundamental tenet's and program resources in the most effective manner.

The City's Comprehensive General Planning includes the central theme of land use, transportation, housing, and safety, resource management, including the preservation of open space, conservation and environment, and preserving scenic corridors. Also included are planning for the preservation of cultural resources, community design, and economic development. As with all planning, these topics are constantly reviewed and updated, reflecting the latest data, population growth, economic factors, and the issue of sustaining increasing population and business growth.

In order to continue the development planning of the City, members of the City staff and community participants look at the following important issues ranging from land use, transportation, regional and local, housing, safety resources management, community design, and economic development. To understand issues facing the City, the City distributed a community survey, and the primary concerns were traffic, retaining the residential character of the community, and preserving the downtown area.[6]

The community is also cognizant of ongoing hazards affecting the community, from natural sources such as earthquakes, flooding, and wildfire hazards to human-caused hazards such as transportation of hazardous materials along Interstate 210 and various additional hazards affecting public safety's ability to monitor and mitigate those hazards. The City's fire department has embraced the IAFC's Ready-Set-Go Program and provides educational literature.[7]

All-Hazards Community Risk Assessment

Risk factors influence the types of services a community provides. Identification of hazards is the process of recognizing the natural or human-caused events that threaten a community. Every community must prepare for and respond to events, whether natural disasters like an earthquake, pandemic, or wildfire. The degree to which a community exhibits certain social conditions, including poverty levels, vehicle access, or the number of individuals in a household, may affect the community's ability to prevent suffering and financial loss in the event of a disaster. These factors describe a community's risk.

A community's risk is assessed based on numerous factors, including socioeconomic status, household composition, minority status and language, population and density, housing types, local land use and development, and the geography and natural hazards present throughout the community. These factors affect the number and type of resources—both personnel and apparatus—necessary to control or mitigate an emergency. The community's risk assessment provides relevant information to help public officials and agencies better prepare their community to respond to emergency events and help them recover faster.

- A summary of the ratings indicates the risk index for the City of La Verne to be relatively high and the expected annual loss to be moderate. There is also an indication of high community vulnerability, while the community resilience level is on the low side. This is based on FEMA's community resilience indicator that analyzes 20 census and community data-layers' look at the community resilience indicators, infrastructure entities, and hazard information.
- Population density is a risk factor, and demographics present another unique risk. Over 20% of the population is 65 years of age, and over 24% speak languages other than English at home.
- The physical characteristics of the area and the resultant natural hazards are risk factors. The City of La Verne is located in the San Gabriel Valley at the foothills of Webb Canyon and Live Oak Canyon, and they are at risk of wildland fires and earthquakes.
- Land use and zoning risk can be characterized as low (e.g., agricultural or low-density housing), moderate (e.g., small commercial and office), or high (e.g., large commercial, industrial, wildland exposures, and high-density residential).

Population & Trends

The City of La Verne has seen a decrease in population based on the U.S. Census data from the America Community Survey.[8] The following figure illustrates the population trends of the community from 2010 through 2020.

Figure 1: Population (2010–2020)

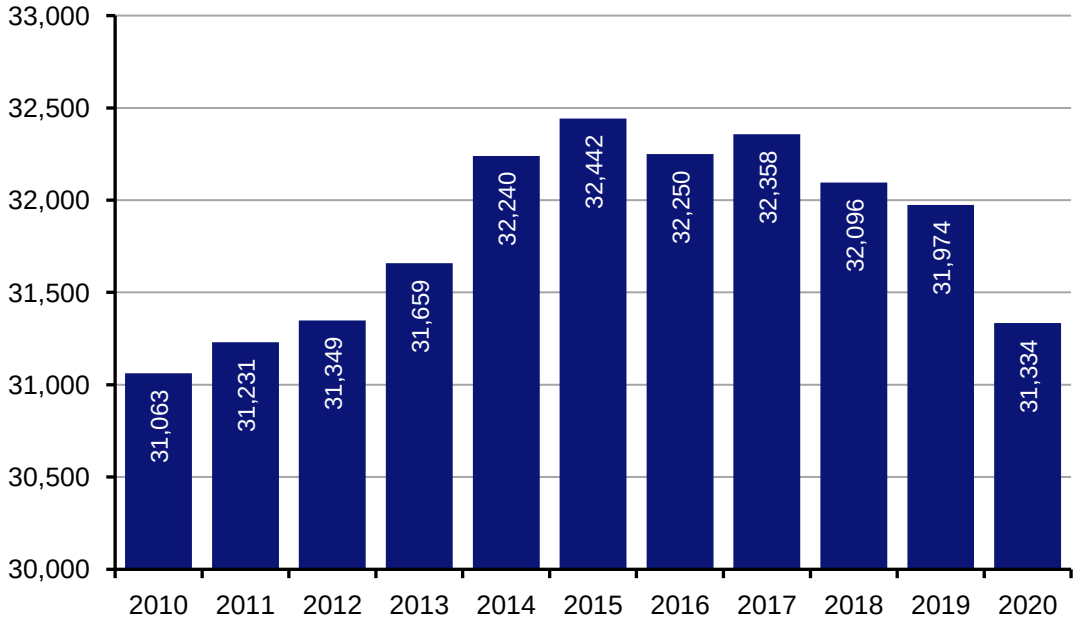
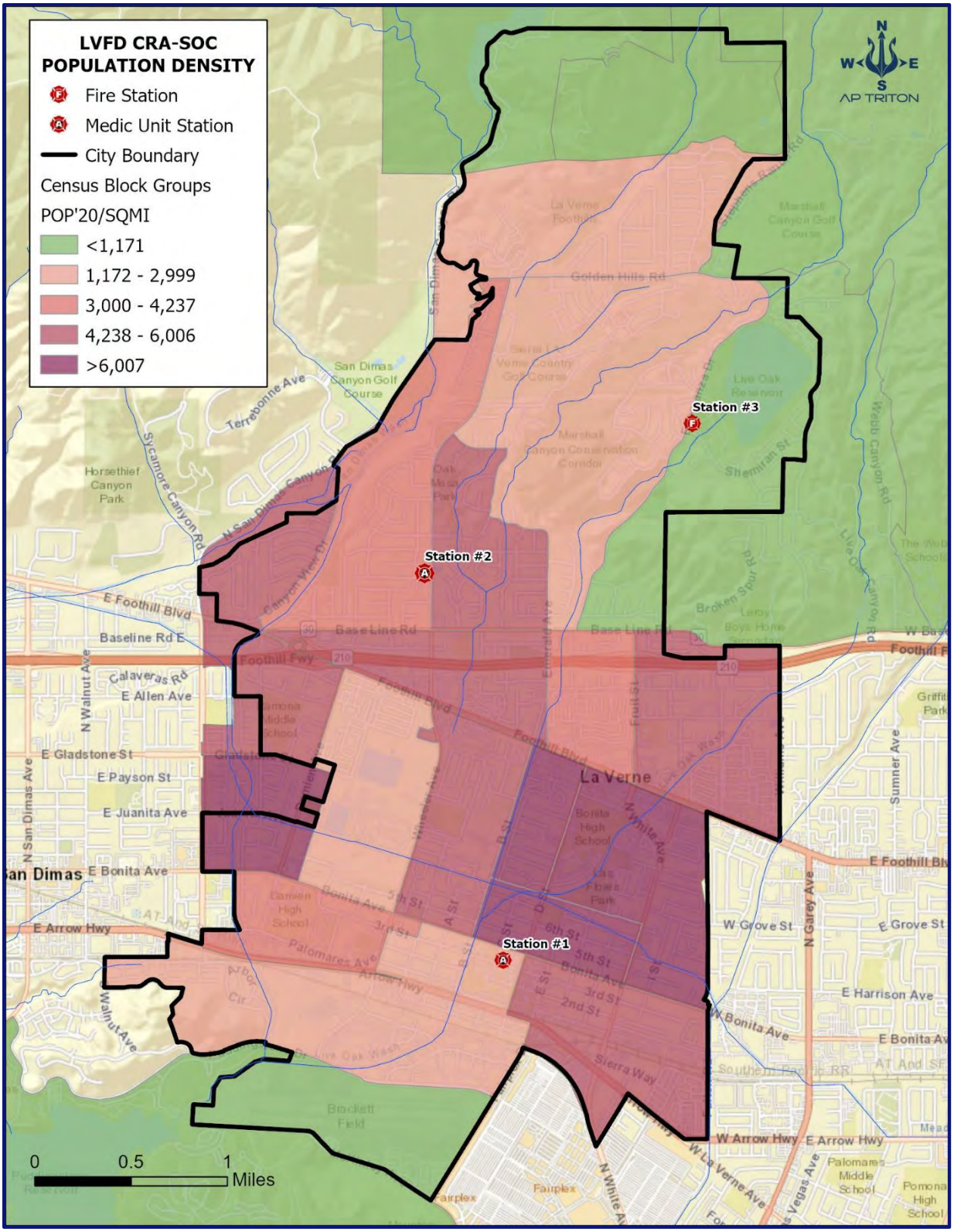


Figure 2: Population Density



At-Risk Populations

Certain populations are at higher risk of fires and other unintentional injuries, and these incidents may affect service delivery. In urban and suburban areas, several factors place groups of people in higher-risk categories. NFPA reports identified groups with a higher risk of injury or death in a fire as follows:[9]

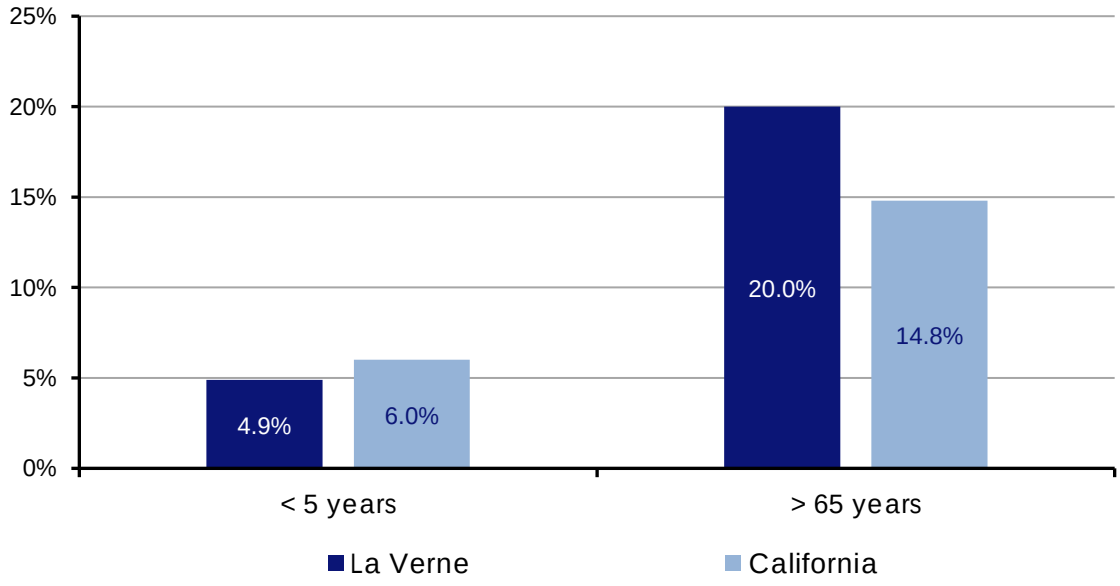
- Children under 5 years of age
- Older adults over 65 years of age
- People with disabilities
- Language barrier
- People in low-income communities

Data from the U.S. Census identified several groups that fall into these categories.[10] These groups are more likely to need additional emergency services, specifically EMS, than other population groups. Please note that data for the City of La Verne was limited and not available for each risk.

Age

The age of a community may directly relate to the need for higher service demand from LVFD. In La Verne, children under five years of age are 4.9% of the population compared to 6.0% in California. The number of older adults over 65 is 20.0% of the population, which is higher than in California at 14.8%.

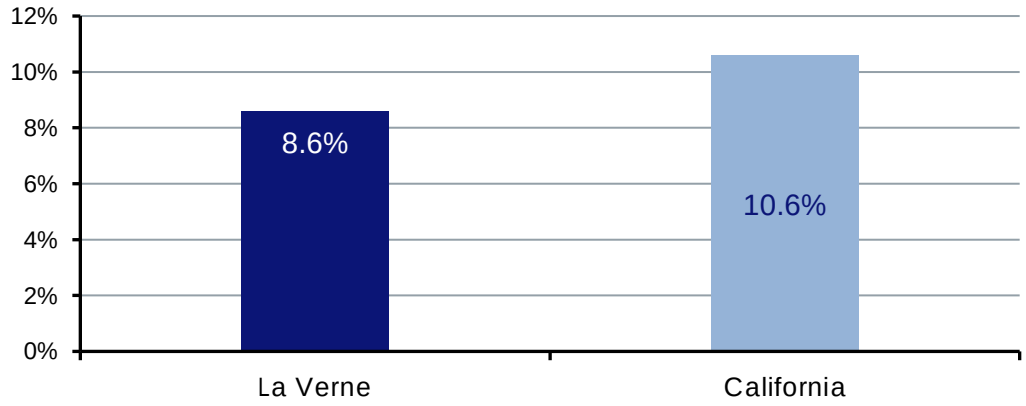
Figure 3: Percentage of Population by Age Risk



Disabilities

Residents with disabilities comprise 8.6% of the population in La Verne, which is lower than California at 10.6%. This group may have more difficulty or be unable to evacuate during an emergency. These people place an additional demand for emergency medical services as they age, thus increasing response from LVFD. The median resident age of La Verne is 45.7 years, and California's is 37 years.

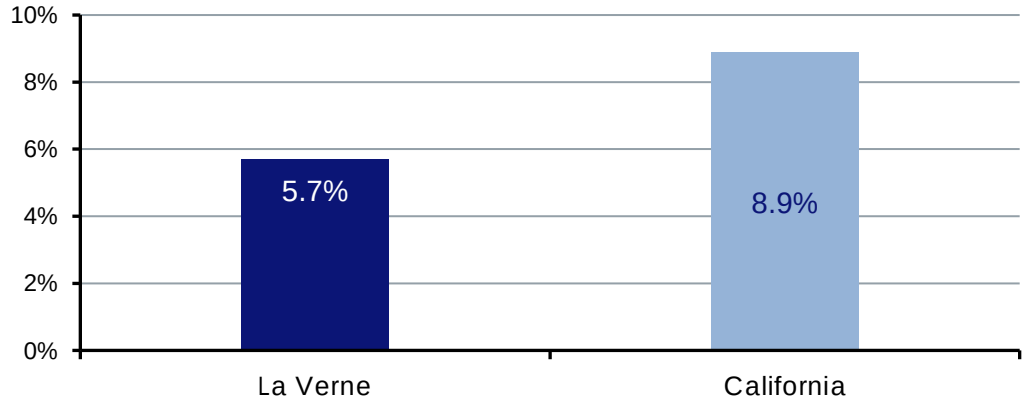
Figure 4: Percentage of Population with Disabilities



Persons without Health Insurance

With La Verne already having a high-risk population of 65 and over at 20%, this age group will continue to become an even higher risk as the population continues to age and when compared to those under 65 without health insurance. This group is more likely to have chronic illnesses requiring more intensive health care services because they did not seek treatment. The good news is that this group is lower than the state average, as the population in La Verne without health insurance is at 5.7% compared to California, which is higher at 8.9%.

Figure 5: Populations without Health Insurance

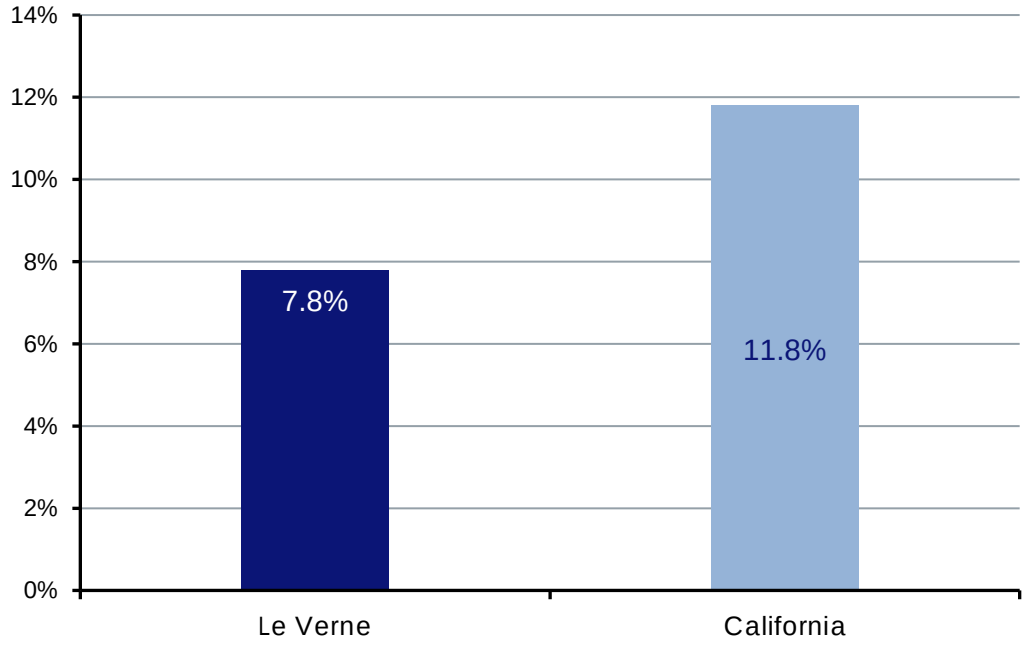


Low-Income Persons

The effect of low incomes in the community corresponds with a higher risk of fires and medical responses. 7.8% of La Verne residents had an income below the poverty level in 2019, 50.2% less than the poverty level of 11.8% across California. Considering residents not living in families, 17.6% of high school graduates and 40.1% of non-high school graduates live in poverty. The highest age group in poverty is between the ages of 15 to 25, representing 25% of those in poverty.

Also, the renting rate among poor residents was 59.6%. For comparison, it was 19.8% among residents with income above the poverty level. The median household income in La Verne is $94,287 compared to the median household income in California of $80,440.

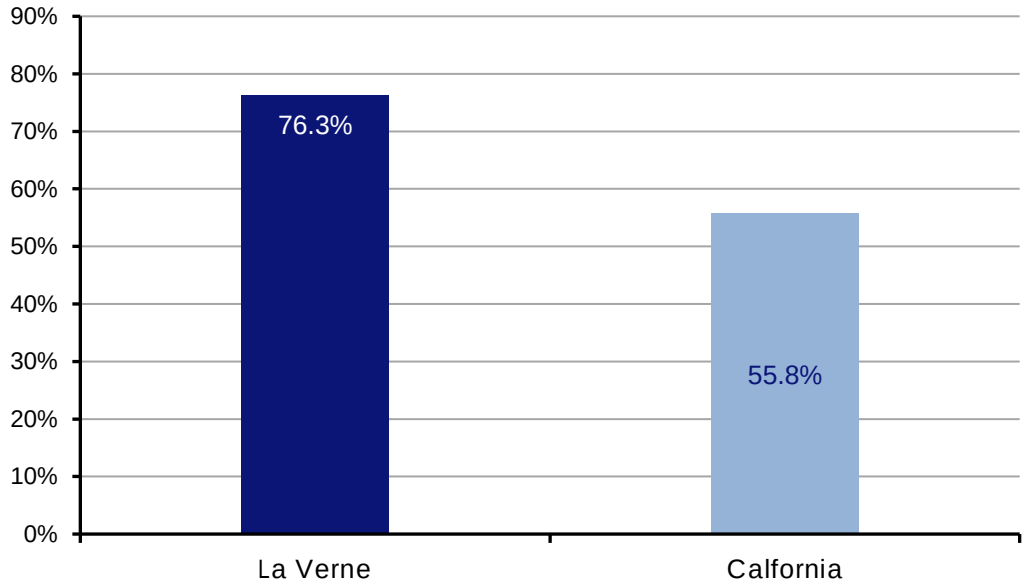
Figure 6: Population with Income Below the Poverty Level



Language Barriers

Populations that do not fully understand the English language present problems that include cultural differences, or they may not be familiar with the use of smoke alarm technology, thus increasing the risk of a fire or injuries in the home. According to the U.S. Census data, the most numerous races in La Verne are Hispanic (11,616 residents), Caucasian (15,702 residents), and Asian (2,952 residents). Over 76% of La Verne residents speak English at home. Almost 17% of La Verne residents are foreign-born (6.6% born in Asia, 5.8% born in Latin America), 60.7% less than the foreign-born rate of 26.8% across California.[11]

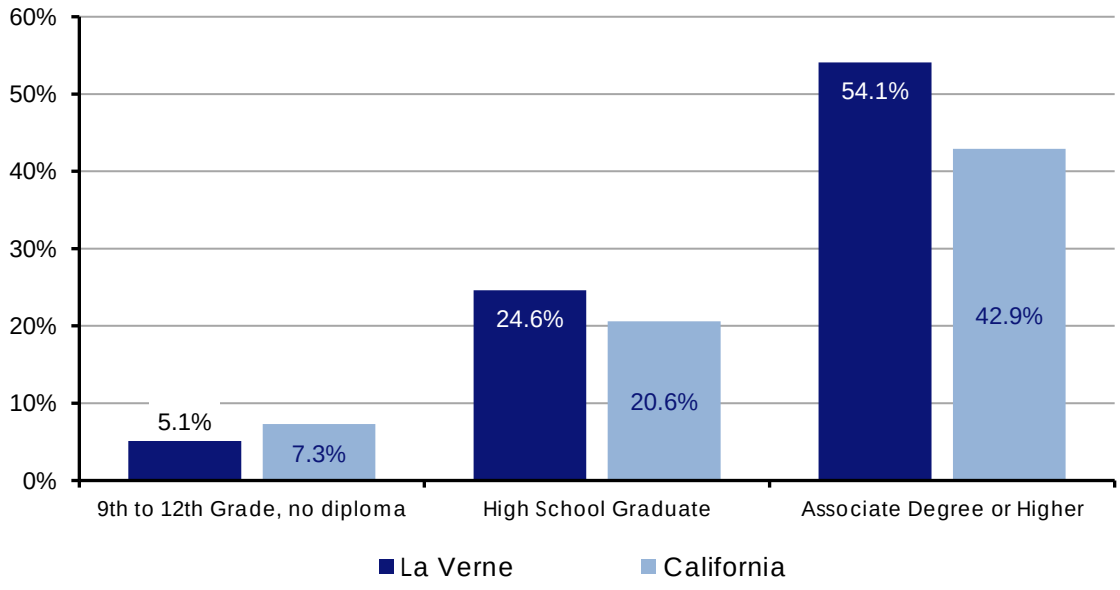
Figure 7: Population Speaking English "Only" & "Very Well"



Educational Levels

Populations with lower educational levels are another risk group. This group may have lower wages, thus at a higher chance of being below the poverty level. Only 5.1% of the population under the age of 25 does not have a high school diploma, compared to 7.3% in California. In La Verne, approximately 38% have a bachelor's degree or higher, and in California, 33.9%.

Figure 8: Education Levels 25 Years & Older

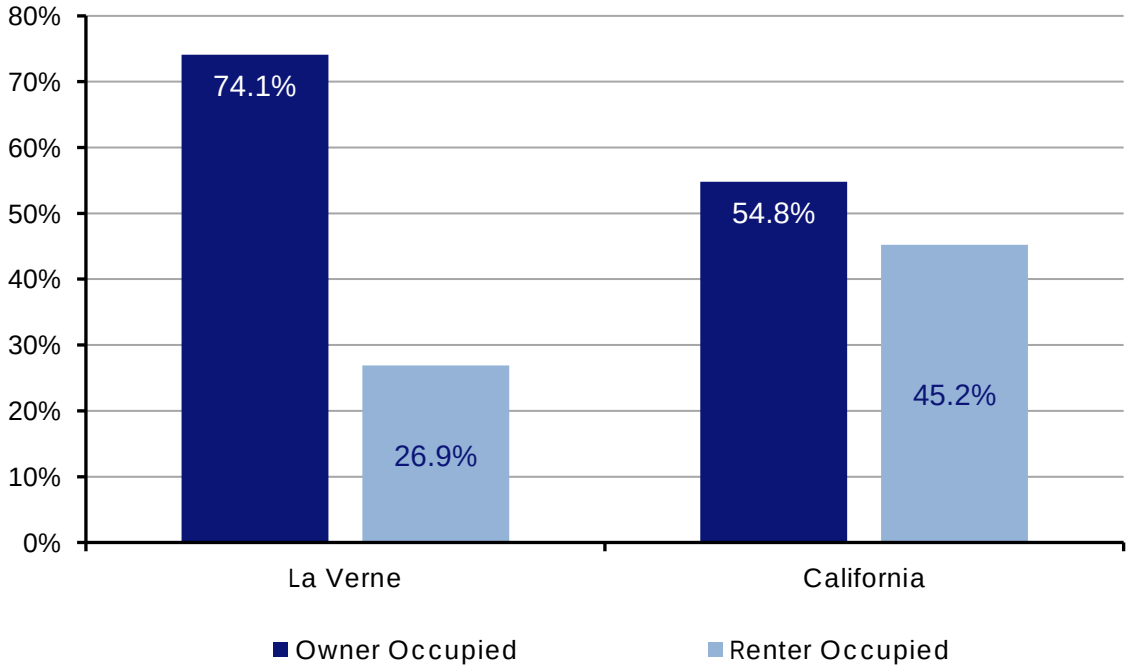


Housing

Although housing is not considered a significant risk compared to income or age, it can provide information for selected housing types such as older multi-family apartments built before fire sprinkler requirements or vacant homes. The types of housing vary in a community and can provide insight into ownership, the age of the home, and the number of units in the building. In La Verne, there are approximately 12,131 housing units (11,561 occupied: 8,494 owner-occupied, 3,014 renter-occupied).

Vacant structures can pose a risk for the fire department and 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. In La Verne, the median year a house or apartment was built is 1975; the percentage of owner-occupied housing is 74.1%, compared to California at 54.8%. Rentals in La Verne are 26.9% of the properties compared to California at 45.2%.

Figure 9: Housing Types-Owner or Renter-Occupied

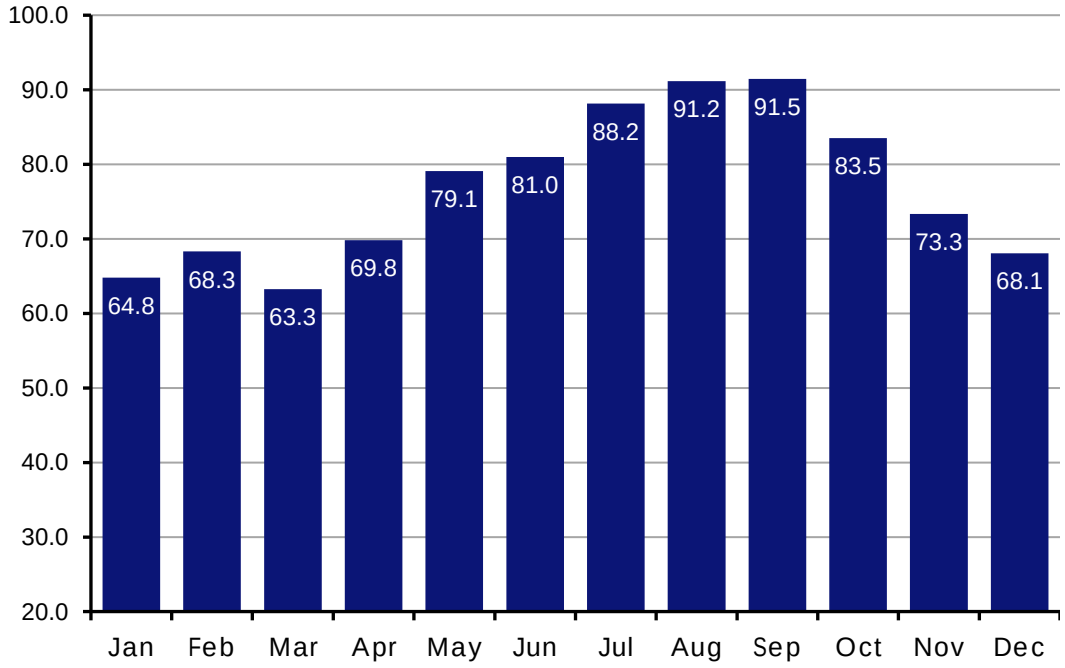


Weather

Temperature

The weather conditions in an area can impact not only the fire department but the entire community. When temperatures are high, they affect firefighters during extended incident operations and require rehabilitation to prevent heat exhaustion. Although the average temperature in La Verne is 76.8˚ Fahrenheit, the temperature can increase during August and September when the average maximum temperature reaches 90˚ Fahrenheit. The following figure shows the City of La Verne's average daily temperature for each month.

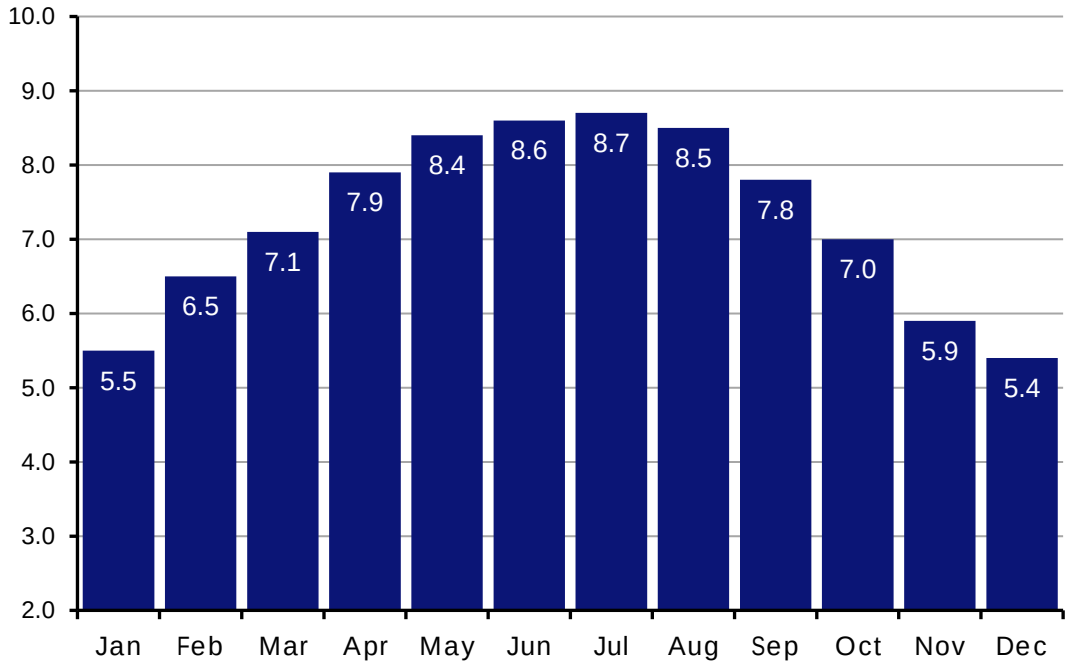
Figure 10: Average Daily High Temperatures



Winds

The direction and speed of winds directly influence how LVFD plans for daily operations, specifically during wildland fire danger. The average wind speed based on data from Brackett Field Airport indicates that May through August is the highest and is predominately diurnal on-shore every afternoon, unless high pressure or "Santa Ana" conditions exist from the west or southwest. The following figure shows the City of La Verne's average daily wind speed for each month.

Figure 11: Average Wind Speeds



Drought

The effects of a drought directly impact the growth 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 conditions in the community that can cause local resources to become strained during an event.

More than 95% of the West remains in drought, with over half of the region in extreme to exceptional drought. According to the U.S. Drought Monitor, this represents the West's most expansive and intense drought this century. Drought continues to intensify across portions of California, and Los Angeles County is experiencing severe drought. The following figure shows the City of La Verne's average daily precipitation for each month.

Figure 12: Average Monthly Precipitation

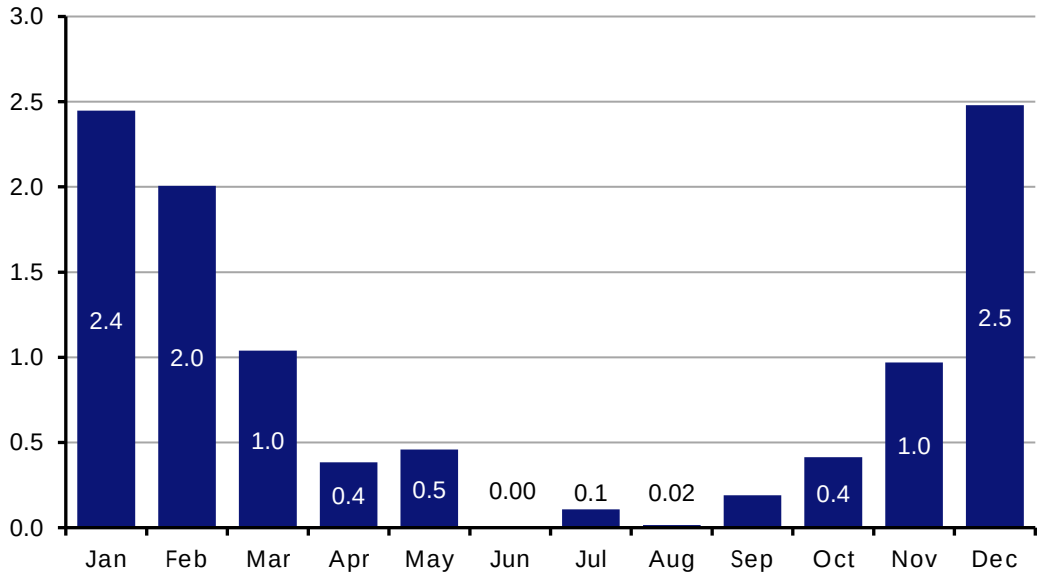
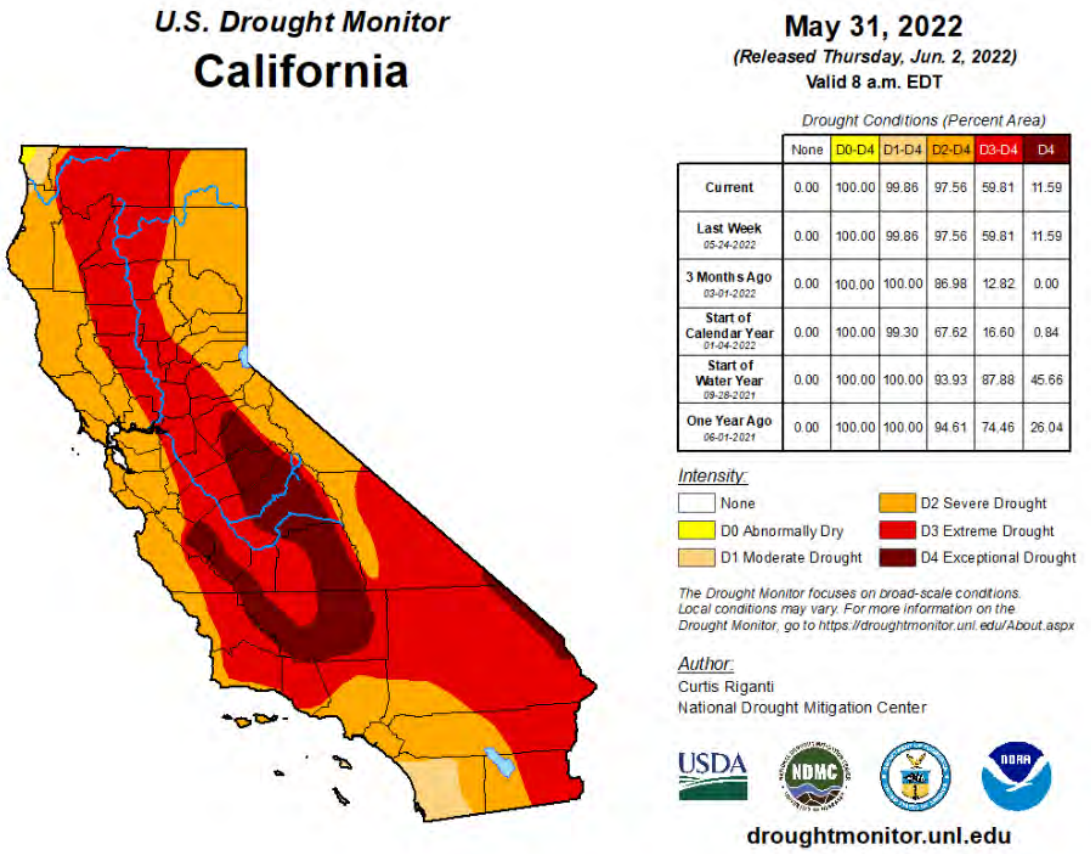


Figure 13: California Drought Conditions, May 2022



Santa Ana Winds

The City of La Verne is one of the several areas in southern California prone to what is known as Santa Ana Winds. These winds are typically seasonal, peaking in October; however, they can occur anytime from late fall to early spring. The winds squeeze over mountain passes and through canyons; as they flow downhill, descending in elevation, the winds cause an increase in temperature and a decrease in humidity. This combination of alignment of the northeast to northwest direction, the increase in wind speeds and temperature along with and lower humidity results in an increase in fire danger and the potential for catastrophic wildland fires. Triton notes that La Verne's Wildland Urban Interface and topography result in one of La Verne's most significant threats from fire hazard.

Environmental & Physical Hazards

The number of natural disasters in Los Angeles County (57) is greater than the U.S. average (15). A total of 27 Major Disasters (Presidential) have been declared. In the history of the City of La Verne, emergencies declared have been the following:

- Fires: 37
- Floods: 16
- Storms: 9
- Winter Storms: 6
- Landslides: 5
- Mudslides: 5
- Earthquakes: 3
- Freeze: 1
- Heavy Rain: 1
- Hurricane: 1
- Snow: 1
- Tornado: 1
- Wind: 2

Earthquakes

The City of La Verne in a high seismic area, and the United States Geological Society has identified several faults. Even though there are several faults in the City of La Verne, none are considered active. The only potential active faults are Indian Hill and the Sierra Madre.

The Sierra Madre-Cucamonga Fault is located along the southern margin of the San Gabriel Mountains. This fault has been responsible for the uplift of the mountains as a result of north-south compression. The Sierra Madre Fault Zone runs along the base of the central San Gabriel Mountains, and the Cucamonga Fault Zone runs along the base of the eastern San Gabriel Mountains. This fault runs east to west for approximately 9 kilometers (5.6 miles) and serves as a barrier to groundwater movement.

Data suggests a 75% probability of a 7.0 magnitude earthquake within the next 30 years. Since the early 1920s, there have been six earthquakes 6.8 or greater within 50 miles of La Verne.[12] An area of concern is the possibility of soil liquefaction. There are locations along the coast where high severity groundwater and liquefaction are present and may present problems during a major earthquake. The following figures show the City of La Verne's earthquake probability and the earthquake risk areas within La Verne.[13]

Figure 14: Earthquake Probability

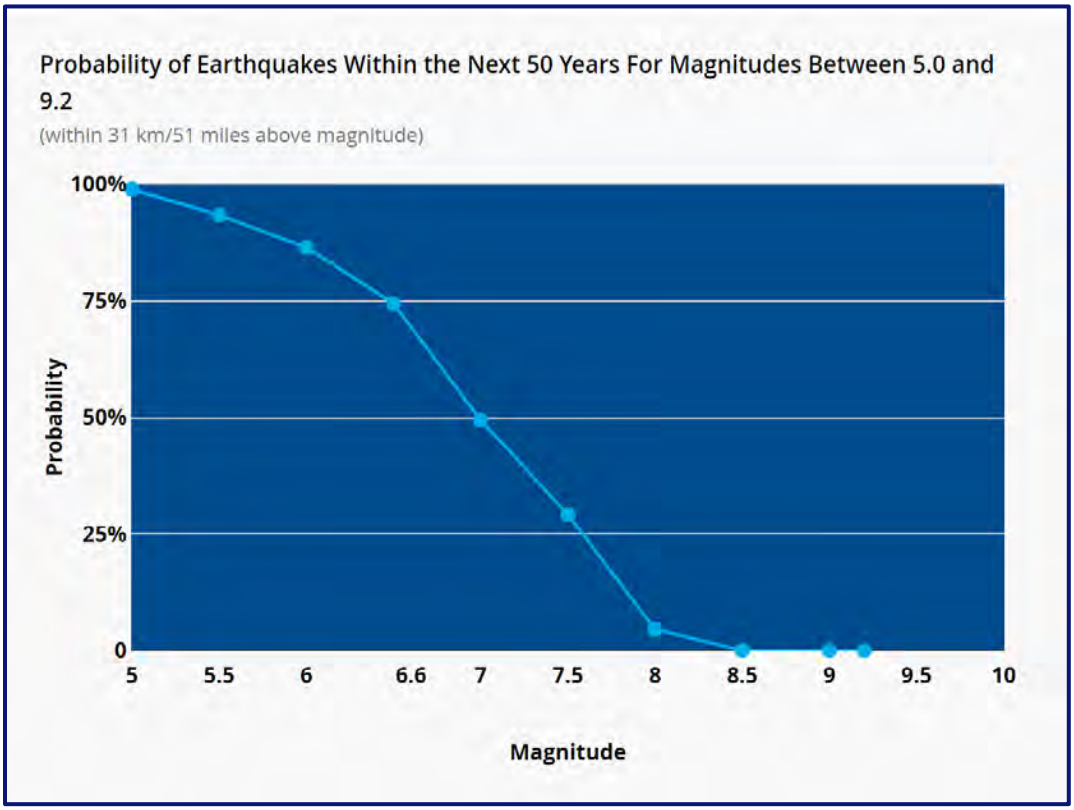
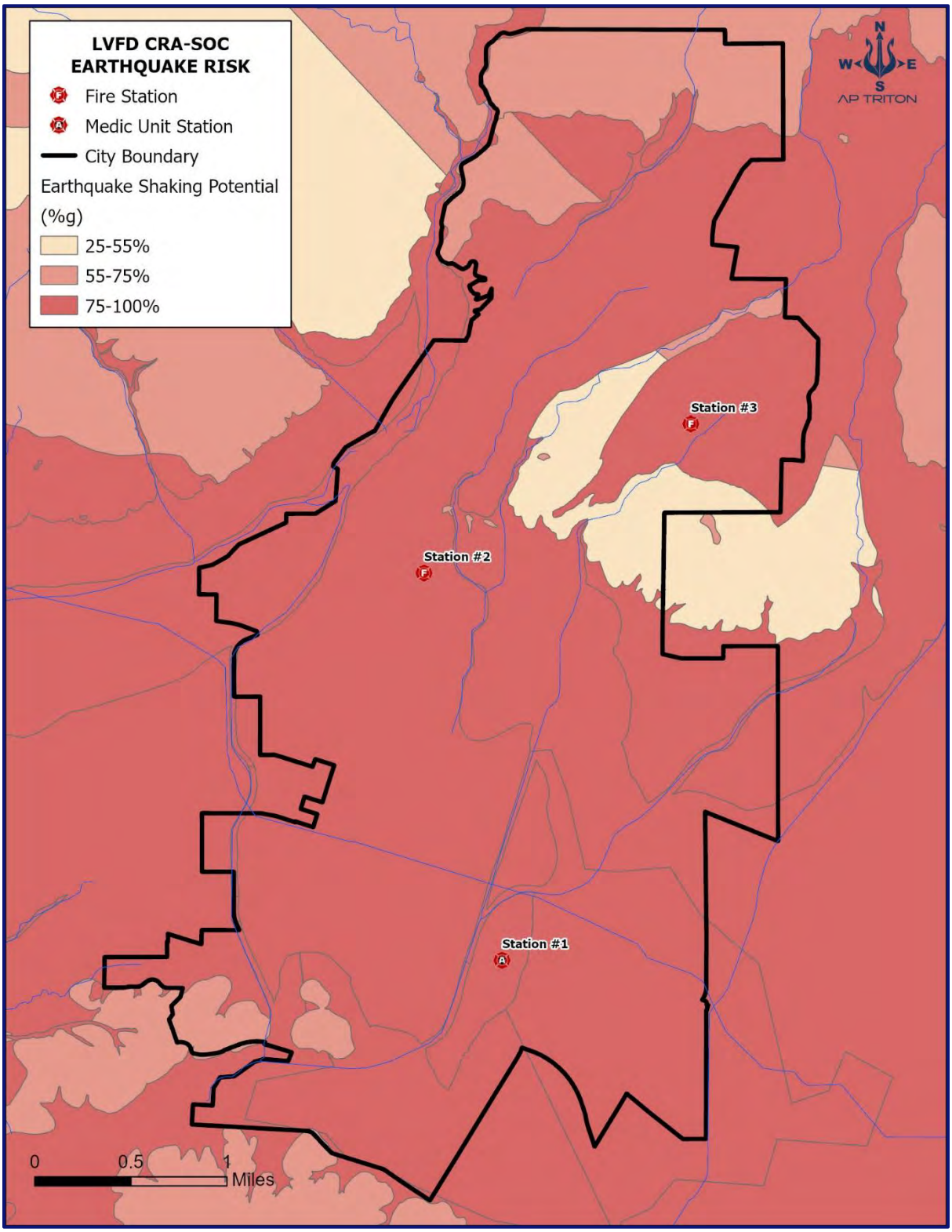


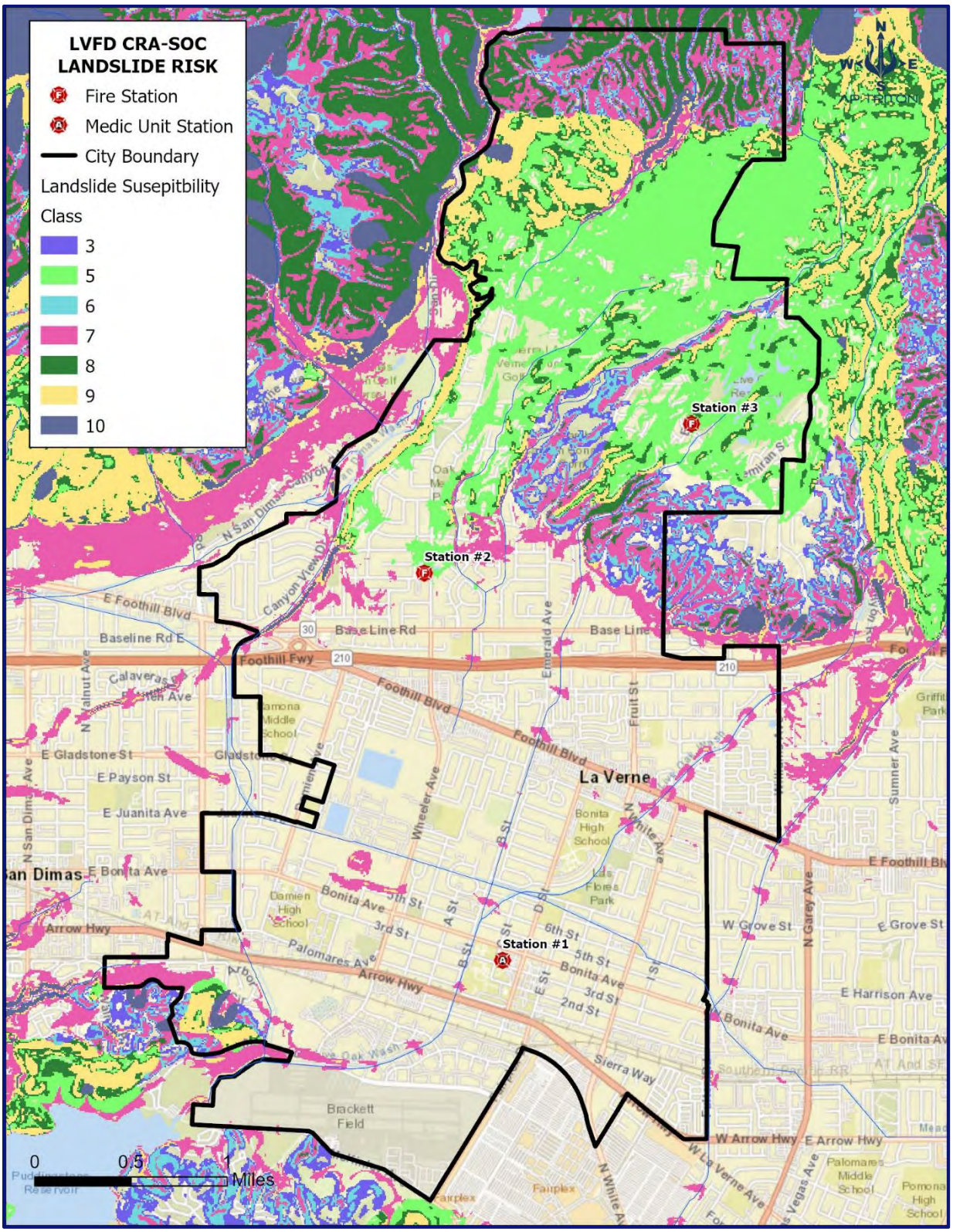
Figure 15: Earthquake Risk Areas



Landslides

The risk of a landslide in La Verne is considered a moderate hazard for the City. Areas in La Verne have the potential for landslides, especially along hills or canyons. Landslides usually occur because of slope failure due to erosion from surface water runoff, mudflows when the water has saturated the ground, or debris flows after a wildland fire. The major locations are along the north and northeast portions of La Verne in the foothills of Webb Canyon and Live Oak Canyon. These canyons create drainage systems that ultimately end at the Pacific Ocean and present flooding issues during heavy rains. The following figure shows the City of La Verne's landslide risk areas.

Figure 16: Landslide Probability



Wildland Fires

Wildland fire risks in La Verne range from moderate to very high; however, much of the City has been designated a very high fire severity area. Much like many areas in L.A. County, the threat of wildland fire in the City is a significant risk. The greatest wildfire threat to the City comes from fires spreading out of the Angeles National Forest or undeveloped L.A. County lands east of La Verne. Wildland fuel north of Baseline Road and Thompson Creek Road is contiguous enough to provide a travel path for wildfires into the City during Santa Ana winds. Limited access areas due to narrow and steep roads similar to those in the Mountain Springs Estates subdivision, reduced right-of-way from overgrown vegetation, properties without proper addressing, and dead-end roads with limited abilities to turn around fire apparatus or vehicles are all wildland-urban interface (WUI) issues.

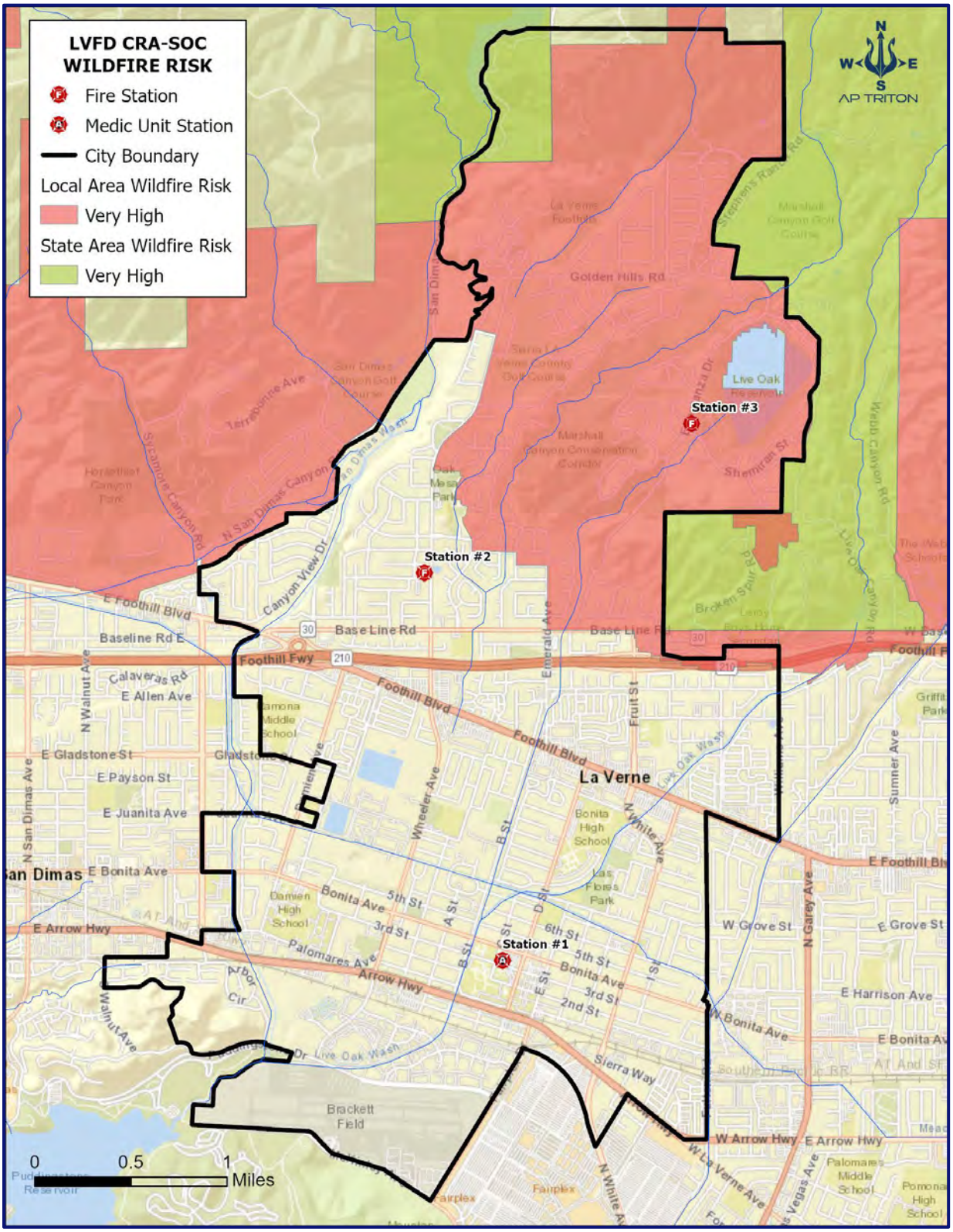
Fire Hazard Severity Zones (FHSZ) were established by the California Department of Forestry and Fire Protection (CAL FIRE) for most of California and assigned moderate, high, and very high locations. La Verne is considered by CAL FIRE a very high fire severity zone. The broad-brush approach used by CAL FIRE does not provide the detail required for establishing hazard mitigation priorities since all Very High Fire Severity areas within the City are considered to have the same risk. Fire models were used to provide greater detail regarding where fire risk is most significant within the corporate boundary. The City, north of the 210 Freeway, is vulnerable to wildfires due to its proximity to the wildlands of the San Gabriel Mountains and Angeles National Forest. The structures located directly adjacent to these wildlands are at the greatest risk. Populated areas in La Verne have, on average, greater wildfire likelihood than 84% of communities in California.

Populated areas in La Verne have, on average, a greater risk than 74% of communities in California. Populated areas in La Verne are predominantly exposed to wildfire from indirect sources, such as embers or home-to-home ignition. Each summer and fall, the City of La Verne is reminded of the likely potential for wildfires when the Santa Ana wind events blow through town. The neighborhoods north of the 210 Freeway, especially in the City's Hillside Development Overlay Zone (HDOZ), such as North La Verne, and North La Verne Hillside, and Van Dusen, are substantially at risk of damage or loss from wildfires due to their proximity to the wildland vegetation of the San Gabriel Mountains and Angeles National Forest. These areas produce special risks because of limited egress and access due to reduced road widths and difficulties for vehicles attempting to pass during an emergency. A delayed response may occur when emergency vehicles need access during an incident because other vehicles use the same roads.

The La Verne area has experienced a previous history of fires since the early 1990s. One such example was the 2009 Station Fire, which threatened foothill communities from Tujunga to Azusa. La Verne has been fortunate to avoid direct impact on the community from recent large fires, including the 2003 Padua and 2002 Williams fires. While the Williams fire burned within the City's corporate boundary, with no damage to La Verne structures, the fire burned a total of 62 homes and 14 outbuildings outside the City.

Because of the risk, the City of La Verne developed a Community Wildfire Protection Plan (CWPP) in 2014 and was part of a City-wide planning effort to evaluate and identify the wildfire threat. The CWPP developed strategies that enhanced wildfire protection to help protect human life and the City's assets. The development of this CWPP includes data, planning documents, and a science-based assessment of the potential wildfire threat. Based on the CWPP being over 8 years old, it should be updated on a regular basis to be relevant for current risk assessment. As a result of this CWPP, LVFD was able to identify areas with the highest wildfire threat and developed mitigation actions needed to enhance the protection of the City from wildfires.

Figure 17: Fire Hazard Severity Zone



LVFD has implemented programs to mitigate hazardous WUI issues to reduce damages during an event. These areas are noted as Vegetation Management Units located in the North and Northeast La Verne (Mountain Springs, Golden Hills, Wilderness Park, La Verne-Live Oak, Marshall Canyon, San Dimas, Van Dusen) areas and involve public education for property owners and residents.

Ready! Set! Go! is a wildfire action plan for residents living near the natural and vegetative areas and has been implemented by LVFD. The document provides information to develop a plan that makes a structure more resistant to wildfires and what to do for an evacuation.

Another focus is the La Verne fuel mitigation strategy to create a defensible space around properties in the WUI. This buffer is created to remove combustible materials such as weeds and vegetative materials near a home. This also applies to homes within one mile of natural areas that are at risk of wind-driven embers. Based on the initial CWPP, the City did some initial fuel reduction work on the City-owned properties in the high-risk areas. However, it appears that since this initial work, no further fuel reduction has been completed to date on the City properties. This is a high-risk area and a fuel assessment should be completed and an annual reduction plan put into place.

The City adopted the Los Angeles County Code 2020 Edition and the 2019 California Fire Code and was ratified by the Council, effective January 1, 2020. This local fire code includes a vegetation management plan for new construction and is required in the High Fire Hazard Area. The plan requires a copy of the site plan that includes all buildings, property lines, and designated fuel modifications zones. The modification zones state there shall be a minimum of 10' horizontal and 13'6" vertical clearances for access to the property. Within 200 feet of the structure, certain requirements must be met.

- Zone A—This is a cleared area within 30 feet of the exterior edge of the structure. Only green lawns and a limited number of ornamental plants from LVFD's "Desired Plants List" are allowed. All plantings must be arranged to reduce the spread of fire to the structure.
- Zone B—This is an area from 30'–100' from the surrounding edge of the structures. This zone is designed to disrupt the vertical and horizontal spread of fire and provide a safe area for fire suppression personnel during a wildfire.

- Zone C—The final zone is from 100'–200' from the edge of the structure. It may have slopes greater than 25% or fuel loads over 100 tons, and vegetative materials may be removed based on the slope, size, type, fuel compaction, and chemical content.14

The plan requires a maintenance schedule to ensure the vegetation management plan is followed.

There are more than 120 properties inspected annually for compliance by LVFD for brush clearance. These inspections are completed only upon request, and they are assigned to the Fire Marshal or designee who utilizes the LVFD brush clearance form. If violations are identified, the property owner is notified, and a follow-up visit is conducted. In many cases, the property owner participates and is notified of any findings during the inspection. If violations are not corrected, fines can be issued only by the City and not the Fire Marshal. Authority should be given to the Fire Marshal to enforce this area of responsibility similar to other jurisdictions.

The City and the LVFD should look into conducting a community chipping event with funds from a CAL FIRE grant to reduce the vegetative materials in WUI. The programs are designed to reduce injuries, deaths, and property loss during a wildfire event. LVFD addresses several components of a WUI risk reduction program that includes the responsibility of the property owner to create a defensible space while maintaining proper landscaping management around their homes or accessory buildings. Homes should be built with fire-resistive materials to reduce the effects of ember cast. The *Ready! Set! Go!* evacuation planning program has been implemented to educate residents on preparation and evacuations.

Floods

The City is at risk of flooding, specifically along the creeks flowing to the Pacific Ocean. Flooding typically occurs with the highest rainfall, and these seasonable variations can cause localized flooding along the creek channels during high-intensity rainfall events. Like offshore storms, deeper floods from major events are less likely to occur but cause more significant damage than more shallow flood events, like heavy rains.

A changing environment means higher seas, new weather patterns, and stronger storms. As the atmosphere warms, there is more evaporation and more water available when it rains. Additional problems occur with flash flooding in the urban areas of the city but they are generally short-lived. The following figure shows the City of La Verne flood risk areas.

Figure 18: Flood Risk

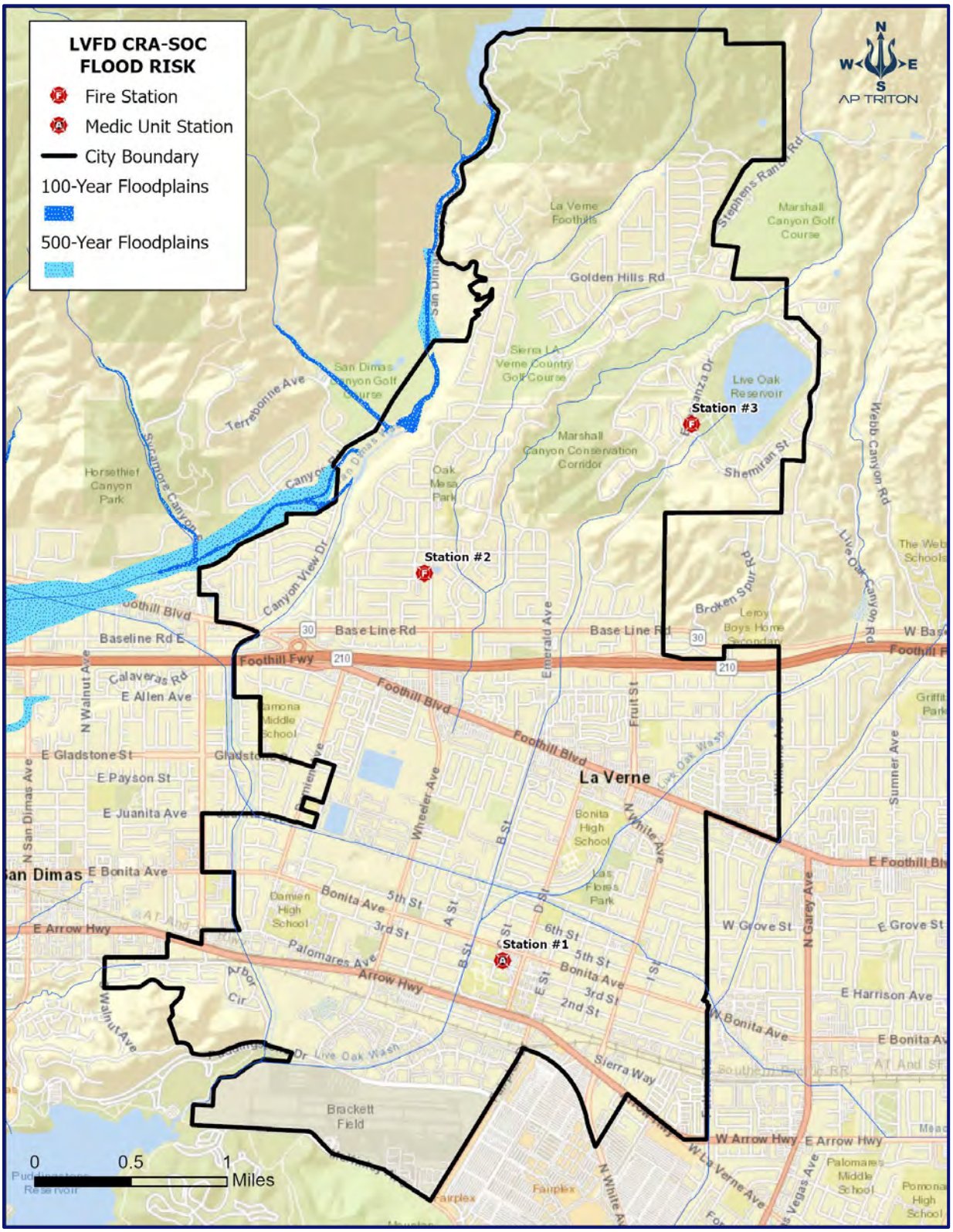


Figure 19: Historical Old Town La Verne Flood (1938)

Technological (Human-Caused) Hazards

Events that occur without warning or that were unknown and suddenly appear are considered technological hazards. Examples include industrial accidents or hazardous chemical releases. Each community should create contingency plans for the specific risks in their jurisdiction. This may include permitting, fire and life safety inspections periodically, and pre-incident planning. These activities are designed to reduce risks and provide on-site visits for fire department personnel.

If a building or facility has been identified that stores or produces hazardous materials, it may require special personal protective clothing and equipment to control or mitigate the event. Locations that have hazardous materials on-site during the year exceeding the limits established by the Environmental Protection Agency are required to file Tier II reports. These reports 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
- Lesser of 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

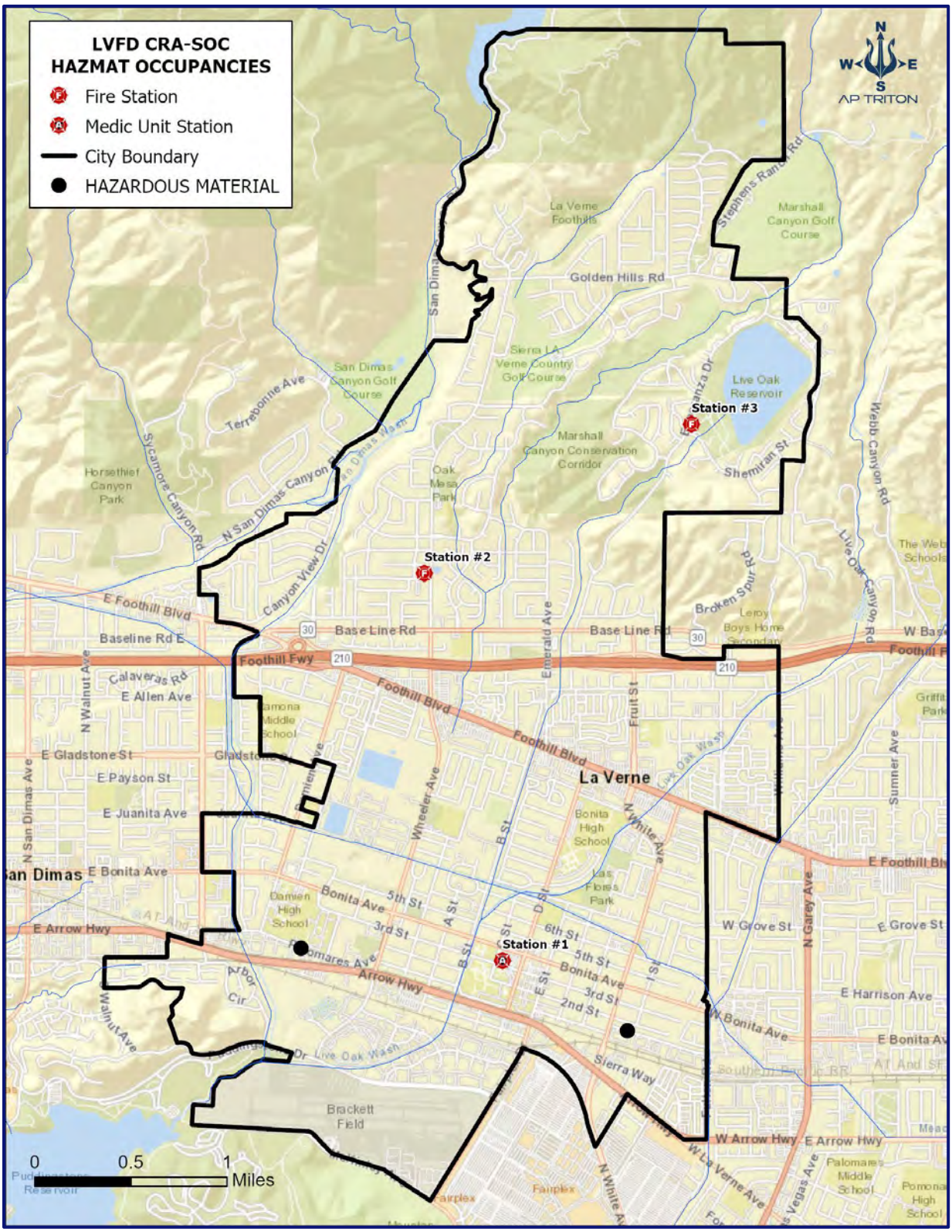
Hazardous Materials

There are numerous facilities in LVFD that store hazardous materials, but there are no locations that produce or store any extremely hazardous substances except for the rail cars used at the water treatment plant, as well as other rail cars traveling through the area. U.S. Highway 210 is the primary transportation corridor passing through the city, and this presents the possibility of a hazardous materials incident involving motor vehicles and trucks.

LVFD has a joint hazardous materials response agreement with the Los Angeles County Fire Department, which is home to a variety of world-renowned specialty resources and highly skilled team members, including hazardous materials (HazMat) firefighters. The LACFD's HazMat program is designed to address the natural, technological, or purposeful response challenges, including chemical, biological, radiological, nuclear, and explosive (CBRNE) threats to its communities and national security. The LACFD provides four 24-hour HazMat units geographically located throughout the County, with HazMat 43 located at 921 South Stimson Avenue, HazMat 105 located at 18915 South Santa Fe Avenue, HazMat 129 located at 42110 6th Street West, and HazMat 150 located at 19190 Golden Valley Road.

LACFD also has the Health Hazardous Materials Division (HHMD), which provides 24-hour emergency services in response to hazardous materials spills or releases and abandonment occurring in areas of HHMD Certified Unified Program Agency (CUPA) jurisdiction and in the cities of Los Angeles and Santa Monica. As deputy health officers, these emergency responders perform multiple job duties at emergency incidents which include: hazard categorization (Haz-Cat), technical advising, entry team participation, and evacuation and re-occupancy determination. The following figure shows the City of La Verne HazMat occupancy locations.

Figure 20: Hazmat Occupancies



Risk Classification

This section describes risks in La Verne. The various risks are analyzed, and a numerical score is developed to assist LVFD in creating mitigation and prevention programs for its community. Community risks are grouped into broad categories:

- Structure Fires
- Hazardous Materials
- Non-structure Fires
- Natural Hazards
- EMS-Medical Assist
- Technological Hazards
- Rescue
- Human Hazards

Within each category, specific hazards were identified, and a risk score between 0–10 was assigned.[15] This is explained by evaluating the different types of events for each risk category. Rescue examples include motor vehicle accidents (MVA), structural collapse, trench, confined space, swiftwater rescue, and the likelihood of occurrence. While MVAs are very likely to occur, the other event types are considered moderate, reducing the overall probability.

A severity score is developed by reviewing an incident's impact on the community and mitigating the event. Community Impact scores the effect of an incident on humans, property, and businesses. As the score increases, the impact on the community increases. Mitigation capacity rates how well a community responds to an event based on preparedness and internal and external response. The lower the mitigation score indicates that the community is better prepared for an event.

The overall scores were then used to generate a Relative Risk score as it applies to the city. The Relative Risk is determined by multiplying the probability and severity for each event type in a category. A summary reviews all community hazards, but it is noted that the primary functions of Le Verne have the highest scores. Although other scores may be low, such as Natural Hazards, it does not reduce specific impacts to include earthquakes that rate the highest in this section. The complete index for this report is contained in Appendix A of this report.

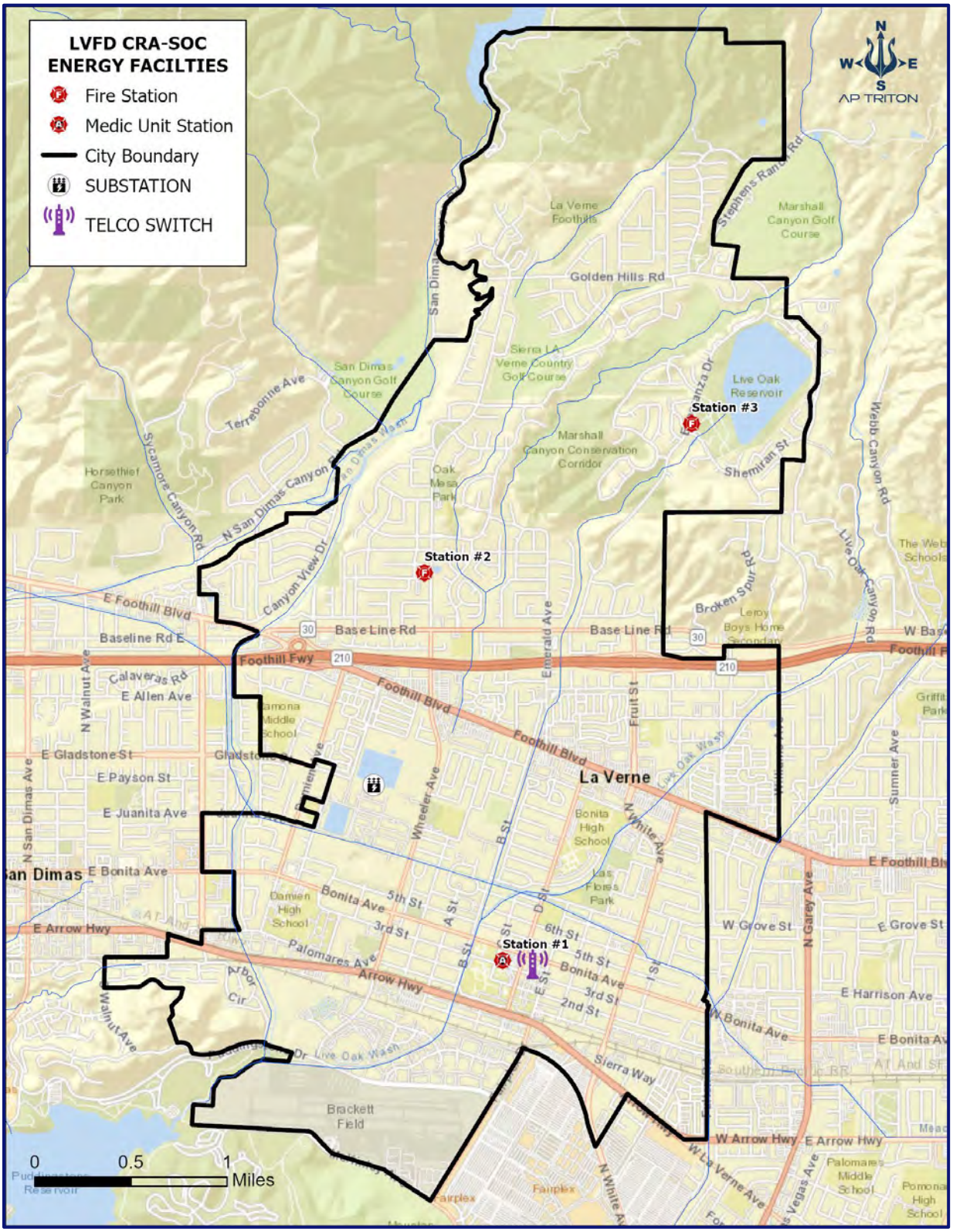
Infrastructure Protected

Energy

The use of electrical power is required for many day-to-day activities. The need for electricity requires lines throughout the City and can be broken down into a distribution network, and the highest voltage lines in the City are 66 kV and 287 kV. No major natural gas transmission lines pass through the City and Southern California Edison (SCE) serves the City with electrical services and natural gas by Southern California Gas Company.

SCE may implement Public Safety Power Shutoffs when wildfire dangers exist to prevent a fire from igniting from power lines. These shutoffs are normally temporary. SCE provides alerts for customers before the power is shut off, but the customer must sign up for text, phone messages, or email notifications.[16] If these shutoffs occur, LVFD must be prepared to understand how the community may be affected if its stations are impacted. The following figure shows the City of La Verne energy facility locations.

Figure 21: Energy Facilities



Transportation Network

The majority of the transportation network consists of collector streets which are fed by residential roads throughout the City. These roads provide interconnectivity for emergency responders, but some no-outlet roads could impact response if the roads are impassable. Traffic signal preemption allows responding units to modify the signal plan and change the light to green to allow safe and quick passage through a controlled intersection. These systems can reduce the number of vehicle crashes with apparatus or between private vehicles. There currently is no traffic signal preemption in the City, except for one related to a fire station that has not been maintained by the City.

The primary highways that transverse the City are U.S. Highway 210, U.S. Highway 30, and Route 66, an East-West freeway through L.A. County. According to *Caltrans,* the 2018 peak monthly average volume for passenger vehicles at Casitas Foothill Freeway (I-210) was approximately 25,000, and more than 680 were trucks.[17] It is unknown how many of these trucks transport hazardous materials. Based on accident data, the City experiences a higher number of auto accidents in July, September, and October on Sunday morning than on any other day of the week. This data also indicates that almost all fatal auto accidents have occurred on all three U.S. highways in La Verne.

Figure 22: La Verne Average Daily Traffic Counts

Location	Ave Annual Daily Traffic—Vehicles	Ave Annual Daily Traffic—Trucks
La Verne, Baseline Road	19,300	525
Bonita Ave. and D St.	11,500	N/A
Jct. Rte. 210 and Foothill Freeway	25,000	680
Fruit St. and Foothill Blvd.	29,300	N/A
Foothill Freeway and Fruit St.	28,700	660

Rail

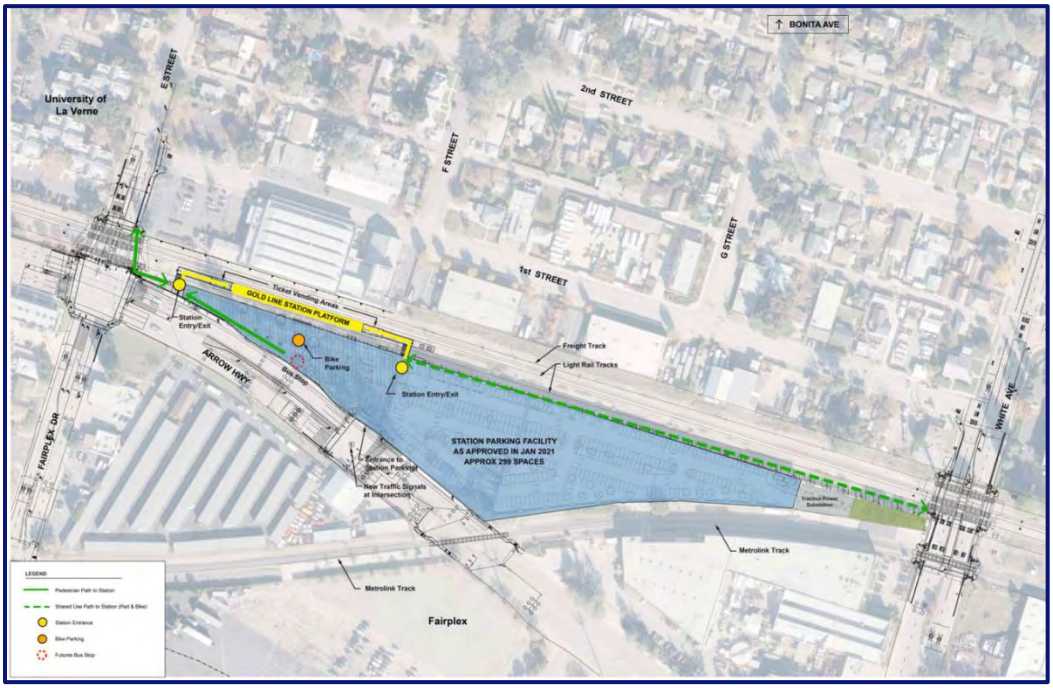
A mainline for Burlington Northern Santa Fe passes through the City of La Verne. There are numerous rail crossings in the City that can threaten not only the train but also a passenger vehicle if they ignore warnings of an approaching train. There is currently a project under construction called the Foothill Gold Line Light Rail system.

The La Verne station is part of the Foothill Gold Line from Glendora to Montclair and will be located north of Arrow Highway and east of E Street, between the University of La Verne and the Pomona Fairplex. The station will be a center platform station, with light rail tracks on either side (for westbound and eastbound trains). The La Verne station will have an associated parking facility and have amenities for riders arriving by walking, bicycle, bus, and drop-off.

Once completed, three tracks will run through the City of La Verne within the shared rail corridor—the two light rail tracks will be located in the south portion of the Gold Line and the one freight track on the north. While the two systems share the rail corridor, light rail trains and freight trains do not share tracks.

Permanent changes will also occur due to the project, including safety enhancements at all street crossings (raised medians, red curbing, and turn restrictions within 100 feet of the rail corridor at all street crossings), relocation of the freight track to the northern half of the rail corridor, new fencing and walls along the entire rail corridor, and new overhead lines to power the Gold Line system. The Gold Line tracks will cross White Avenue at street level, and White Avenue will be restriped to add a second northbound lane from the railroad tracks to 6th Street. The freight track will remain at street level and a pedestrian bridge will be added to cross the Arrow Highway to access the station and the fairgrounds. The following figure shows the City of La Verne Gold Line station location.

Figure 23: La Verne Gold Line Station



Water Supply

Without an adequate water supply and distribution system consisting of water storage, mains, and a fire hydrant system, it will be challenging to control and extinguish a fire. To alleviate this problem, a system of well-distributed hydrants and properly sized water mains are necessary to provide the required water for fireground use.

The City of La Verne Water and Utility Division is responsible for operating and maintaining the City's water production and distribution facilities. The City is committed to providing quality water to its residents and businesses. La Verne receives water from two primary sources: underground water and imported water. The City has eight municipal wells that pump water from two ground basins: Pomona and Live Oak. Water from these underground wells is pumped into booster stations, where it is blended with imported water. La Verne purchases its water from Three Valley Municipal Water District. The underground water is blended with local groundwater and is then pumped to residents and businesses throughout La Verne. The following figures show the City of La Verne water distribution system and hydrant map.

Figure 24: Water Distribution Map

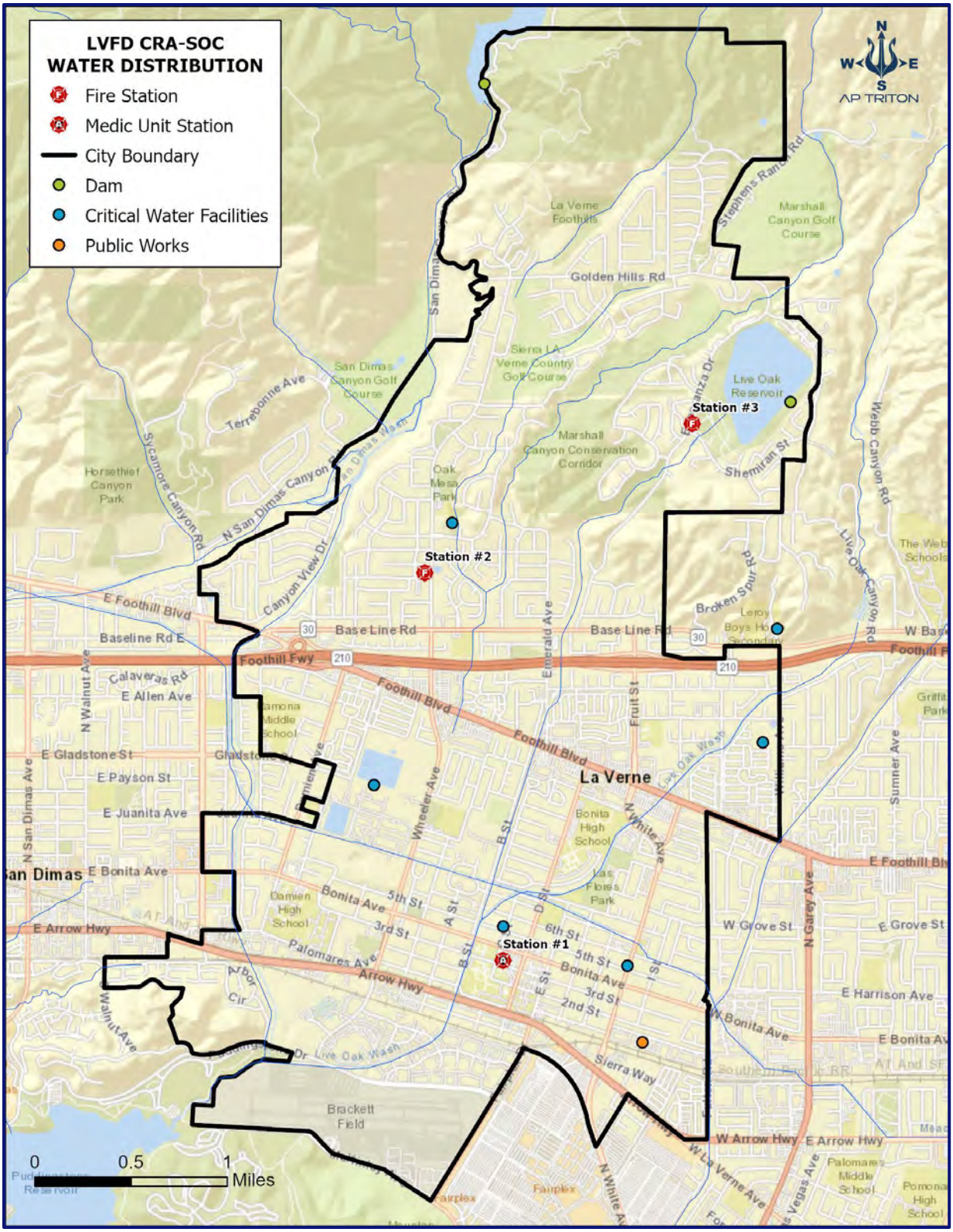
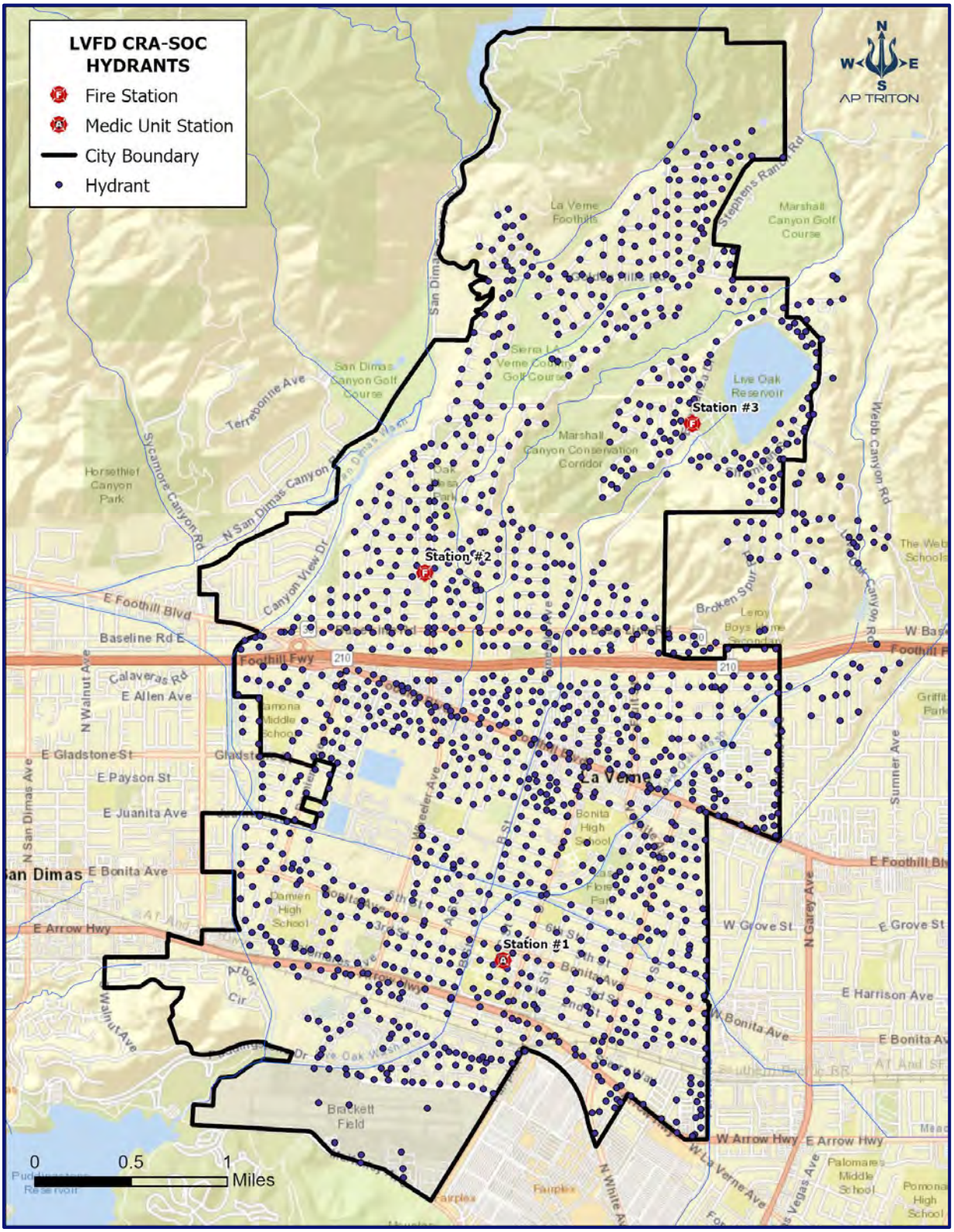


Figure 25: Hydrant Map



Communications

The La Verne Police Department Communications Center is the primary Public Safety Answering Point (PSAP) for all 911 calls pertaining to law enforcement, fire, and emergency medical responses throughout the City. The dispatch center is staffed 24 hours per day, 365 days a year. Communications Officers are Emergency Medical Dispatch certified and attend a Police Officers Standards Training (POST) Dispatch Academy.

Cell phone-based 911 calls that originate within proximity to highways may go directly to the California Highway Patrol (CHP) and then be transferred to LVPD.

When a 911 call is answered for fire or emergency medical services within the City, the call is transferred from LVPD to the Consolidated Fire Protection District of Los Angeles County's (CFPD) Regional Command and Control Center. The center coordinates the dispatching of appropriate LVFD resources as well as automatic and mutual aid resources indicated by the type of incident and location.

The center's staffing includes 16 on day shift and 13 on night shift, including two supervisors each shift: 1 Battalion Chief and 1 Captain. The center provides Emergency Medical Dispatch pre-arrival protocols to 911 callers as approved by the Los Angeles County Department of Health Services.

Government & Public Safety Facilities

Buildings that provide services for the public from local or other governmental units are considered essential facilities and should receive special attention. These facilities are for the public to receive community services, and fire department personnel should be familiar with the properties during an emergency. Pre-incident plans should be completed and updated annually, including their facilities.

Land Use

Land use for a community is designed to classify properties within a geographical area generally under governmental control. The concept of land use regulation is to provide attractive social and environmental outcomes to assist in the management of development efficiently.

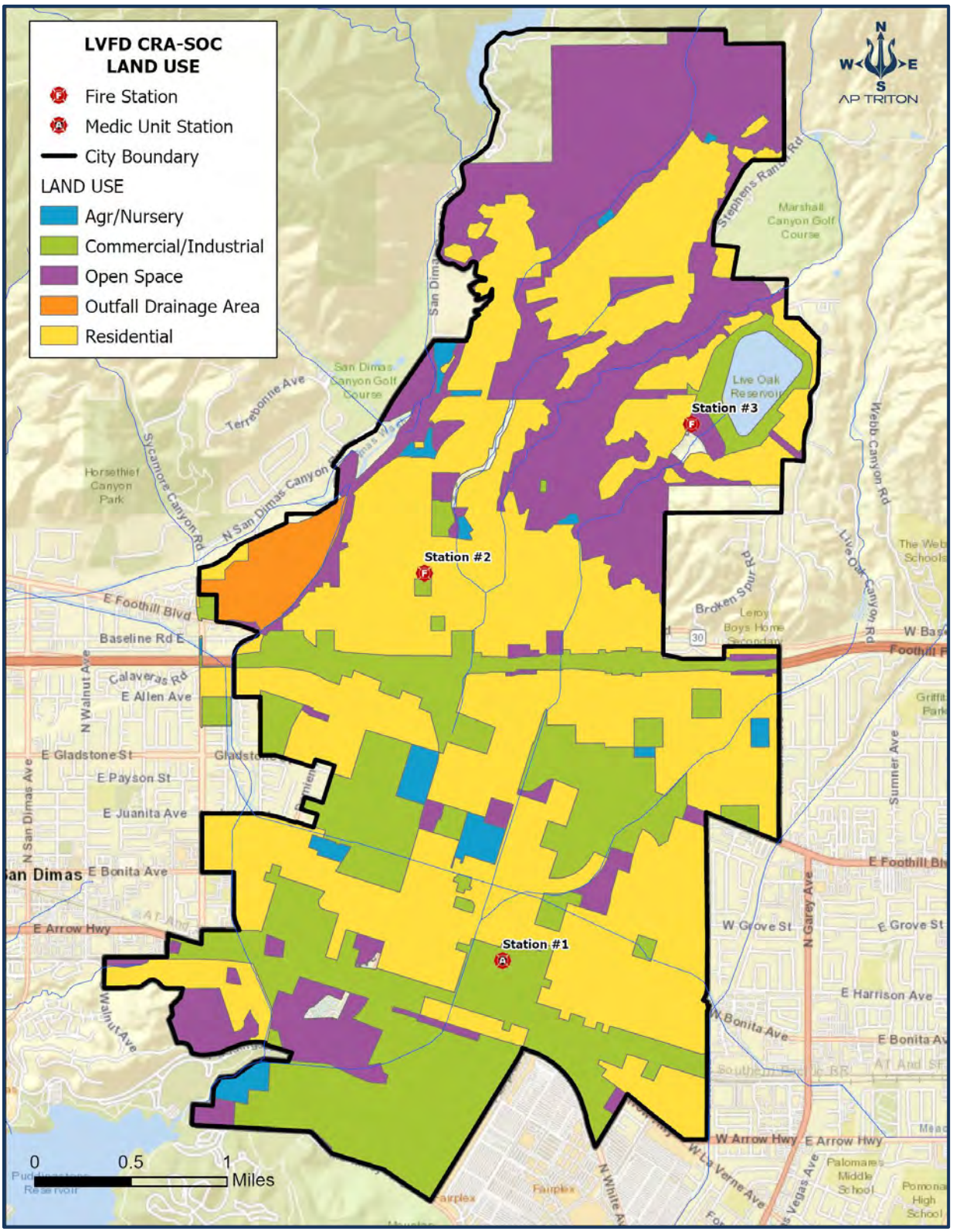
Zoning areas may vary from one portion of the service area with a mixture of low-, moderate-, and high-risk properties.

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

According to the City of La Verne General Plan, "Land use planning begins with the simple act of mapping out our land features and existing uses. Our sloping hillsides and seasonal waterways are examples of natural resources that literally hug our community, and constrain us from growing beyond our natural boundaries. Our transportation routes play a major role in determining our land uses, beginning with our first settlement at the Lordsburg Railroad Stop and existing to commercial centers that grew along old Route 66. Our homes that shelter our workforce… and so it goes. This cycle of interdependency is what makes a settlement. A well-balanced cycle is what makes a planned community."[18]

The City of La Verne General Plan provides a wide variety of techniques to enhance public health safety and welfare, incorporating defensive space strategies, new fire hazard policies, airport land-use policies, noise, transportation, and emergency planning. The plan supports housing opportunities by continuing neighborhood housing development and specialized zoning controls for targeted housing and social service needs. The plan protects public health by limiting development to those areas capable of sustaining it without irreversible or unmitigated environmental damage. The 2016 zoning map regulates the basic principle of the City of La Verne's land use. The following figure shows the City of La Verne land use map.

Figure 26: Land Use Map



Old Town La Verne Specific Plan

As the Foothill Gold Line from Glendora to Montclair continues to take shape, the City of La Verne is likewise making progress on the complimentary Old Town La Verne Specific Plan with two housing projects along First Street. La Verne has begun site preparation and construction activities, marking the first tangible steps in turning a mainly industrial area into a new, vibrant residential area for the community.

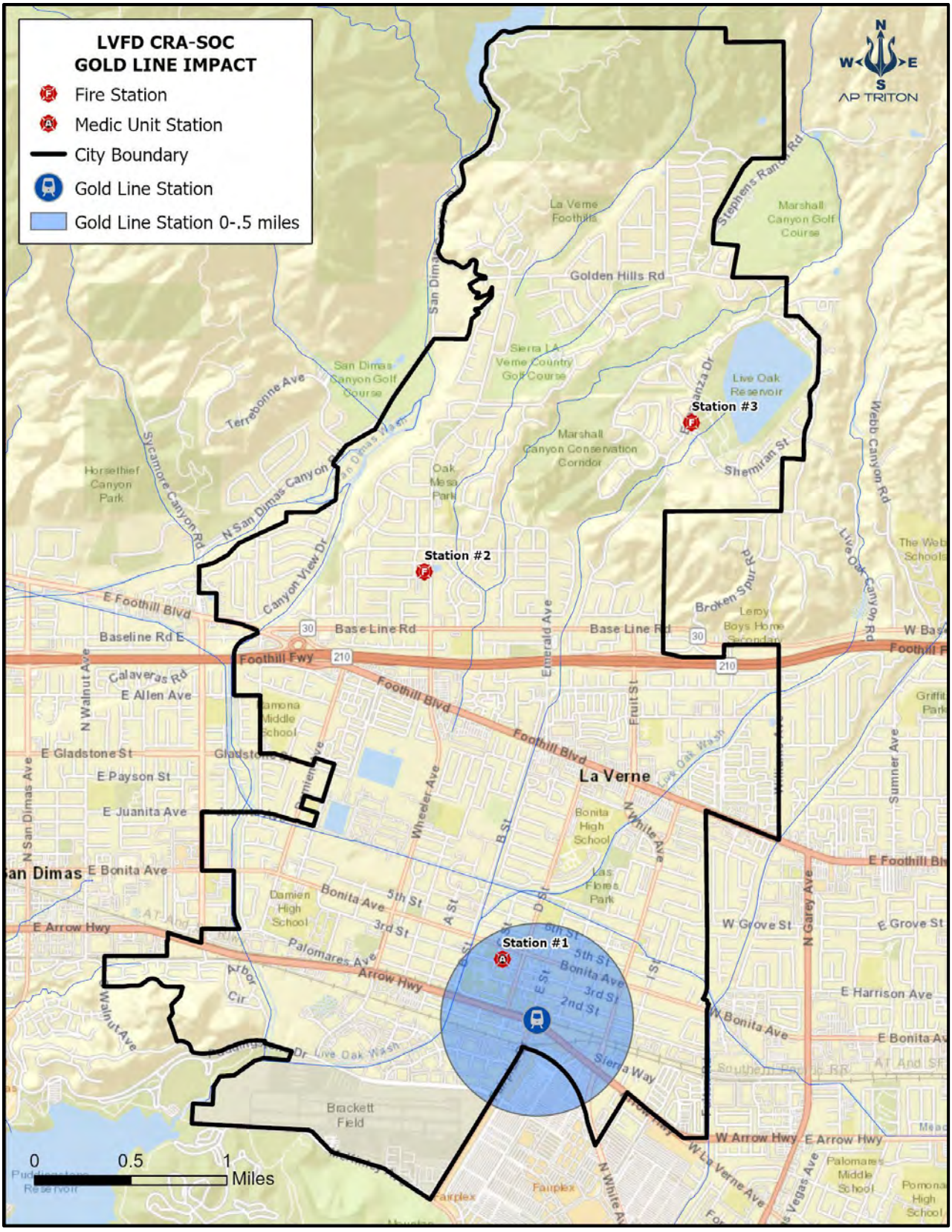
One of these housing developments is located in the area of First Street on the corner of White Avenue. The now partially empty lot will be replaced with a 17-unit, three-story housing development spanning nine buildings and accommodating 36 residential parking spaces. The units will vary in size from 1,351 to 1,911 square feet and include two, three, and four-bedroom unit options.

The second housing project is just down the street, headed west from the first site. The two existing warehouse structures on the site were constructed in 1985 and used for various industrial purposes throughout the years. With the approval of the adaptive re-use of the structures for new development, however, this area will be transformed entirely and feature a three-story building with 36 housing units called the "Lordsburg Lofts."

These new housing options along First Street will be within a five-minute walk to the future Foothill Gold Line station, University of La Verne campus, the Los Angeles County Fairplex, beloved Old Town La Verne shops, restaurants, and other businesses. Along with other projects identified in the Specific Plan, the First Street projects will help strengthen the Old Town La Verne area as a distinctive center for the citizens of La Verne with attractive streets, enjoyable public spaces, historic neighborhoods, lively mixed-use commercial areas, and a variety of housing options. The plan estimates that the potential buildout of new development in Old Town could total approximately 266,000 square feet of retail commercial space, of which about 15% could be restaurant space and on the order of 220 new dwelling units. This would also include an additional 1.1 million square feet of office space.

These projects will have an overall impact on the community and the emergency services. These changes will be from the additional property and sales tax revenue to the addition of new community members, increasing the overall population. The impacts of the Foothill Gold Line station are supported by a study completed in 2007 by the IBI group that stated the effect would be within a 1.5-mile radius of the stations. This is shown in the following figures that show the 1.5-mile impact Aeas and proven further by the Old Town La Verne Specific Plan.

Figure 27: Gold Line Station Impact Map

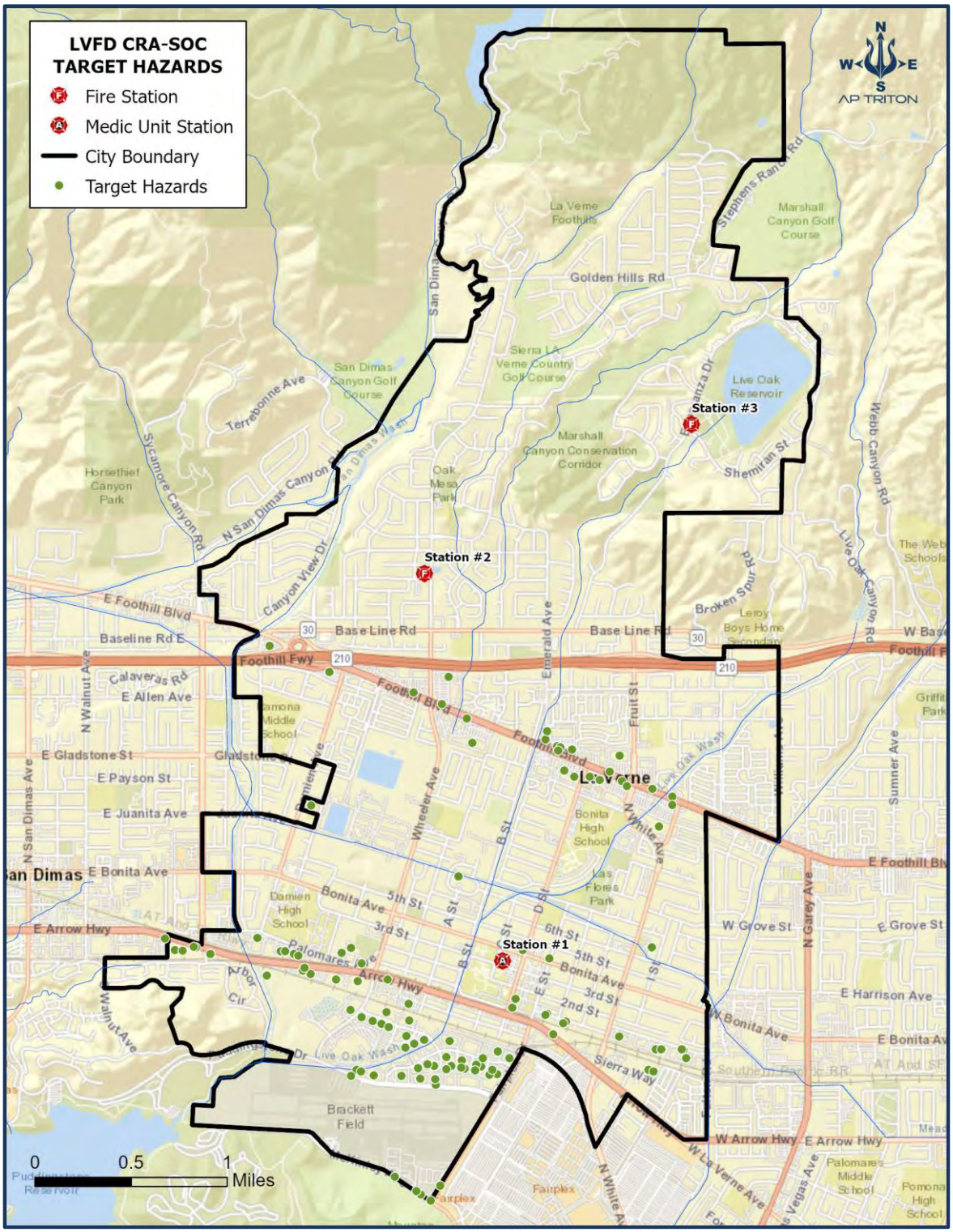


Structural Risks

The definition of target hazards varies among jurisdictions; thus, every department must determine what is important in its community and must define and identify those special target hazards. For continuity, Triton uses the 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, and/or disaster recovery functions."

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. Target hazards can also be considered significant or historic properties that are important community assets. The following figure displays the target hazards located throughout the City of La Verne.

Figure 28: Target Hazard Map



Schools

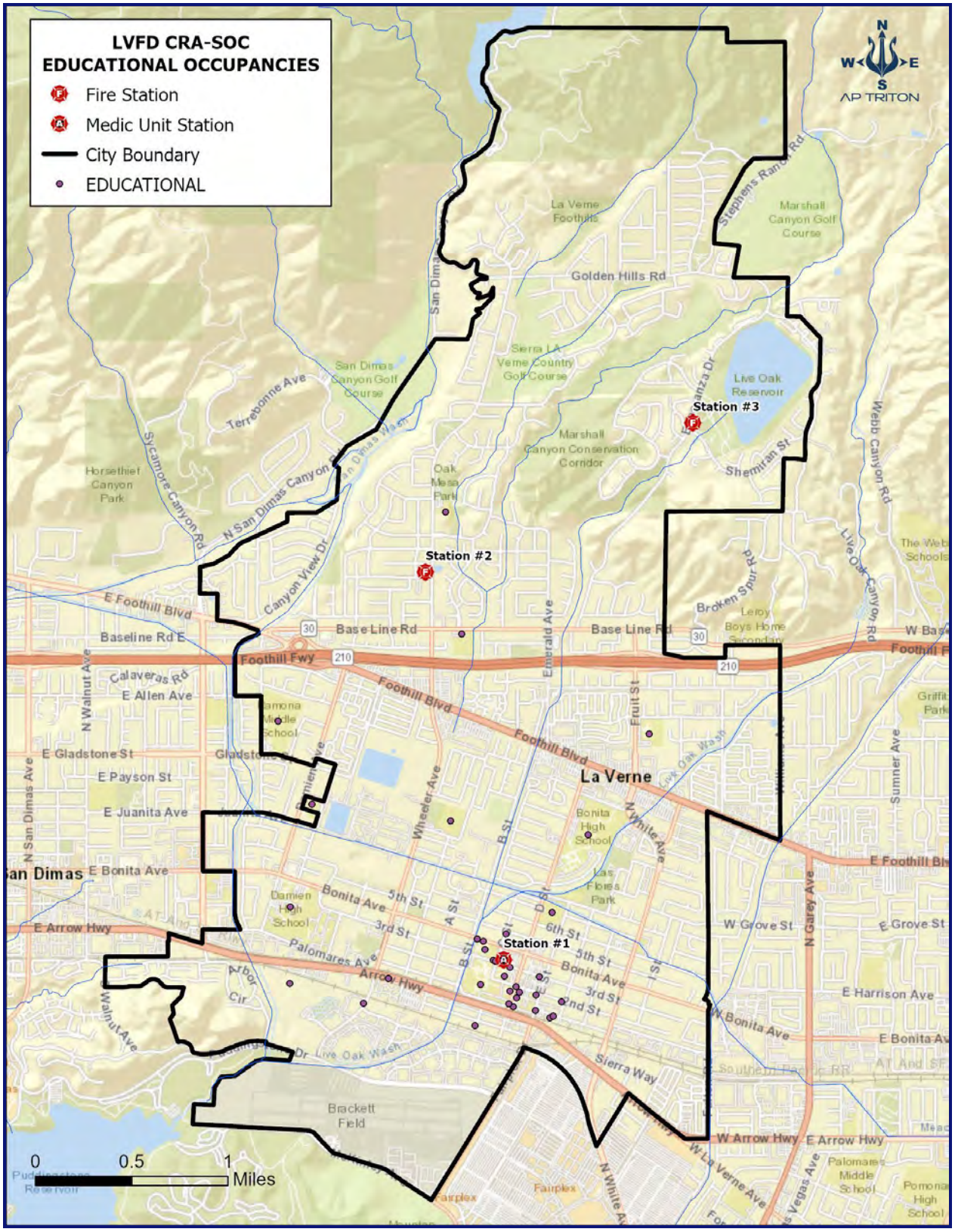
The Bonita Unified School District serves approximately 10,269 students from kindergarten through high school. These locations should be considered target hazards because of the many students and teachers in a single location. The following schools are located within the LVFD area: Bonita High School with 1,892 students, Romona Middle School with 1,392 students, Oak Mesa Elementary with 577 students, La Verne Heights Elementary with 494 students, Grace Miller Elementary with 427 students, and Roynon Elementary with 719 students.

The University of La Verne (ULV) is a private university in the City of La Verne. Founded in 1891, the university is composed of the College of Arts & Sciences, College of Business & Public Management, the LaFetra College of Education, and the College of Law, and the university recently implemented a health sciences program, for Physicians Assistants, Registered Nurses, and other considering EMS-related programs. The university has an on-site enrollment of 4,484 students, and there are three on-campus housing options for students.

- Citrus Hall
- Vista La Verne
- The Oaks

Citrus Hall opened for the Fall 2018 semester and houses about 400 students. The Spot dining hall, located on the first floor of Citrus Hall in wings B and C, opened at the same time, replacing the Davenport Dining Hall a block away. Generally, Citrus Hall houses first-year students, Vista La Verne houses graduate students, and continuing students stay in either Vista La Verne or The Oaks. LVFD personnel should be familiar with the buildings and prepare for various types of emergencies. The following figure shows the City of La Verne educational occupancy locations.

Figure 29: Educational Occupancy Target Hazards



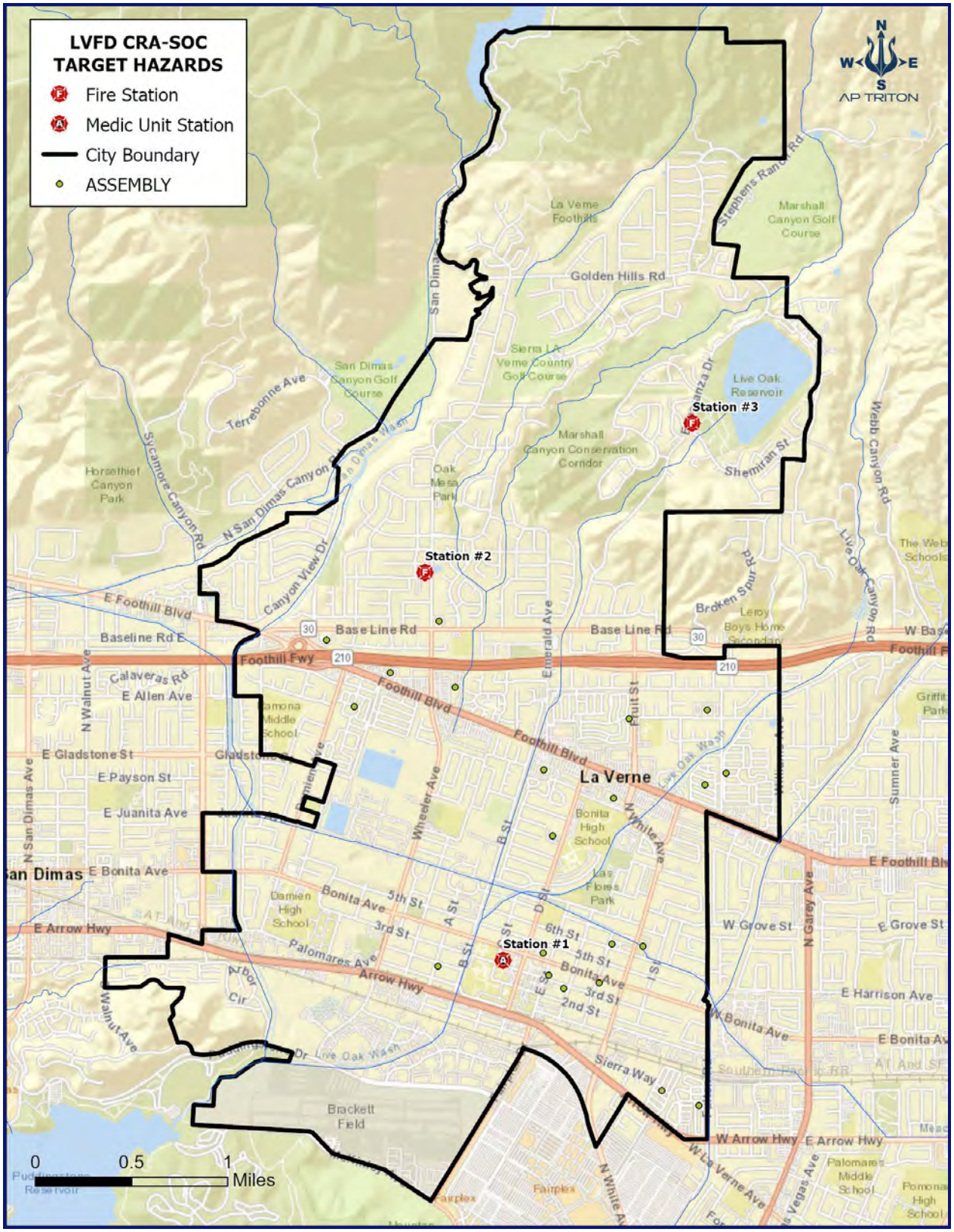
Childcare Facilities

Childcare facilities pose a special concern because of the young age of the children and, in some cases, the inability to evacuate during an emergency. These facilities will require childcare workers to assist small children or physically carry infants when an evacuation is necessary.

Assembly

Assembly occupancies create special risks because of the large number of people in a single location. These types of occupancies include restaurants, theaters, nightclubs, sporting events, or large outside festivals—all locations where people gather. These occupancies may require many emergency response personnel during an event such as a fire or active shooter. These locations should have pre-incident plans completed for use by personnel during a response. The following figure shows the City of La Verne assembly occupancy locations.

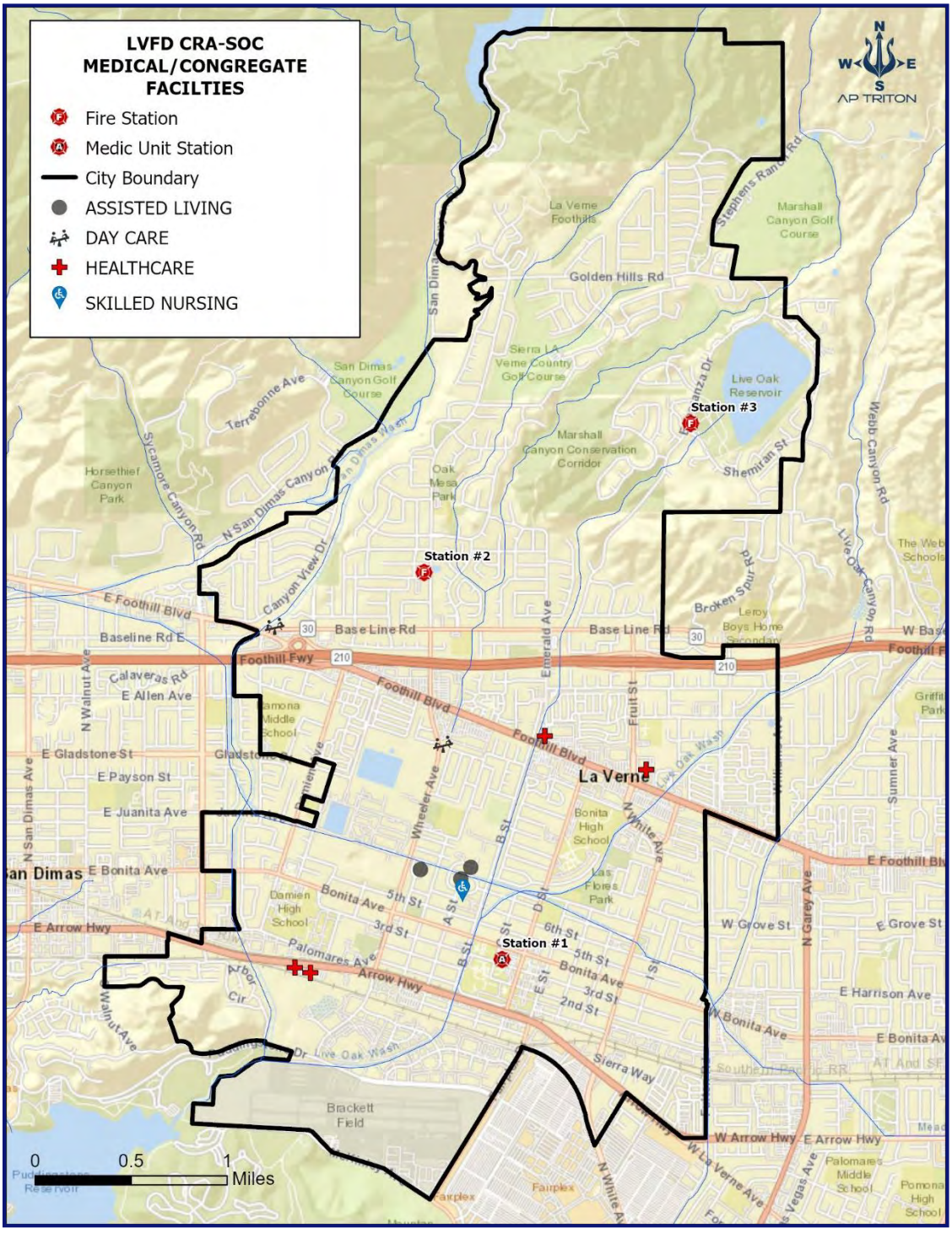
Figure 30: Assembly Occupancy Target Hazard



Institutional

These types of buildings are where occupants may be unable to leave without assistance from the employees. Examples include assisted living, nursing homes, medical facilities, or jails. The following figure shows the City of La Verne medical care locations.

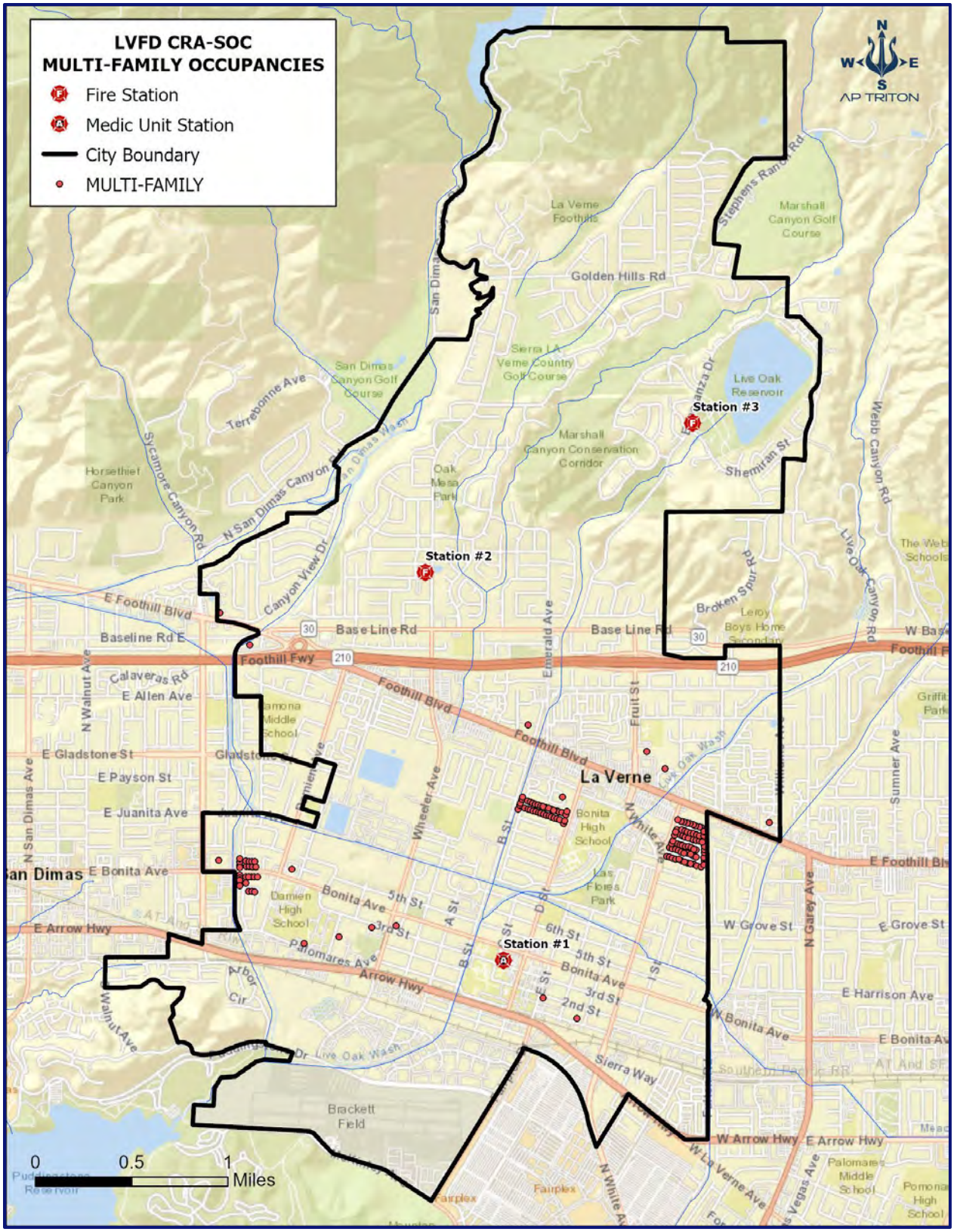
Figure 31: Medical Care Facilities



Residential Multi-Family Occupancies

Residential properties create a higher risk for occupants than most commercial buildings. Most fire fatalities occur in these locations 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. The following figure shows the residential multi-family locations.

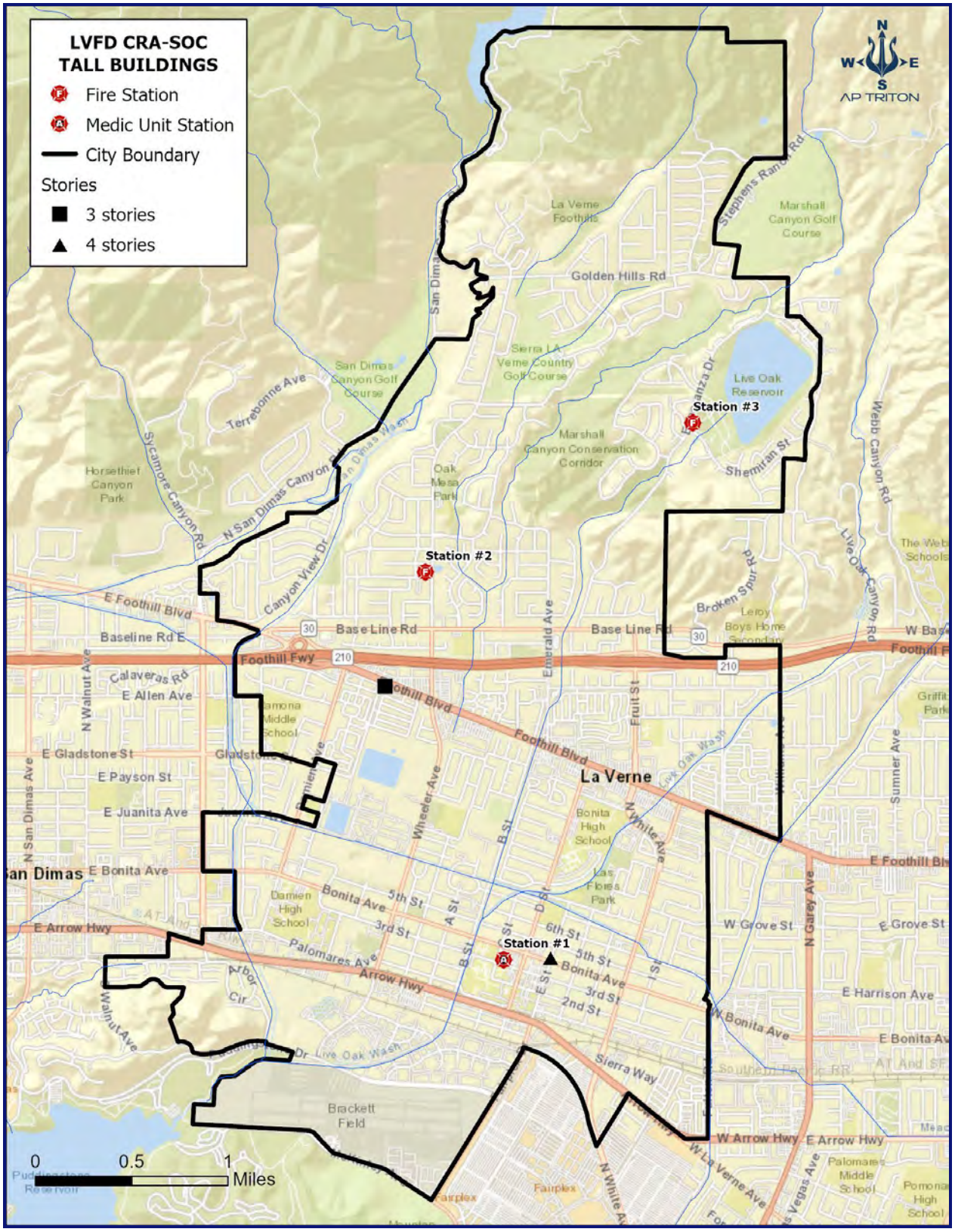
Figure 32: Multi-Family Occupancies



Buildings Three or More Stories in Height

Structures that are three or more stories in height typically require an aerial apparatus with an elevated master stream. The Insurance Services Office (ISO) reviews the coverage area for all buildings within 2.5 miles of a ladder truck. A ladder truck may be necessary to access the upper floors or roofs of these higher buildings since most ground ladders are unable to reach these heights. The following figure provides locations of all buildings three or more stories in height. Please note, as previously mentioned, that per the Old Town Specific Plan, the number of buildings three stories or more will increase over the next few years.

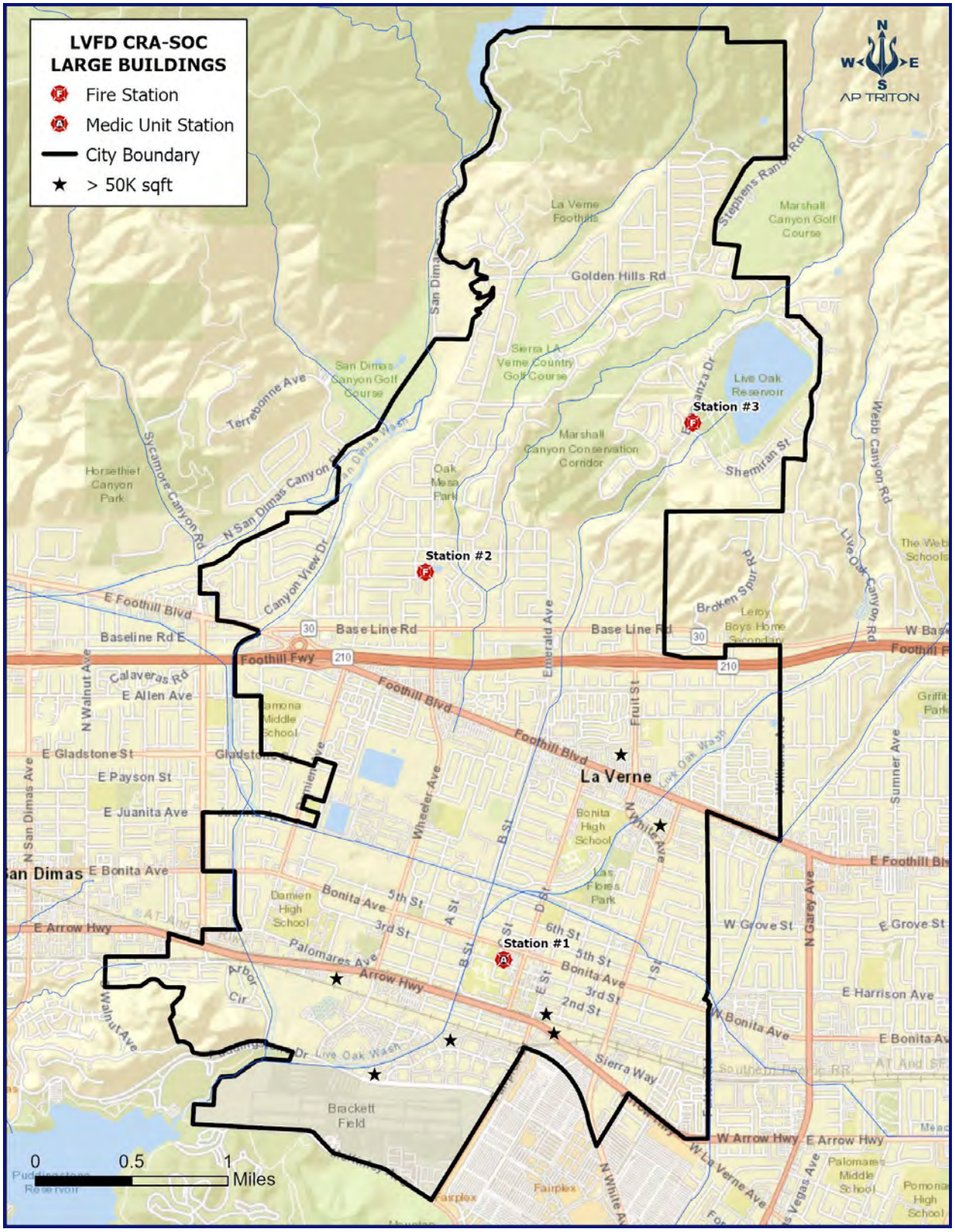
Figure 33: Buildings of Three of More Stories



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 data from ISO and shows the locations for buildings 50,000 square feet and larger.

Figure 34: Large Building Target Hazards

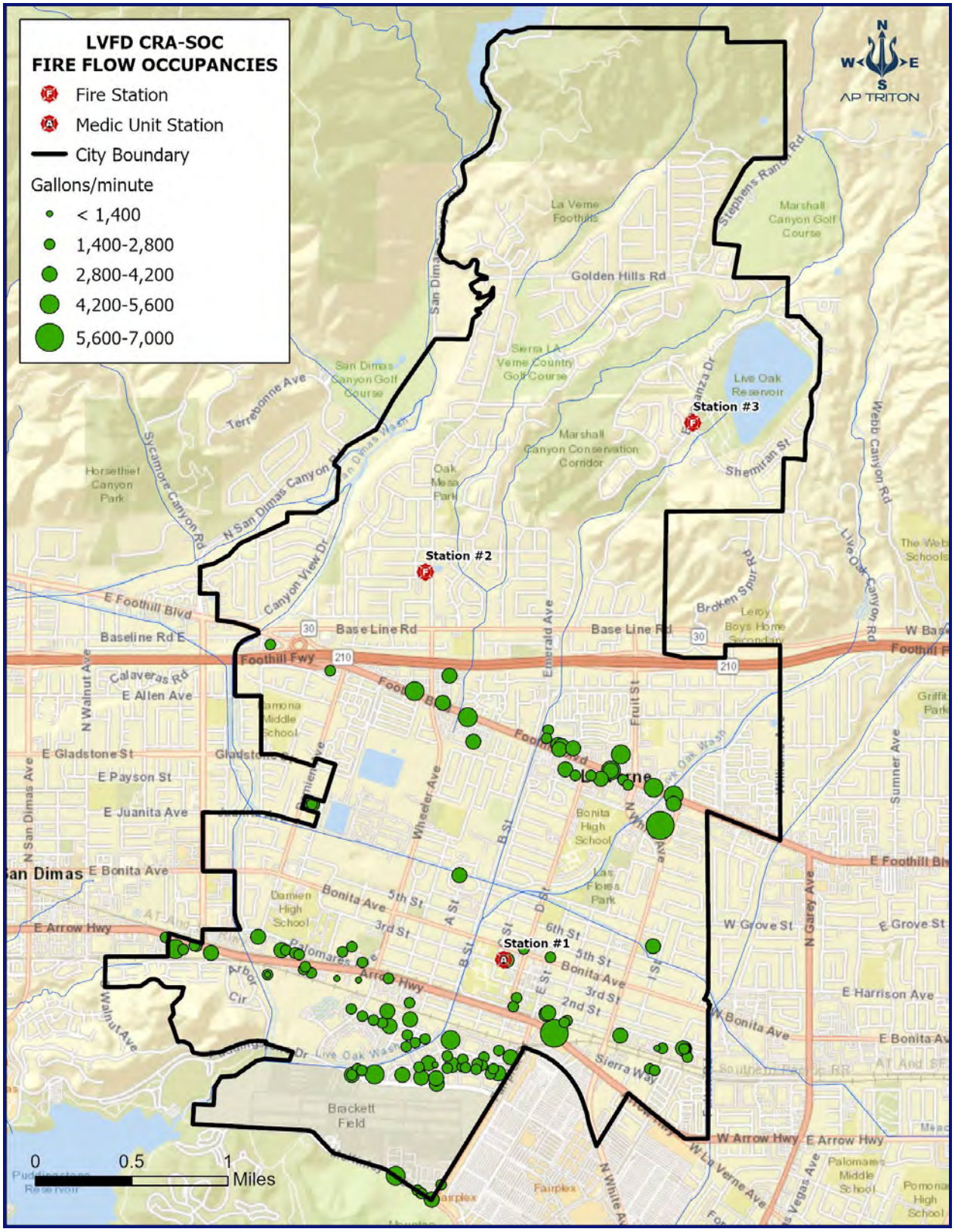


Large Fire-Flow Occupancies

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

ISO developed the Batch Report that lists the needed fire flow (NFF) for most commercial occupancies in the City. The NFF formula was developed based on a review of large-loss fires by ISO that included the construction and occupancy type, area of the building, and exposures. The following figure shows the large fire flow occupancy locations.

Figure 35: Large Fire Flow Occupancies



Comparison of Fire in Other Communities

Fire Loss

The most recent National Fire Protection Association (NFPA) fire incident data reported in 2019 that United States fire departments responded to an estimated 1.3 million fires. These fires resulted in 3,700 civilian fire fatalities, 16,600 civilian fire injuries, and an estimated $14.8 billion in direct property loss (this figure includes a $12 billion loss in Northern California wildfires). Home fires caused 2,770, or 75%, of the civilian fire deaths.[19]

Figure 36: La Verne Number of Fires & Loss per Capita

Community	No. Fires per 1,000 Population	Property Loss per Capita
LVFD	1.9	$43.84
United States	3.2	$96.29

The fire loss for the City in 2020 was $43.84 per capita, which is about 45% lower compared to the United States. The rate of fire loss can fluctuate from year-to-year based on factors such as the number of incidents or their severity. When reviewing fire incident data in 2019, the average was slightly higher than the U.S. at $96.29.

Intentionally Set Fires

Intentionally set fires, or in many cases considered arson, are defined as "any willful or malicious burning or attempt to burn, with or without intent to defraud, a dwelling house, public building, motor vehicle or aircraft, personal property of another."[20]

Insurance Services Office

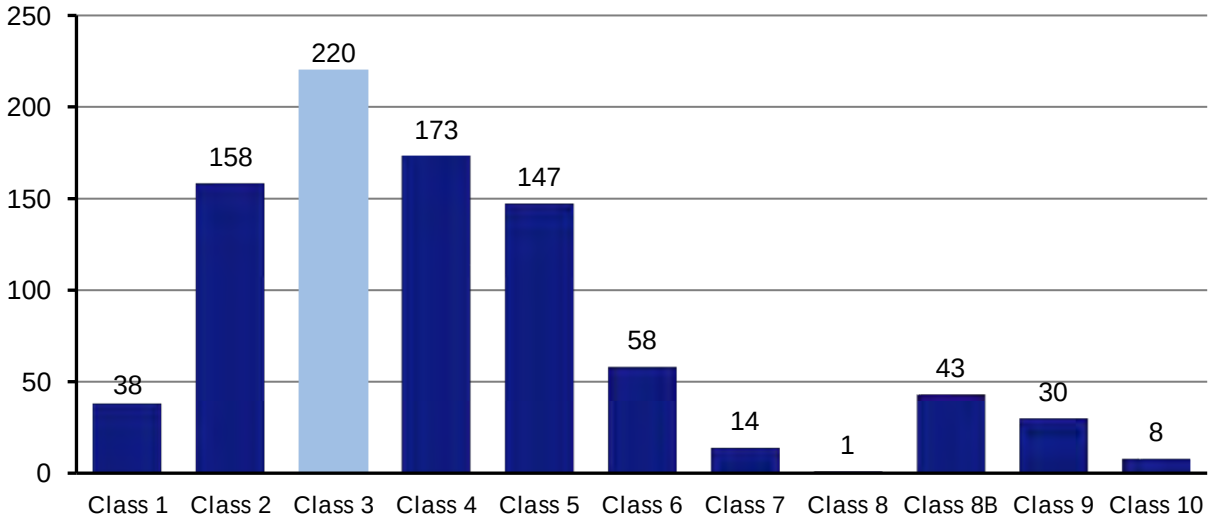
The Insurance Services Office, Inc. (ISO©) is an independent organization that collects and analyzes data from fire departments in communities throughout the United States to determine rates for fire insurance. According to their report, the ISO's Public Protection Classification program, or PPC, "is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

The ISO Fire Suppression Rating Schedule (FSRS) measures four primary elements of a community's fire protection system: *Emergency Communications* (max 10 points); *Fire Department* (max 50 points); *Water Supply* (max 40 points), and *Community Risk Reduction* (max 5.5 points) for a maximum possible total of 105.5 points. ISO then assigns a grade using a scale of 1 to 10, 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 2020, the LVFD was assigned an ISO classification of 3. LVFD is one of 220 communities out of 890 surveyed across the State to achieve the rating, as shown in the following figure. LVFD received 75.30 points which translates to its assigned classification.

A review of the Public Protection Classification Summary Report revealed 4.51 credits out of 9 for training, and this is usually because of the lack of tracking training or providing the training. There were also two other deficient categories with 5.63 credits out of 15 for company personnel, and a credit of 1.5 of 7 was given for inspection and flow testing of hydrants. Currently, few hydrants are being inspected by either LVFD or the City of La Verne. This should be noted as it could be a liability for the City of La Verne.

Figure 37: Comparison of ISO Class Rating (California)



Section II:
STANDARDS OF COVER & DEPLOYMENT ANALYSIS

The La Verne Fire Department

Following a devastating fire in 1911, the City of Lordsburg organized a fire company and agreed to purchase two hose carts and create an organization of 27 volunteers. This was known as the Lordsburg Volunteer Fire Company.

In 1917, the residents voted to change the name of their city to La Verne, and in the 1950s, LVFD began its progression to a career fire department by hiring its first paid Fire Chief. The volunteers continued to support the growing fire department until the 1970s, when Reserve Firefighters were hired on a part-time basis to augment the paid staff. In 1975, a second fire station was constructed to serve the growing northern portion of the City. In 1980, the department began its paramedic program, housing a private ambulance at Fire Station 2. Four years later, an ambulance was purchased, and six paramedics were hired. By 1992, all positions in the La Verne Fire Department were filled with full-time career firefighters.

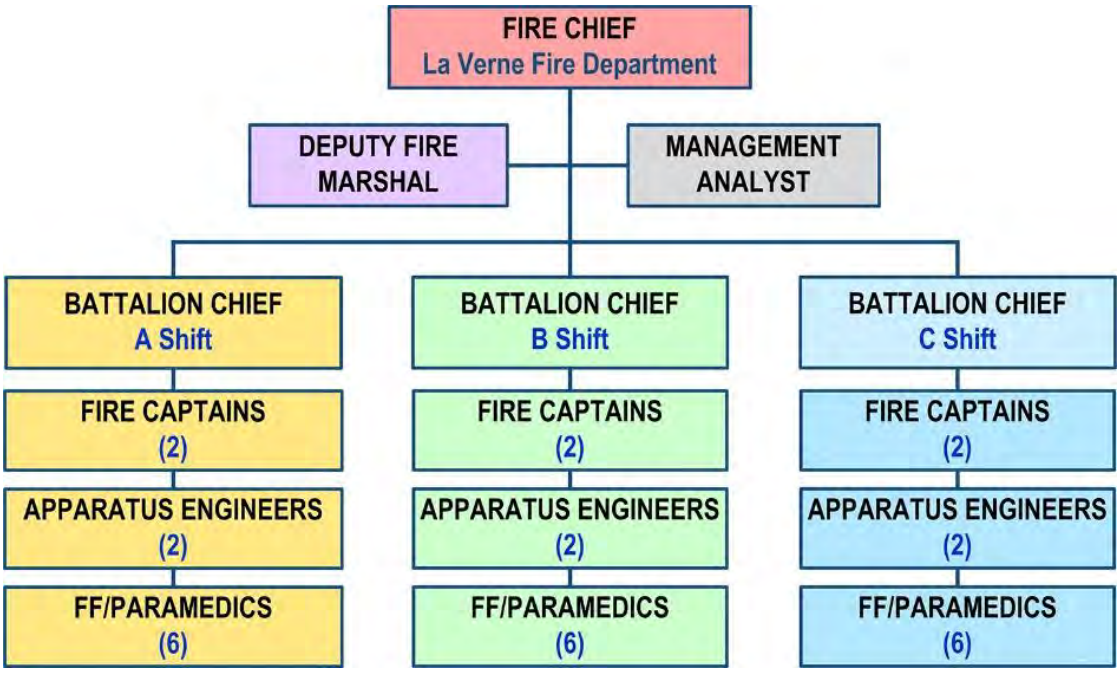
The La Verne Fire Department serves the City in an area that encompasses nearly nine square miles, with an approximate resident population of more than 32,000 persons. Within its service area are 150 miles of paved roads and about 18 miles of state highways.

LVFD Organizational Structure

Governance & Lines of Authority

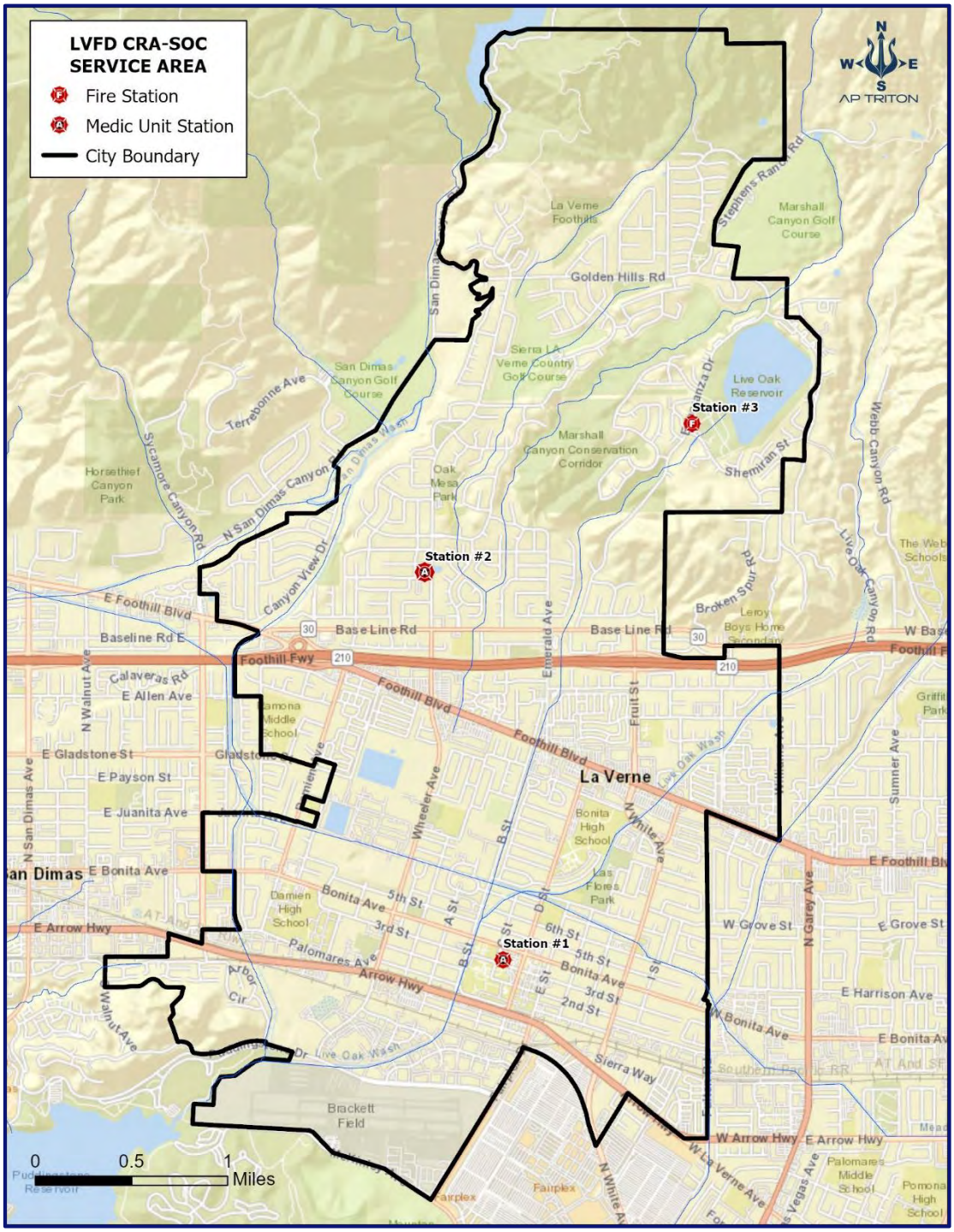
The City of La Verne maintains a Council-Manager form of government. Residents elect a "Mayor" and four council members at large to represent them. As elected representatives of its citizens, the City Council develops and establishes ordinances and policies in the best interest of the City. The Council acts as a part-time "board of directors," appointing a City Manager to conduct the City's day-to-day affairs. The La Verne City Manager supervises the Fire Chief. The next figure illustrates the current organizational structure of LVFD.

Figure 38: LVFD Organizational Structure (2021)



In January 2022, the La Verne Fire Department was authorized to employ 33 uniformed career personnel, 12 non-safety ambulance operators, one non-safety Fire Marshal, and one administrative support person. The following figure is a geographic illustration of the LVFD service area.

Figure 39: Service Area



Description & Review of the Services Provided

The La Verne Fire Department currently deploys its apparatus, Rescue Ambulances, and personnel from two of its three stations. At the time of this writing, one of its stations was unstaffed. In July 2021, the City of La Verne was assigned a Class 3 Public Protection Classification (PPC™) by ISO. LVFD provides traditional fire suppression, first-responder level hazardous materials response, fire inspections, code enforcement, fire-cause and origin investigations conducted by engine company Captains, plan reviews are conducted through a contractual arrangement, and a limited role in public education and prevention activities.

Prior to March 2022, Emergency Medical Services (EMS) incidents, the La Verne Fire Department provides Advanced Life Support (ALS) medical first-response service using "Paramedic Assessment" (PA) engines. The department also provides ALS-level transport with its "Rescue Ambulance" (RA) along with Basic Life Support (BLS) transport through a contractual arrangement with Care Ambulance.

The current EMS deployment model was changed because of personnel shortages. Previously, LVFD operated two ALS Rescue Ambulances and two Paramedic Assessment engines without a contracted BLS ambulance. All EMS incidents get a PA engine, ALS RA, and a BLS ambulance.

Other Emergency Services Resources Available to LVFD

LVFD has mutual aid agreements with the Angeles National Forest and the Los Angeles County Fire Department (LACFD). Los Angeles County Fire also contracts with LVFD with communication and dispatch services, and upon request can provide rotary-wing air medical, and fire suppression support.

Hospitals & Tertiary Care Facilities

LVFD transports many of its patients to the Pomona Valley Hospital Medical Center (PVHMC), which provides online medical control (base station), is a Level II designated Trauma Center, and a STEMI and Stroke Center. LVFD also commonly transports to San Dimas Hospital (SDH) and Emanate Health Foothill Presbyterian Hospital (EHFPH). LAC+USC Medical Center in Los Angeles is a designated Level I Trauma Center.

Introduction to the Stakeholder Interviews

Triton interviewed a wide variety of the City of La Verne 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 services delivery system, opportunities for shared services, and expectations from community members.

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

Stakeholders were identified within the following groups: Elected Officials, City Management, Department Heads, Business Community Leaders, Community volunteers, Chief Officers, and Labor Leaders. Details of the interviews can be found in Appendix B.

Financial Analysis

Local Economy

La Verne's location is a major asset as it is only 30 minutes from Los Angeles and Orange Counties' civic centers, major trucking centers, and the commercial airport in Ontario. Thousands of commuters travel through the City on a daily basis, with Interstates 10, 210, and 57 serving the City. The City's commercial corridor had enjoyed occupancies near 95% in its stores, specialty shops, and other retail businesses.

Historical Financial Information

The City of La Verne operates on a fiscal year from July 1 to June 30 each year. As a government entity, the City utilizes the fund accounting method for recording revenues and expenditures. This methodology recognizes all receipts as revenue and all expenditures as expenses regardless of the typical accounting characterization. For example, loan proceeds and the repayment thereof would be treated as revenues and expenditures, respectively.

Comprehensive financial policies are necessary to safeguard the resources of any business but more so for public entities using taxpayer funds. The City has developed a set of policies designed to protect the financial resources of the City. Purchasing policies, including the credit cards issued to certain officers of the fire department, include approval levels at certain dollar levels, use of forms for various transactions, and reviews. The Unfunded Accrued Liabilities that have resulted from the reduced earnings in the CALPERS pension program have been identified and guidance for extinguishing the debt has been provided in Policy 212 dated July 1, 2018. In July 2018, the City updated its fund balance policy to comply with various Governmental Accounting Standards Board requirements.

The City utilizes numerous funds to record its transactions with the General Fund being utilized to record revenues not specifically identified or allocated to designated functions. La Verne uses over forty funds in its accounting system. This section will focus on the General Fund activities and those funds specific to the fire and EMS services.

For purposes of analysis and presentation of the finances of the City of La Verne and the La Verne Fire Department, Triton classifies revenues and expenses as either recurring or non-recurring, with those identified as recurring being items that are expected on an annual basis, and which can be reasonably quantifiable. Non-recurring items, conversely, are items not expected on an annual basis or are not easily quantifiable.

Examples of recurring revenues are property and sales taxes, various other taxes such as business, utility users, and franchise taxes, and licenses and permits. Non-recurring revenues include loan and lease proceeds, grant revenues, insurance proceeds, and investment earnings. Recurring expenses include salaries and benefits, office expenses, repairs and maintenance, fuel, utilities, and technology costs. Non-recurring expenditures include capital acquisitions, debt retirement, and transfers to other funds.

The onset in the fiscal year 2019–2020 of the COVID-19 pandemic and the related State and County stay at home orders and suspensions of non-essential businesses resulted in significant decreases in two of the City's key revenue sources, sales taxes and recreation programs. However, sales tax revenue in the fiscal year 2019–2020 fell only $31,000 short of the budgeted $4.5 million, while recreation program revenues declined by $400,000.[21] These negative impacts were offset by the City's implementation of budgetary adjustments.

The fiscal year 2020–2021 contemplated the use of $1.1 million of General Fund reserves to balance the budget but at the time of the initial FY 2021–2022 budget discussions, sales tax revenues were projected to be $650,000 higher than originally anticipated in the FY 2020–2021 budget.

Unlike a for-profit business, municipalities do not have the ability to immediately respond to changing economic conditions and, absent reductions in services, require reasonable reserves to continue to provide service levels. In July 2018, the City Council amended its fund balance reserve policy to increase the committed reserve level to 20%. Reserve balances are expected to be near 30% at the end of fiscal year 2020–2021. In March 2020, the residents of the City voted to implement Measure LV, a .75% sales tax increase that is anticipated to raise approximately $3 million per year and will be used to fund median salary adjustments, health insurance cost increases, and funding for other City projects.

Property tax revenues were relatively consistent for FY 16–17 through FY 17–18. In FY 18–19, the Motor Vehicle in-lieu tax was reclassified from other taxes to the property tax category. General Fund property tax revenues have experienced a 37% decrease from $7,196,812 in FY 15–16 to $4,527,889 in FY 19–20. However, total revenues from all sources of property taxes have increased from $7,832,817 to $12,597,335, including the previously mentioned reclassification. Non-recurring revenues include a $4,766,000 transfer to the General Fund to minimize the impact of the loss of revenue due to the COVID-19 pandemic.

General fund expenditures include costs related to various departments of the City, including general government, fire department, police department, community development, public works, and community services. Non-recurring expenditures are debt service and transfers to other funds.

After general fund expenses experienced a 9.0% increase between FY 16–17 and FY 18–19, the economic downturn resulting from the COVID-19 pandemic resulted in a spending reduction in response to the anticipated loss of sales tax and recreation-related revenues.

Figure 40: La Verne General Fund Historical Revenues & Expenditures

Revenue/Expenses	FY 16–17 Actual	FY 17–18 Actual	FY 18–19 Actual	FY 19–20 Actual	FY 20–21 Estimates
Property taxes	7,205,979	7,980,984	12,268,704	12,597,335	12,494,706
Sales Tax	4,215,232	4,409,369	4,610,252	4,480,421	4,396,000
Utility taxes	2,874,221	3,028,260	2,887,985	2,786,378	2,906,000
Other taxes	4,194,233	4,388,138	1,170,983	1,179,699	1,173,000
Licenses and permits	1,852,848	2,026,719	1,337,888	1,200,412	1,520,713
Intergovernmental	401,597	333,782	292,933	408,368	382,349
Charges for services	6,925,087	7,511,906	7,101,086	6,388,849	5,844,589
Fines and forfeitures	15,973	11,481	15,650	4,566	10,600
Recurring Revenue	27,685,170	29,690,639	29,685,481	29,046,028	28,727,957
Investment income	72,066	139,590	195,161	262,882	140,000
Unrealized gain on investments	—	(25,442)	150,665	59,893	—
Rents	444,058	490,104	268,363	246,943	231,371
Sales of assets	8,938	22,781	173,442	230,025	—
Other revenues	85,648	153,529	809,374	42,010	107,249
Transfers in	3,021,212	3,271,220	8,881,832	4,766,736	5,379,100
Non-Recurring Revenue	3,631,922	4,051,782	10,478,837	5,608,489	5,857,720
Total Revenue:	$31,317,092	$33,742,421	$40,164,318	$34,654,517	$34,585,677
General government	2,657,938	2,545,181	2,872,581	2,817,780	2,892,785
Fire department	8,490,541	9,246,429	9,610,355	8,471,934	8,976,022
Police department	10,612,823	10,816,336	11,823,297	11,057,609	12,583,316
Community development	2,078,998	1,748,040	2,055,162	1,441,653	1,433,867
Public works	6,526,831	6,763,314	6,783,507	6,326,070	6,809,168
Community services	1,534,043	1,590,813	1,630,562	1,432,668	1,494,485
Total Recurring Expenses:	31,901,174	32,710,113	34,775,464	31,574,714	34,189,643
Transfers out	2,647,654	245,950	4,291,324	243,421	376,000
Debt service	—	—	—	3,100,239	—
Total Non-Recurring Expenses:	2,647,654	245,950	4,291,324	3,343,660	376,000
Total Expenses:	$34,548,828	$32,956,063	$39,066,788	$34,891,374	$34,565,643
Increase (Decrease) in Fund Balance:	(3,231,736)	786,358	1,097,530	(236,857)	20,034
Beginning Fund Balance	12,328,050	9,096,314	9,882,672	10,980,202	10,743,345
Ending Fund Balance	$9,096,314	$9,882,672	$10,980,202	$10,743,345	$10,763,379

Historical Financial Information

The fire department operates as a component of the General Fund. There are several divisions in the fire department: Administration, Emergency Services, Fire Apprentices (Volunteers), Training, Facility Maintenance, Fire Prevention, Emergency Preparedness, Paramedic Services, and Vehicle Maintenance. Additionally, the Paramedic Service Fund (104) and Fire Equipment Replacement Fund (250) are specifically identified revenue funds with the fire department.

Figure 41: Operating Expenses by LVFD Division

Expenses	FY 16–17 Actual	FY 17–18 Actual	FY 18–19 Actual	FY 19–20 Actual	FY 20–21 Actual
Administration	728,928	798,114	1,407,049	639,359	551,368
Emergency Services	3,338,304	4,063,091	3,969,202	3,364,524	5,102,611
Fire Apprentices	107,623	126,656	74,477	32,033	83,770
Training	602,840	704,264	623,614	449,522	568,804
Facility Maintenance	263,357	283,601	279,124	254,764	318,482
Fire Prevention	310,360	329,850	329,200	463,679	353,341
Emergency Preparedness	34,941	43,307	33,230	24,782	20,621
Paramedic Services	2,546,466	2,335,543	2,502,257	2,683,569	3,539,496
Vehicle Maintenance	554,463	556,871	576,481	559,702	687,565
Total	8,487,282	9,241,297	9,794,634	8,471,934	11,226,058

The fire department General Fund expenses are offset by revenues generated from the Paramedic Tax Fund. This fee was implemented by ordinance and, in FY 17–18 and thereafter, has been accounted for separately in the General Fund. Historically, revenues generated by the Paramedic Fund have been approximately $850,000 annually. Additional revenues attributable to the fire department include various inspection fees. The City has also received minimal funding through the GEMT program.

Figure 42: Historical Revenues Attributable to the Fire Department

Revenues	FY 16–17 Actual	FY 17–18 Actual	FY 18–19 Actual	FY 19–20 Actual	FY 20–21 Actual
Paramedic Service Fees	671,644	793,929	781,331	817,069	300,000
Third Party OES	702,696	1,084,905	902,944	503,375	1,259,112
Fire Revenue Inspections	44,565	22,861	44,985	15,284	14,000
Business Fire Inspection Fee	—	—	—	16,385	15,000
Fire Response Fee	11,964	6,150	2,000	—	—
Paramedic Service Fund (Measure GG)	—	819,510	829,651	844,159	880,000
Fire Department	1,430,869	2,727,355	2,560,911	2,196,272	2,468,112

The City Council of La Verne has adopted Resolution 20-61, updating prior legislation and authorizing a special tax to pay for police protection services, fire protection services, sewer pump maintenance, street maintenance, and costs associated with administering the programs in Operations and Maintenance Community Facilities District No. 90-1.[22] In FY 20–21, the assessments were $1,489,887. Council also adopted Resolution 20-60 for Community Facilities District No. 11-1 for the financing of fire suppression and prevention costs and the administration of the District.[23] In FY 20–21, this special assessment was estimated to create $163,345 in revenue.

The City has established an apparatus and equipment replacement policy and has been funding the replacement cost on an annual basis.

Billing and collection services for the EMS program are performed by Wittman Enterprises, a third-party contractor with significant experience in the industry. The following figure indicates ambulance gross billings and collections as provided by the Department.

Figure 43: Ambulance Gross Billings & Collections

Revenues	FY 16–17 Actual	FY 17–18 Actual	FY 18–19 Actual	FY 19–20 Actual	FY 20–21 Actual
Ambulance Gross Billings	2,620,561	2,923,128	2,973,433	3,200,321	1,352,383
Cash Payments Received	773,284	777,726	800,211	823,851	431,857
Percentage of Billings Collected	29.5%	26.6%	26.9%	25.7%	31.9%
Number of Billable Transports	1,529	1,549	1,481	1,606	1,835
Average Receipts per Transport	$506	$502	$540	$513	$235

Financial Projections

The City of La Verne and the La Verne Firefighters' Association entered a Memorandum of Understanding (MOU) effective June 30, 2020, and expiring June 30, 2021. Measure LV, a voter-approved sales tax initiative adopted in March 2020, is anticipated to provide approximately $3,465,000 in total revenue, a portion of which may be used for the increased salaries and benefits negotiated under the Department's collective bargaining agreements with its labor force. As of September 7, 2021, the City and the La Verne Firefighter Association (LVFA) were unable to reach an agreement on a successor Memorandum of Understanding (MOU) for the June 30, 2021-expired MOU between the two parties. This resulted in the City following impasse procedures in accordance with the Meyers-Milias-Brown Act (MMBA) and its Employer-Employee Relations Resolution (EERR). The City presented its Last, Best, and Final Offer (LBFO) for a twelve-month extension of the MOU but the offer was not accepted. Under the terms of the MMBA and the EERR, the mediation process is usually initiated; however, the LVFA was not agreeable to the process and requested the City Council consider the terms and conditions contained in the City's LBFO. AT the September 7 City Council meeting, Resolution No. 21-66 was adopted, which provides for a MOU between the City and the LVFA effective through June 30, 2022.

The Department's FY 21–22 adopted budget includes significant overtime costs due to unfilled firefighter positions and long-term injuries. The authorized positions will remain at 34 sworn and two non-sworn positions. After the adoption of the FY 21–22 budget and the start of the fiscal year, a new Fire Chief was appointed. Additionally, as a result of a presentation to the City Council by the newly appointed Fire Chief, structural changes in the Department's deployment model have occurred. These changes include employing civilian single role ambulance operator (A/O) positions, reclassifying three firefighter positions to Captain positions, and reclassifying three firefighter positions to engineer positions. The additional hours of availability of medic units are projected to produce additional revenue from ambulance billings. The following figure adjusts the original FY 21–22 adopted budget.

Figure 44: Adjustments to the Adopted (FY 21–22 Budget)

Expenses	FY 21–22 Adopted	Adjustments	FY 21–22 Adjusted
Administration	520,565	—	520,565
Emergency Services	7,191,457	148,020	7,339,477
Fire Apprentices	45,250	—	45,250
Training	160,940	—	160,940
Facility Maintenance	33,700	—	33,700
Fire Prevention	281,358	—	281,358
Emergency Preparedness	37,387	—	37,387
Paramedic Services	1,728,942	386,029	2,114,971
Vehicle Maintenance	331,403	—	331,403
Fire Department	10,331,002	534,049	10,865,051
Less Third-Party Personnel Costs	(602,185)	—	(602,185)
Net Costs	9,728,817	534,049	10,262,866
Insurance Billing	780,000	298,500	1,078,500
Measure GG	885,000	—	885,000
Third Party OES	510,000	—	510,000
Other	92,000	—	92,000
General Fund Support	7,461,817	235,549	7,697,366
Total Funding	9,728,817	534,049	10,262,866

The financial projections will use the amended FY 2022 Budget as the starting point. As the budget amendment provides for the impact of only six months, the remaining half of the affected lines must be added to the amended FY 2022 Budget to calculate the escalations for the FY 2023 projections. Salaries and benefits are projected to escalate 3% annually between FY 2023 and FY 2026. Other operating costs are projected to increase 2% annually. The following figure project the expenditures and offsetting revenues for the La Verne Fire Department from the Amended FY 2022 through FY 2026.

Figure 45: Projected Expenses & Offsetting Revenue (Budgeted FY 2022–FY 2026)

Revenues	FY 21–22 Amended	FY 22–23	FY 23–24	FY 24–25	FY 25–26
Administration	520,565	534,344	548,501	563,044	577,985
Emergency Services	7,329,988	7,683,690	7,905,137	8,133,048	8,367,610
Fire Apprentices	45,250	46,155	47,078	48,020	48,980
Training	160,940	165,135	169,442	173,866	178,410
Facility Maintenance	33,700	34,374	35,061	35,763	36,478
Fire Prevention	281,358	289,799	298,493	307,447	316,671
Emergency Preparedness	37,387	38,509	39,664	40,854	42,079
Paramedic Services	2,124,461	2,592,056	2,666,225	2,742,548	2,821,087
Vehicle Maintenance	331,403	338,031	344,792	351,688	358,721
Fire Department	10,865,051	11,722,092	12,054,394	12,396,277	12,748,022
Less Third-Party Personnel Costs	(602,185)	(800,000)	(824,000)	(848,720)	(874,181)
Net Costs	10,262,866	10,922,092	11,230,394	11,547,557	11,873,841
Insurance Billing	1,078,500	1,377,000	1,404,540	1,432,631	1,461,283
Measure GG	885,000	902,700	920,754	939,169	957,952
Third Party OES	510,000	680,000	700,400	721,412	743,054
Other	80,000	80,000	80,000	80,000	80,000
Total Offsetting Revenue	2,553,500	3,039,700	3,105,694	3,173,212	3,242,289
General Fund Support	7,697,366	7,882,392	8,124,700	8,374,345	8,631,552

Capital Facilities & Equipment

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

Fire Station Features

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, or survival from sudden cardiac arrest. Fire stations also need to be designed to adequately house equipment and apparatus and meet the needs of the organization and its personnel.

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

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

In gathering information from the La Verne Fire Department, Triton asked the department to rate the condition of its fire stations using the criteria from the next figure. The results will be seen in subsequently following figures.

Figure 46: Criteria Utilized to Determine Fire Station Condition

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

Fire Stations

The following figures list the various features of the La Verne fire stations.

Figure 47: LVFD Station #1

Address/Physical Location:	2061 Third Street, La Verne, CA 91750
	General Description: This facility serves as the department's headquarters. However, the department's space needs have exceeded the current area assigned to the department resulting in a need to relocate and construct a new facility. Immediate needs include an upgrade to the heating, ventilation, and air conditioning systems; update all door seals that lead to the apparatus bay; provide storage for firefighter protective gear away from toxins such as diesel exhaust, and the Plymovent system needs to be redesigned/extended to accommodate drive-through bays.

Structure						
Date of Original Construction	1980					
Seismic Protection	Compliant at the time of construction					
Auxiliary Power	Full site					
General Condition	Fair					
Number of Apparatus Bays	Drive-through Bays	3	Back-in Bays	0		
ADA Compliant	Yes/limited					
Total Square Footage	8,500					
Facilities Available						
Sleeping Quarters	2	Bedrooms	7	Beds	0	Dorm Beds
Maximum Staffing Capability	7					
Exercise/Workout Facilities	1					
Kitchen Facilities	1					
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	No					
Apparatus Exhaust System	Ineffective due to improper design					

Figure 48: LVFD Station #2

Address/Physical Location:	4785 Wheeler Avenue, La Verne, CA 91750

General Description:
The facility has gone through remodels since originally being built and has the ability to accommodate separate genders The roof has apparent leaks, which have resulted in damage to ceiling tiles. All door seals that lead to the apparatus bay need attention; the Plymovent system needs to be redesigned/extended to accommodate drive-through bays, and attention should be given to maintaining the door to the firefighter protective gear closed to prohibit intrusion of toxic gases such as diesel exhaust.

Structure						
Date of Original Construction	1975					
Seismic Protection	No					
Auxiliary Power	Critical loads only					
General Condition	Fair					
Number of Apparatus Bays	Drive-through Bays	2	Back-in Bays	0		
ADA Compliant	No					
Total Square Footage	4,500					
Facilities Available						
Sleeping Quarters	4	Bedrooms	4	Beds	0	Dorm Beds
Maximum Staffing Capability	4					
Exercise/Workout Facilities	Located in apparatus bay					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	2					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Station Sprinklered	No					
Smoke Detection	Local alarm only					
Decontamination/Bio. Disposal	No					
Security System	No					
Apparatus Exhaust System	Ineffective due to improper design					

Figure 49: LVFD Station #3

Address/Physical Location:	5100 Esperanza Drive, La Verne, CA 91750

General Description:
This station is fairly new and, up until recently, has never been fully staffed. There is an obvious sign of a roof leak and possible mold in some of the ceiling tiles. The station can accommodate separate genders . The Plymovent system needs to be redesigned/extended to accommodate drive-through bays.

Structure						
Date of Original Construction	2007					
Seismic Protection	Yes					
Auxiliary Power	Critical loads only					
General Condition	Fair					
Number of Apparatus Bays	Drive-through Bays	2	Back-in Bays	0		
ADA Compliant	Yes					
Total Square Footage	4,400					
Facilities Available						
Sleeping Quarters	4	Bedrooms	4	Beds	0	Dorm Beds
Maximum Staffing Capability	4					
Exercise/Workout Facilities	Small gym					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Bathroom/Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Station Sprinklered	Yes					
Smoke Detection	Yes					
Decontamination/Bio. Disposal	No					
Security System	No					
Apparatus Exhaust System	Ineffective due to improper design					

Summary of the La Verne Fire Stations

The next figure summarizes the three La Verne fire stations and their basic features.

Figure 50: Summary of the La Verne Fire Station Features (2021)

Station	Square Footage	Apparatus Bays	Maximum Staffing	General Condition	Station Age
Station #1	8,500	3	7	Fair	41 years
Station #2	4,500	2	4	Fair	46 years
Station #3	4,400	2	4	Fair	14 years
Totals:	17,400	7	15		

As shown in the preceding figure, LVFD can staff a maximum of 15 personnel across three fire stations and house a total of seven apparatus—although one bay at Station #2 is occupied with exercise equipment. Station #1 and Station #2 are approaching the typical lifespan of 50 years for a fire station.

Apparatus & Vehicles

Fire apparatus, ambulances, and other emergency response vehicles must be sufficiently reliable to transport firefighters and equipment rapidly and safely to an incident scene. In addition, such vehicles must be properly equipped and function appropriately to ensure that the delivery of emergency services is not compromised.

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

Figure 51: Criteria Used to Determine Apparatus & Vehicle Condition

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

The La Verne Fire Department maintains two frontline Type 1 structural engines, one Type 3, and a 100-foot quint with a tiller. In addition, LVFD maintains two relatively new Type I ambulances, keeping one in reserve. The next figure shows LVFD's frontline inventory.

Figure 52: LVFD Frontline Apparatus & Ambulance Inventory (2021)

Unit	Type	Manufacturer	Year	Condition	Features
Engine 761	Type 1	Pierce	2007	Fair	1500 gpm/500 gal.
Engine 762	Type 1	Pierce	2020	Good	1500 gpm/500 gal.
Engine 7462	Type 3	BME	2021	Excellent	500 gpm/500 gal.
Quint 762	Aerial	Pierce	2014	Good	200 gpm/300 gal./100 ft.
RA 761	Type I	Braun NW	2018	Good	ALS equipped
RA 763	Type I	Braun NW	2019	Good	ALS equipped

In addition to the vehicles listed in the preceding figure, LVFD maintains two Type 1 engines in reserve, both of which are listed in "Fair" condition. A Type I Road Rescue ambulance is also in reserve and listed in "Poor" condition.

The next figure lists LVFD's frontline command, utility, and staff vehicles.

Figure 53: LVFD Frontline Command & Other Vehicles

Unit	Type	Manufacturer	Year	Condition
Battalion 761	Command	Chevrolet Suburban	2009	Fair
Utility 761	Utility	Ford F-150	2014	Fair
Utility 762	Utility	Ford F-250	2004	Poor
Admin 765	Staff Car	Chevrolet Tahoe	2009	Fair
Prevention 761	Staff Car	Ford Escape	2014	Good

As shown in the preceding figure, three of the vehicles listed in the inventory have a "Fair" condition rating, one is "Poor," and one is "Good."

Apparatus Maintenance & Replacement Planning

No piece of mechanical equipment or vehicle can be expected to last indefinitely. As apparatus and vehicles 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 and ambulances, 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. However, 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

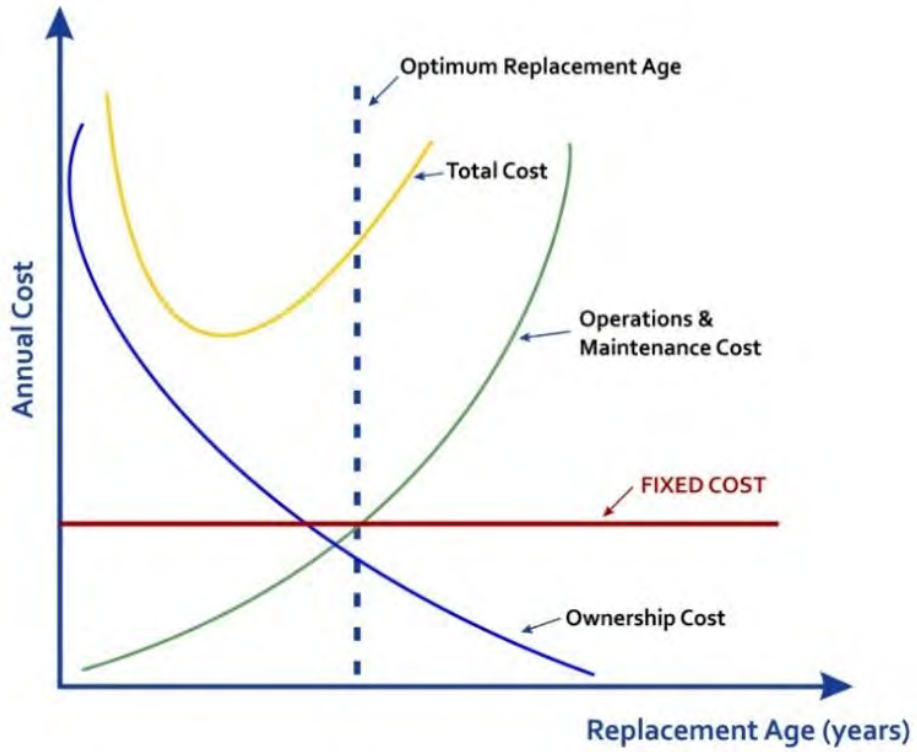
A conceptual model utilized by some fire departments is the *Economic Theory of Vehicle Replacement*. As a vehicle ages, the theory states that the cost of capital diminishes, and its operating costs increase. The combination of these two costs produces a total cost curve. The model suggests that the optimal time to replace any apparatus is when the operating costs begin 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. However, if an agency does not routinely replace equipment promptly, the overall reduction in replacement spending can quickly increase maintenance and repair expenditures. Therefore, 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 next figure is a representation of the *Economic Theory of Vehicle Replacement*.

Figure 54: Economic Theory of Vehicle Replacement



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

Future Apparatus Serviceability

An important consideration for fire departments is the cost associated with the future replacement of major equipment. Apparatus service life can readily be predicted based on factors that include 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 that apparatus 25 years or older 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. For example, a two-year-old engine with 250,000 miles may need replacement sooner than a 10-year-old one with 2,500 miles.

Triton uses a calculation tool to determine replacement costs of apparatus. Utilizing the original costs of the vehicles, the following figure applies a 15-year life expectancy for each engine, 20 years for the quint, and 10 years for the ambulances. It appears the City does not have a formal replacement policy.

Figure 55: LVFD Estimated Costs & Year to Replace Frontline Apparatus (2021)

Apparatus	Replacement Cost[A]	Current Cash Requirements	Annual Cash Requirements	Replacement Year[B]
Engine 761	$472,500	$441,000	$31,500	2022
Engine 762	$1,583,945	$105,596	$105,596	2035
Engine 7462	$831,571	$0	$55,438	2036
Quint 762	$2,451,344	$857,970	$122,567	2034
RA 761	$256,092	$76,828	$25,609	2028
RA 763	$295,491	$59,098	$29,549	2029
Totals:	$5,890,943	$1,540,492	$370,259	

[A]Estimated using a 5% inflation rate. [B]Based on typical estimated life expectancy.

[C]Possibly earlier due to mechanical issues.

It must be emphasized that the dollar amounts in the preceding figure are intended as *estimates* and only for discussion purposes. The exact costs to replace vehicles and apparatus will depend on the type and configuration of each.

Capital Medical Equipment Inventory

LVFD maintains six ZOLL® X Series Monitor/Defibrillators on its frontline apparatus and ambulances and two ZOLL® AED Pro automated external defibrillators. The department maintains three Stryker Power-PRO XT powered ambulance cots and two Stryker Stair Chairs for use on its ambulances.

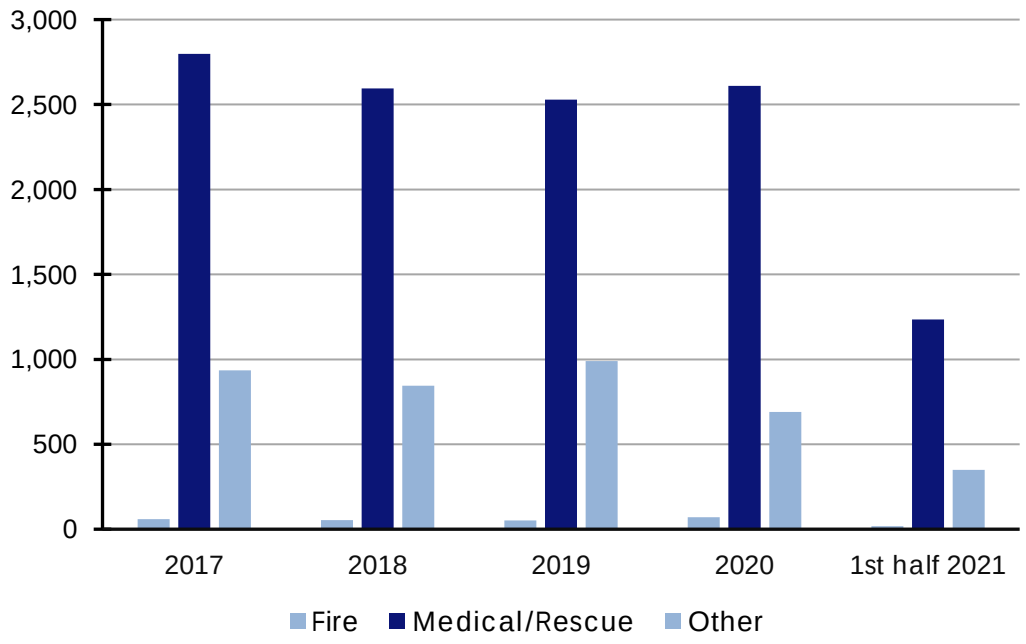
Historical System Performance

In analyzing the service delivery and performance of LVFD, incident and unit response data were requested by the study team for the calendar years of 2018 through June 30, 2021. The department provided data from its records management system (RMS) and dispatch center. The RMS dated from 2017. Both data sets were utilized in this section's assembly of analysis. Note that the department recently changed vendors for RMS and dispatch software. This required comingling of data from different outputs.[24]

Service Demand

The following figure shows the response workload by general type for the last four and a half years. The total response workload has decreased by 11% over the four full-year periods. Interestingly, mainly due to fire call types that rose 20.3% (from a very small base) over the period, EMS still shared the vast majority of the total volume; however, it decreased by 6.7% and was slowing even before the pandemic effects of less traffic and less personal interaction. All other types of calls had decreased by 26%.

Figure 56: LVFD Response Workload History



LVFD responded to over 15,000 incidents over the four-and-a-half-year period. However, from the previous figure, it can be seen that total responses have been decreasing. The following figure shows incidents by type. Emergency medical responses and motor vehicle collisions were the most common incident types, comprising 74% of the total responses.

Figure 57: Responses by Incident Type

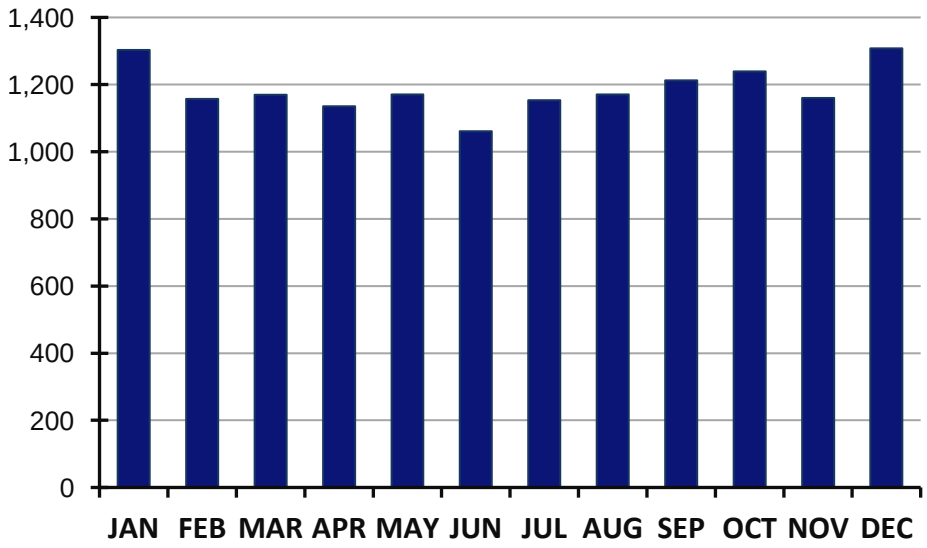
Incident Type Description	Percent of Total*
Emergency Medical Services	74%
Other Incident Types	18%
Alarms	4%
Hazardous Incident	2%
Structure Fires	< 1%
Other Fires	< 1%
Vehicle Fires	< 1%
Wildland Fires	< 1%
Rescues	< 1%

*Percentages rounded to the nearest integer.

Temporal Analysis

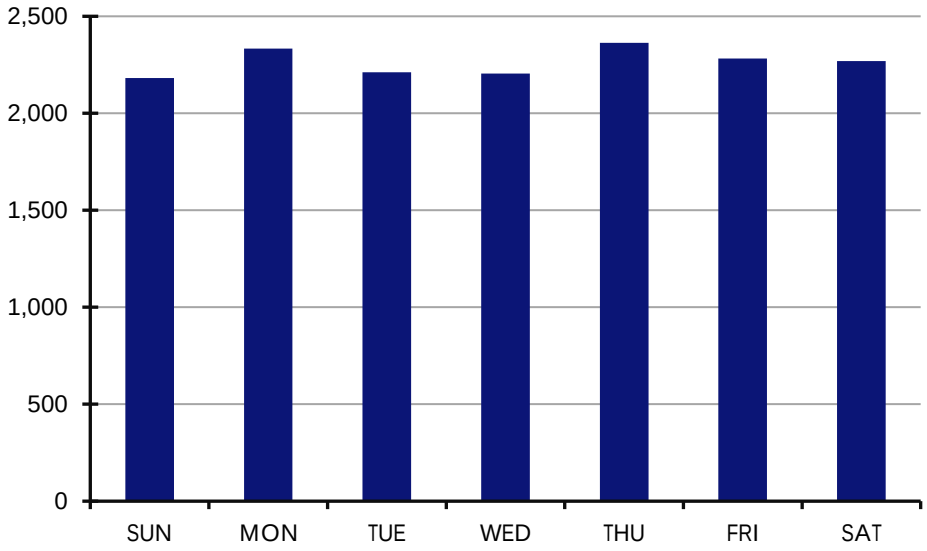
This analysis shows how responses change in volume over various measures of time. For example, the following figure shows the change in volume over the months during the study period, indicating seasonality in the response pattern.

Figure 58: Monthly Response Workload



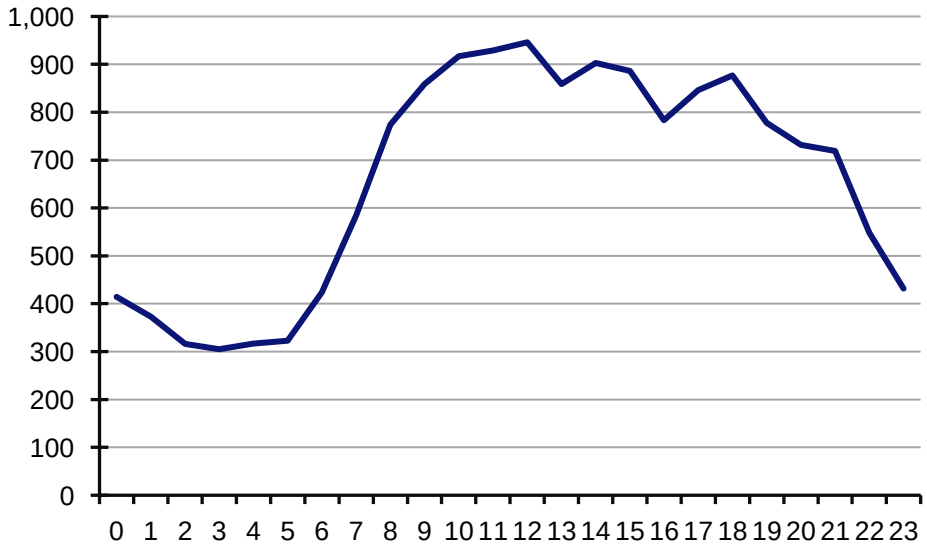
The busiest months for LVFD have been December through January, after which total monthly volume generally declines until June, then rises. Next, response workload is shown by the day of the week. Mondays and Thursdays tend to have the most responses.

Figure 59: Daily Response Workload



Response workload by the hour typically shows fire department activity higher during daytime hours, as in the case of LVFD. Response workload correlates with the time of day in which people are most active. In La Verne, the department's activity begins to increase from 4:00 a.m. to 5:00 a.m. until it reaches its first peak at noon. This level gradually decreases until the 6:00 p.m. hour, when it begins to decrease more rapidly.

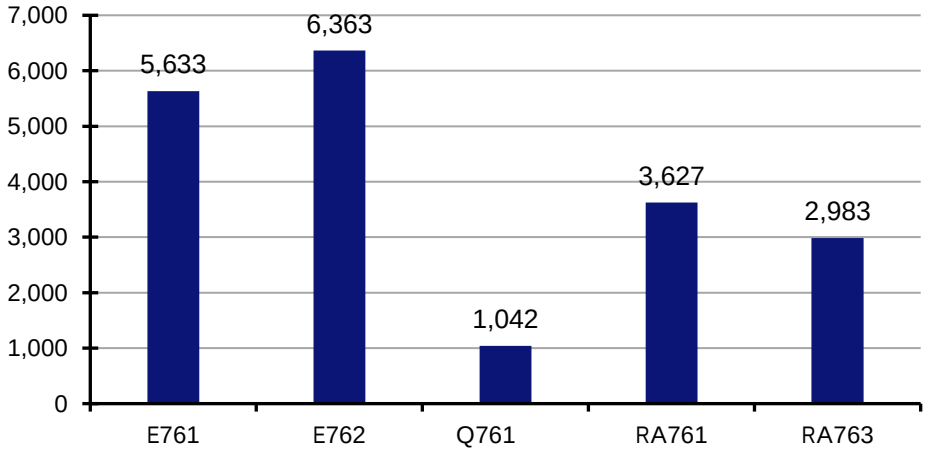
Figure 60: Hourly Response Workload



Response Unit Workload

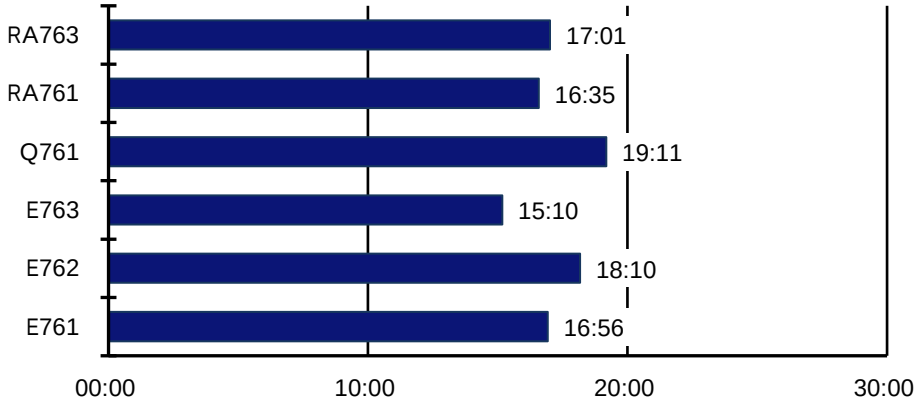
The response workload for each LVFD apparatus is shown in the following figure. Many incidents like structure fires and severe motor vehicle collisions require more than one unit to respond. Engine 762 is the busiest unit. Of note is that Q761 is crossed-staffed by the crew assigned to Engine 761 as needed.

Figure 61: Response Unit Workload



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

Figure 62: Average Time Committed to a Scene by Unit

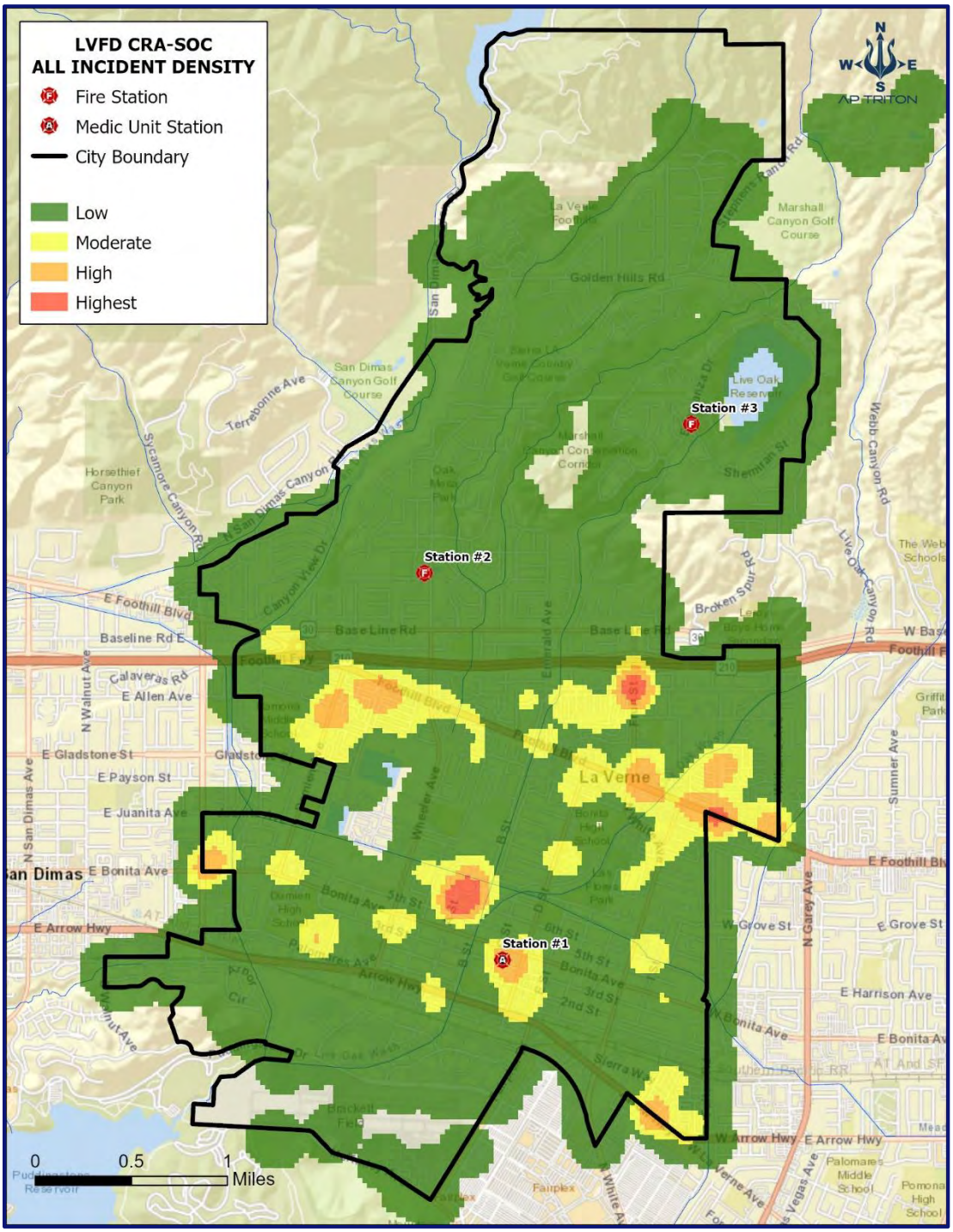


Utility units spend the most amount of time on the scene as expected. The remaining units that have data to analyze spend a similar amount of time on the scene.

Spatial Analysis

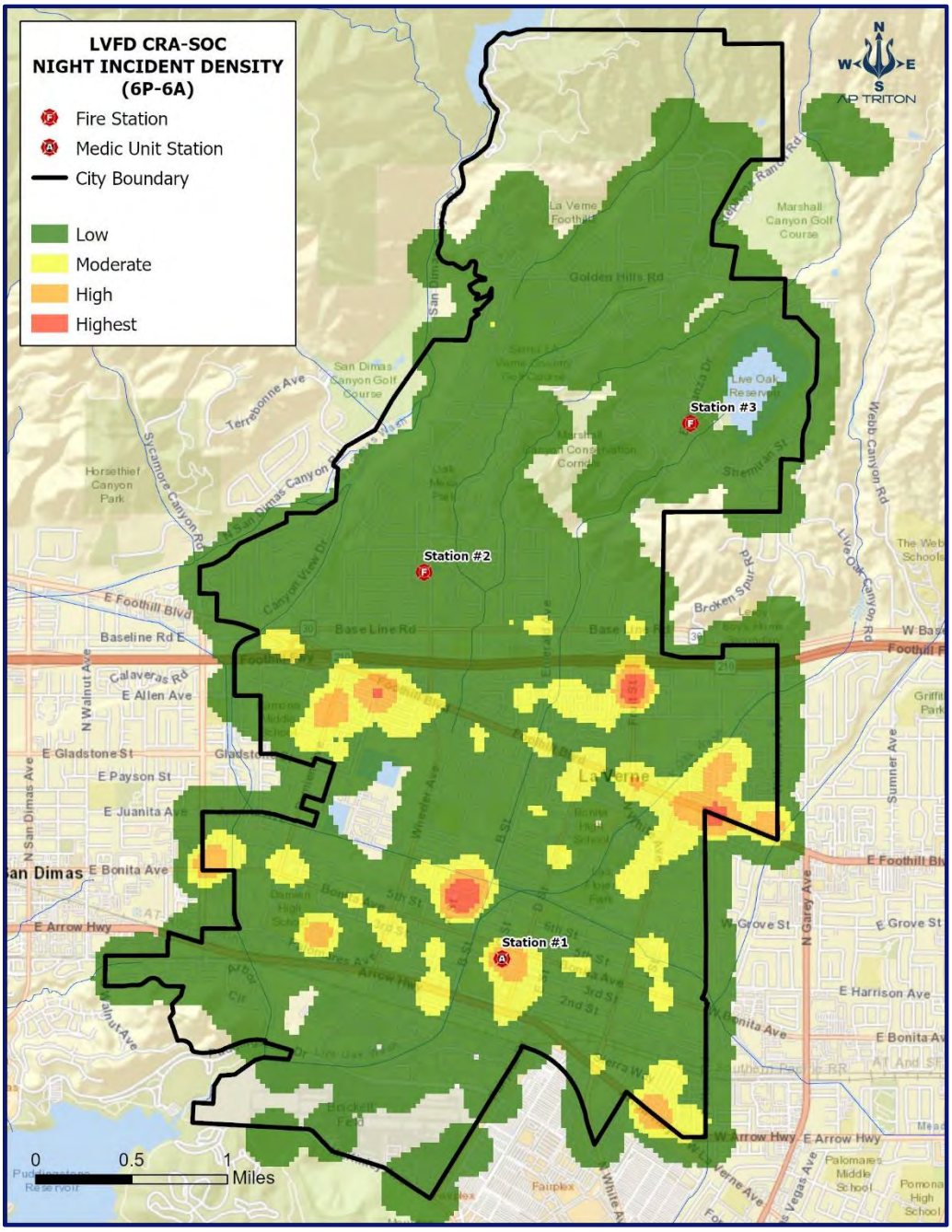
Triton also examined response workload geographically. The distribution of heavier service demand can be evaluated against the location of the fire station. The following figure shows the density of response workload during the study period.

Figure 63: Incident Density—All Call Types



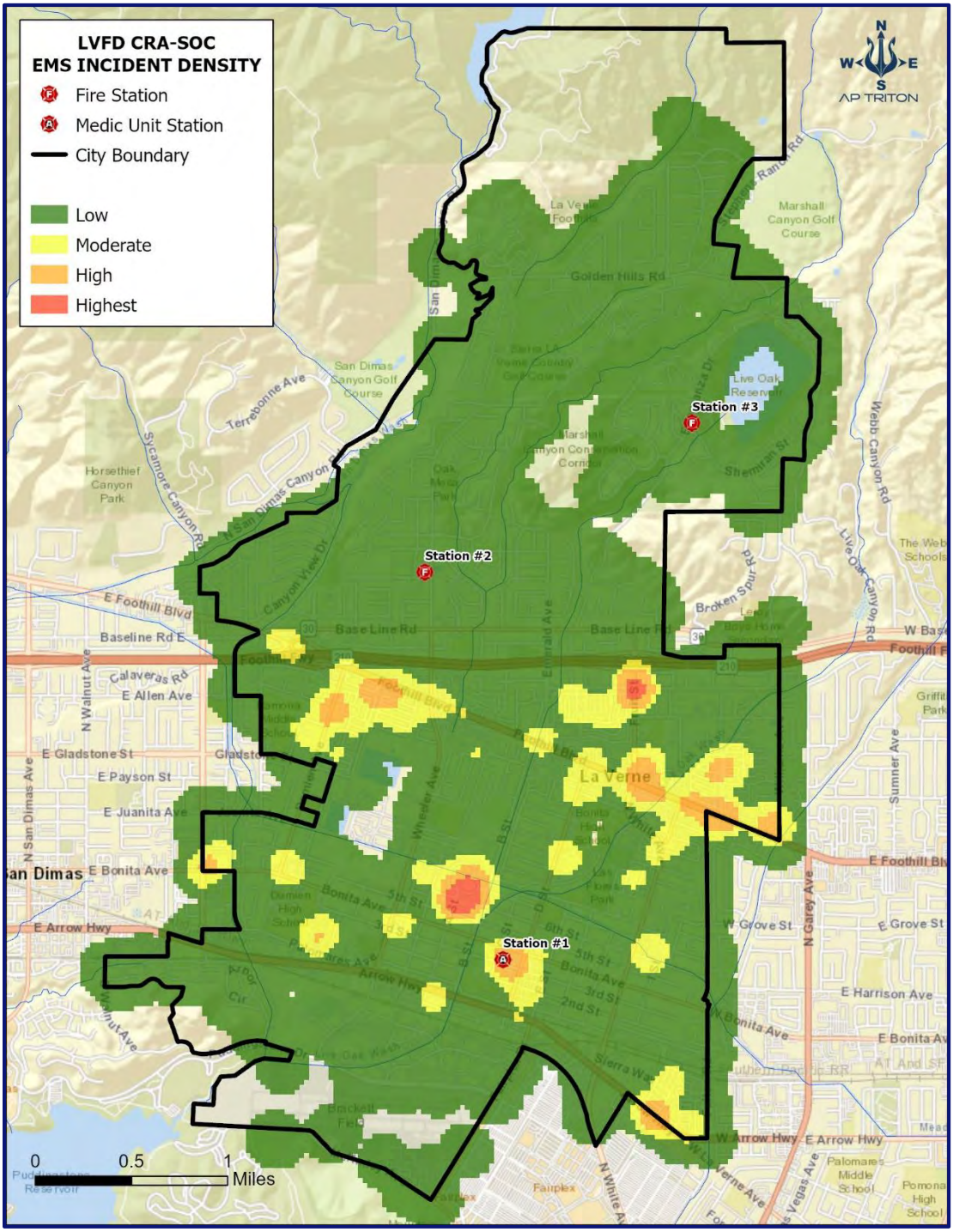
The previous figure was reflective of the predominance of emergency medical incidents within the dataset. Note that most demand is located near an assisted living facility and Foothills Boulevard. There is a moderate level located near Station 1 as well. During the day, the pattern closely mimics the overall demand. As noted previously, the workload during the evening is lower, but the heavier demand density intensifies in the neighborhoods previously mentioned.

Figure 64: Incident Density—All Calls at Night



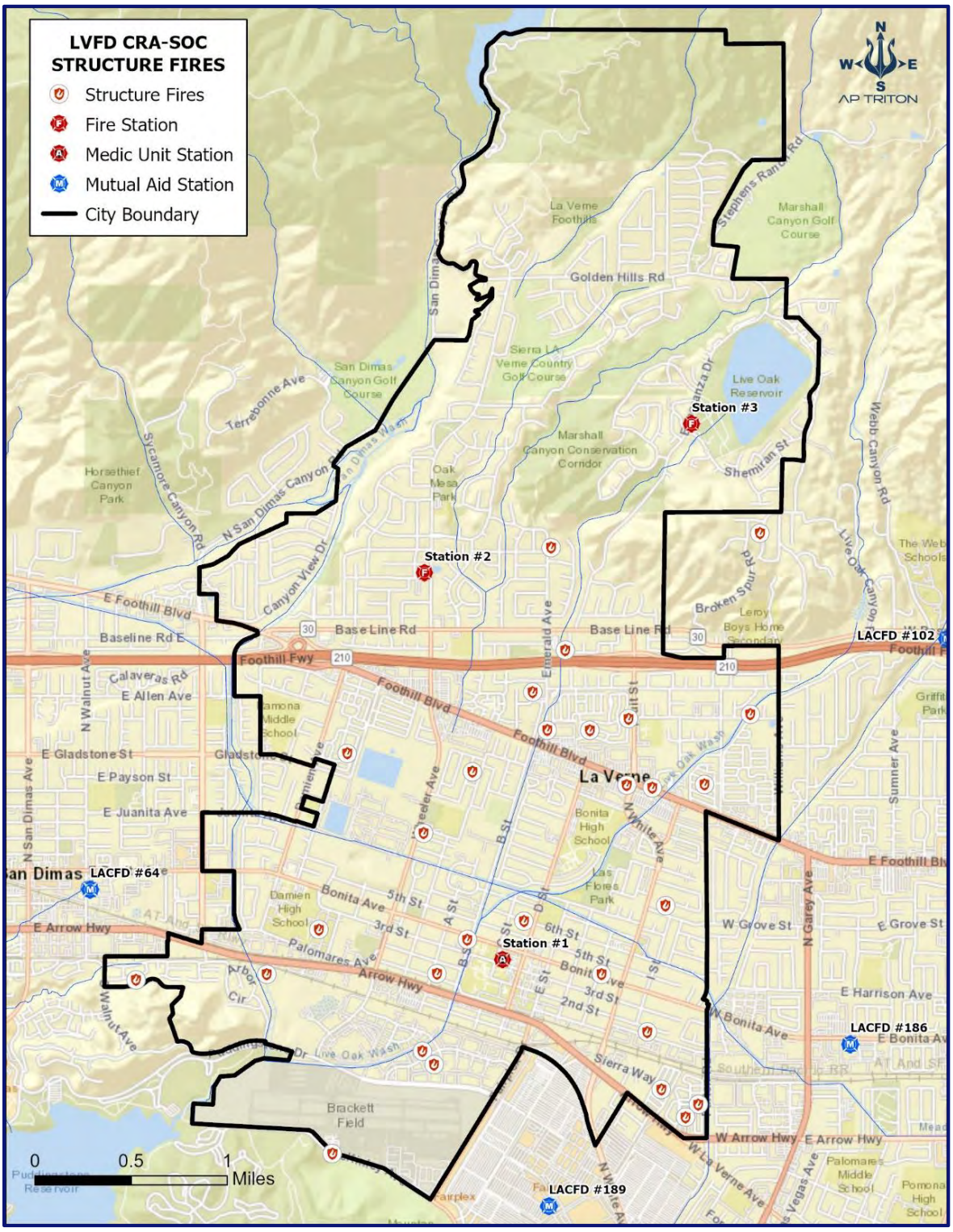
Because of the predominance of EMS-type incidents in the workload data, this map mimics the map of overall demand density.

Figure 65: EMS Demand Density



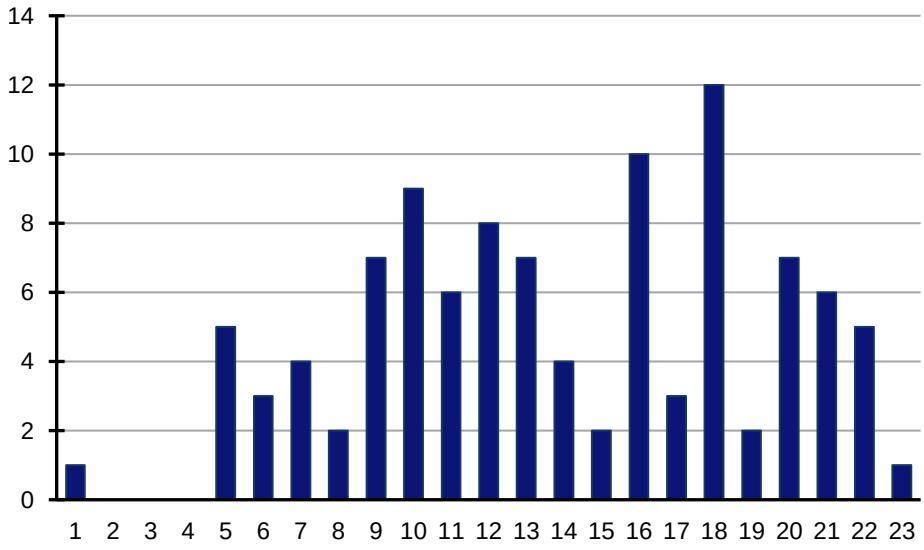
The following figure shows the structure fire locations within the City.

Figure 66: Structure Fire Incidents



The previous figure reveals that most of the structure fires occurred south of the 210 Freeway during the afternoon and early evening hours, as shown in the following figure.

Figure 67: Structure Fires by Hour of Day



The following figure details the La Verne addresses to which the department responded to calls most frequently.

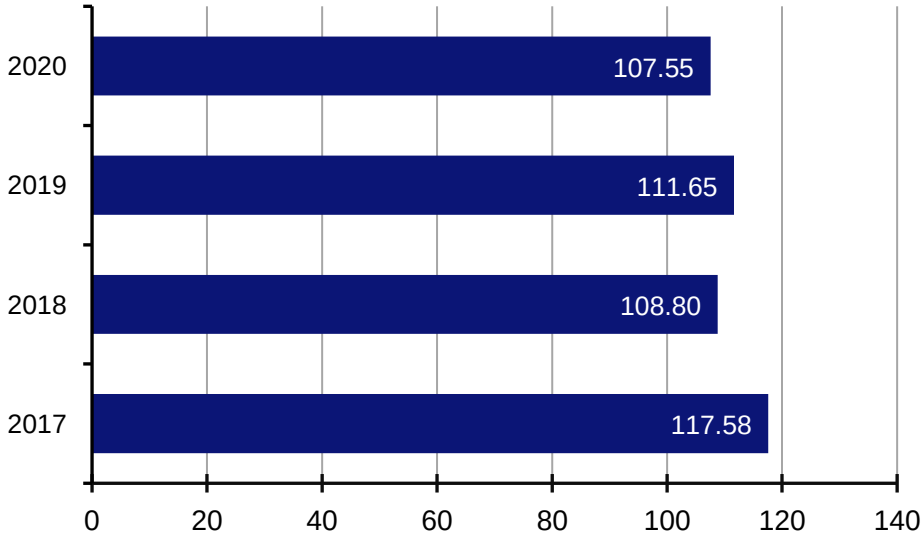
Figure 68: Frequent Response Addresses

Location	Facility	No. of Calls
2600 A Street	Woods Memorial	312
2061 Third Street	La Verne Police Department	243
2701 Mountain View Drive	Birch/Maple Court Apartments	159
3102 D Street	Bonita High School	136
1350 Third Street	Joan Macy School	125
23xx Foothill Boulevard	Private	98
2555 Sixth Street	La Verne Manor	79
40xx Fruit Street	Private	76
IS210 Fruit Street	Interstate Highway	68

Projected Service Demand

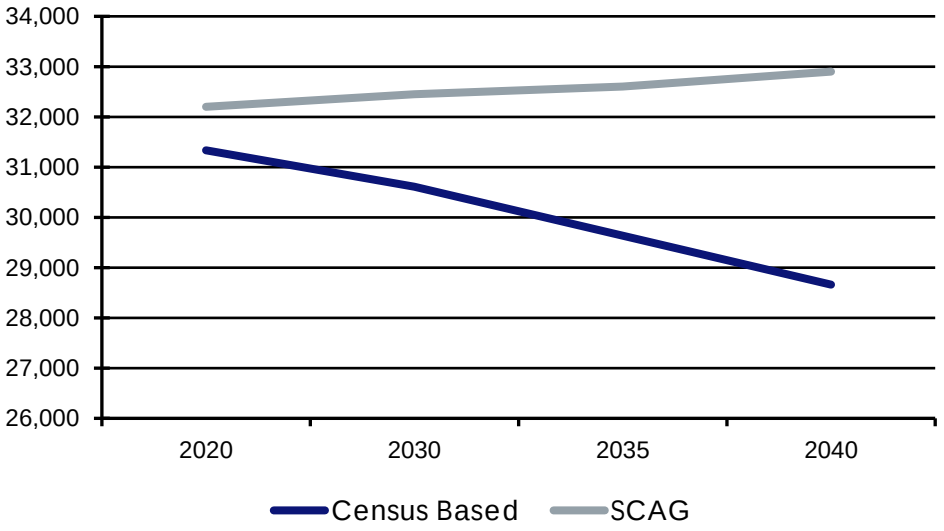
Over the last three years, the utilization rate of the fire department per 1,000 population generally had decreased, as shown in the following figure. The rate during 2019 increased, but in 2020, the rate was lower at 107.55 incidents per 1,000 population. It is projected that utilization will stabilize at 111 per 1,000 population through 2040.

Figure 69: Utilization Rate



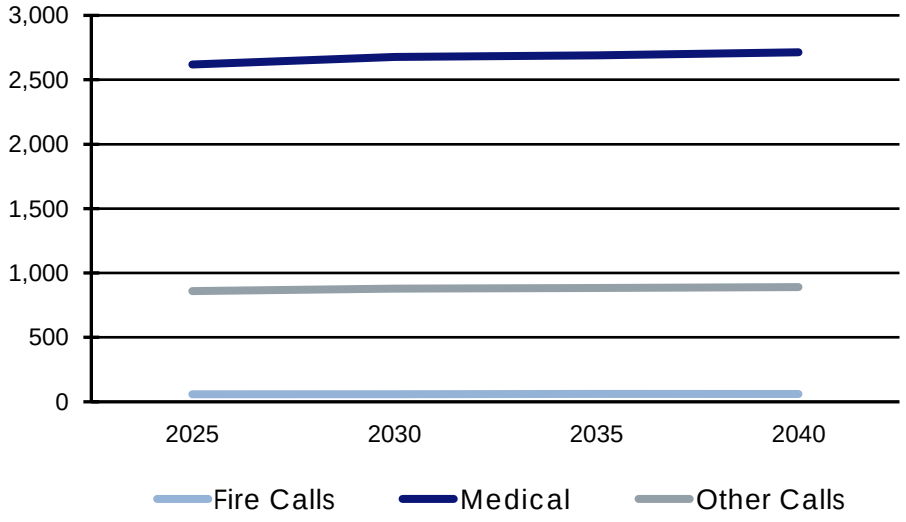
A forecast for a future population can be calculated using the growth rate data based on the U.S. Census Bureau statistics. Unfortunately, this forecast is opposite to the population projections provided for La Verne by the Southern California Association of Governments (SCAG) report.[25] Census-based forecast calculated a population of 27,685 in 2040, while the SCAG projected 32,900 residents. The impact resulting from development and new residents post-Gold line commuter rail in operation is expected to increase the population. At this point, it is speculative to estimate the amount of increase that may occur and impact the fire department workload.

Figure 70: Population Projections



The following figure shows that using the locally forecasted population growth will potentially increase LVFD's workload. This is due to the Gold Line project that will bring commercial and high density residential to the area, some of which is low income designated. However, response workload is expected to remain stable, driven primarily by requests for emergency medical services.

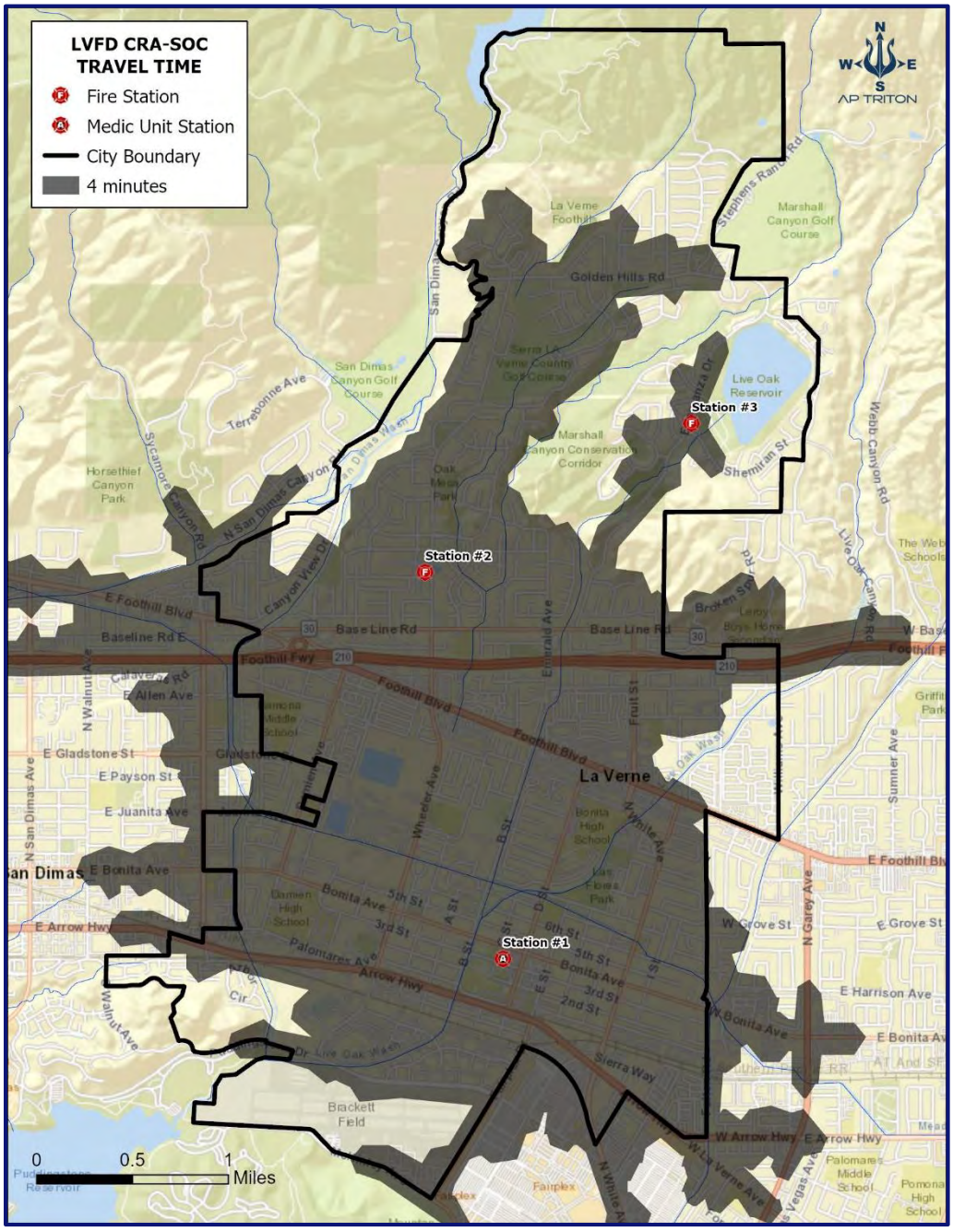
Figure 71: Workload Projections



Resource Distribution

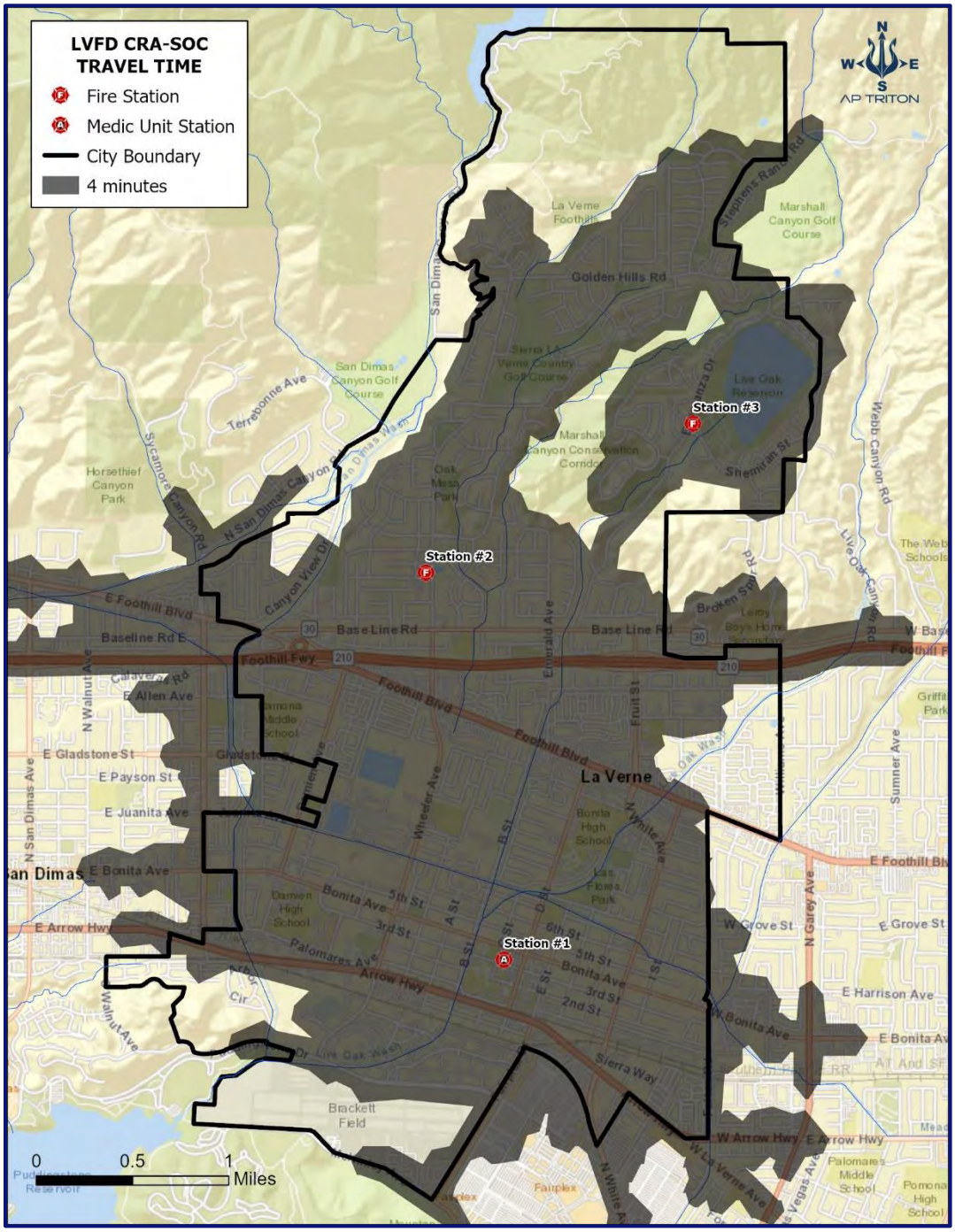
LVFD operates out of three fire stations; Station 3 is unstaffed. The following figure illustrates the street sections that can be reached from each station within 4 minutes or less of travel time. The data are based on posted road speeds modified to account for turning, stops, and acceleration. They do not consider congestion, construction, weather, darkness, and other non-controllable factors.

Figure 72: Current Travel Time



The overall coverage of fire incident demand is 93.3%, presuming engines are available and responding from their assigned stations. The coverage of EMS incidents was 88%. In March 2022, LVFD plans to staff an engine at Station 3. The following figure shows the additional coverage within the four-minute travel time.

Figure 73: Travel Time with Station 3 Staffed



Effective Response Force Capability Analysis

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

The response time goal for delivering the full ERF to a building fire is within 9 minutes, 20 seconds, 90% of the time. LVFD has identified per their alarm assignments the minimum full effective response force for low-rise building fires as four fire engines, one ladder truck, one Ambulance, and one Battalion Chief for a total of 19 firefighters. At present, LVFD can only provide two engines, a Paramedic unit, and a Battalion Chief, though LVFD acknowledges the need for 21 firefighters according to its identified critical tasking. Triton notes that the 2020 version of NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* recommends an ERF of 17 firefighters, which is less than identified by LVFD staff. At the time of this study, it was identified that regardless of the minimum ERF used, other units would need to be requested from mutual aid apparatus in County Fire Stations. For mid-rise and commercial building fires, LVFD staff identified an ERF need of more firefighters (29). These firefighters can also be summoned by requesting Mutual Aid from County Fire Stations.

Impact of Mutual Aid

Mutual Aid is assistance that is dispatched, upon request, by the responding fire department. Usually, it is requested upon arrival at the scene. This creates a delay in response from the County Fire Stations. In order to meet effective response force performance objectives, all units would need to be dispatched nearly simultaneously. This is known as Automatic Aid. Automatic Aid is assistance that is dispatched automatically by a contractual agreement between two fire departments, communities, or fire districts.

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

Figure 74: Mutual Aid Stations Available to LVFD

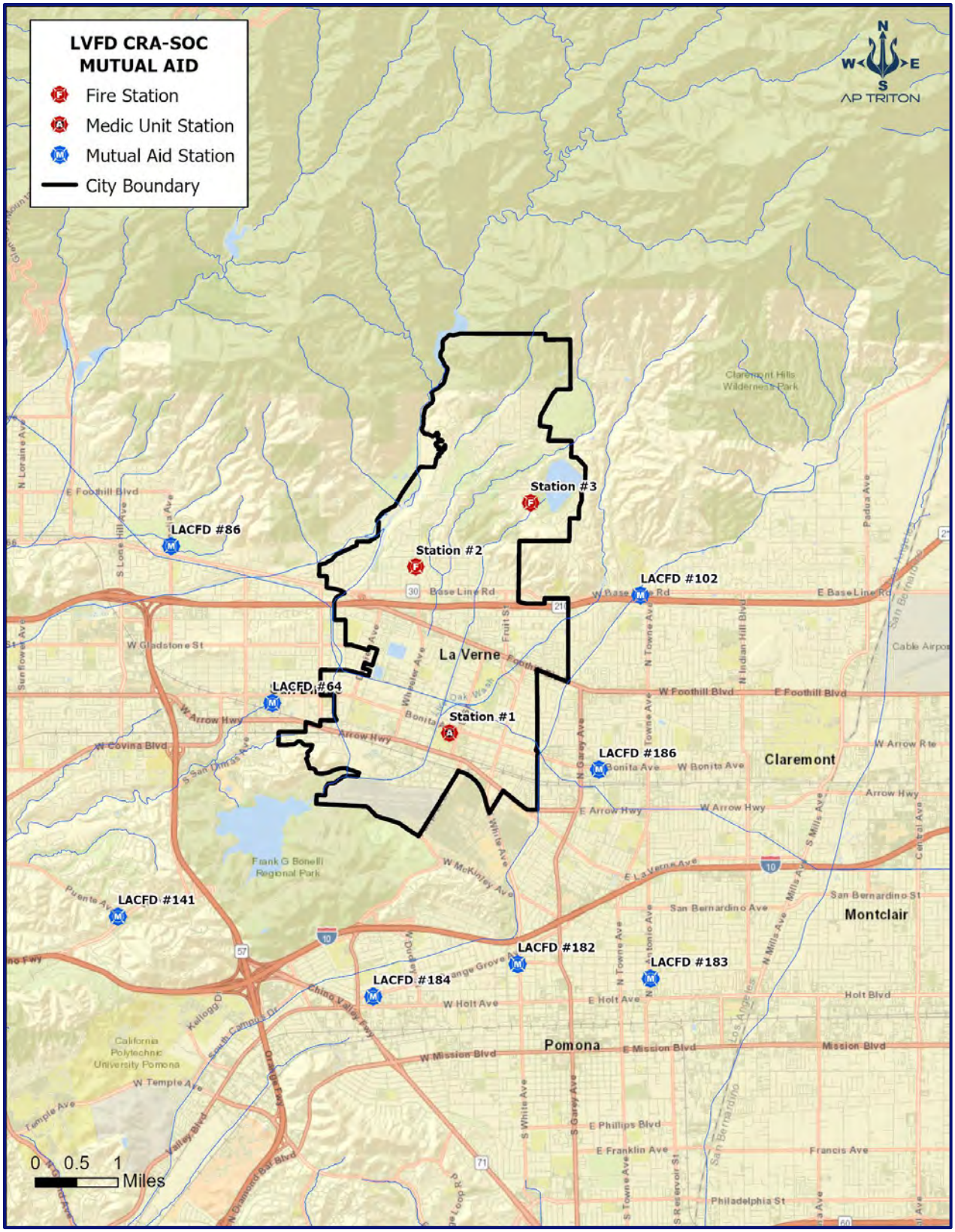


Figure 75: Mutual Aid Agency Capabilities

Dept.	Station	Station Address	Engines	Aerials	Other	Staff
LACo	64	164 S. Walnut Ave, San Dimas, 91773	1	1	2	10
LACo	101	606 W. Bonita Ave, Claremont, 91711	1	0	1	5
LACo	186	280 E. Bonita Ave, Pomona, 91767	1	0	0	3
LACo	182	1059 N. White Ave, Pomona, 91768	1	0	0	3
LACo	102	2040 Sumner Ave, Claremont, 91711	1	0	1	3
LACo	86	520 Amelia Ave, Glendora, 91741	1	1	1	9
LACo	85	650 E. Gladstone St, Glendora, 91740	1	0	1	5
LACo	62	3701 N. Mills Ave, Claremont, 91711	1	0	1	3
LACo	185	925 E. Lexington Ave, Pomona, 91766	1	1	1	10
LACo	189	1101 W. McKinley, Pomona, 91768	1	0	0	3

LVFD reciprocates by providing aid to its adjacent agencies when requested. According to LVFD data, fewer than 1% of the incidents were recorded as providing Mutual Aid. Many were to addresses with a La Verne postal address but identified by the fire crew as outside the City. The most Mutual Aid was given to Pomona postal addresses, with San Dimas the third most.

When a structure fire is reported, the reality may be something else, perhaps less threatening. As a result, an engine often arrives and handles the fire threat, canceling the other units dispatched. The following figure details the structure fire responses that achieved the effective firefighting force of apparatus and staffing per LVFD Staff, compared to the department's alarm assignment protocol. There were no events identified in the data for 2020 and 2021.

Figure 76: Effective Firefighting Force Response Performance

Description	2018	2019
Structure Fires	29	21
Structure Fires with ERF	15	13
First alarm ERF response time	0:11:53	0:10:37

Currently, the effective response force established by LVFD staff, uses mutual aid to achieve enough apparatus and firefighters to achieve the LVFD identified critical tasking. This can delay responding neighboring units needed to achieve critical tasking because they are not automatically dispatched with LVFD units. Triton notes that LVFD is unable to meet staff's stated ERF performance objectives unless all units are dispatched via automatic aid simultaneously.

Figure 77: Effective Firefighting Force First Alarm Assignment

ERF (Stated)	Engines	Ladder	Rescue	BC	Staff
Low Risk	5	1	1	1	21
Moderate/High	7	2	1	1	29

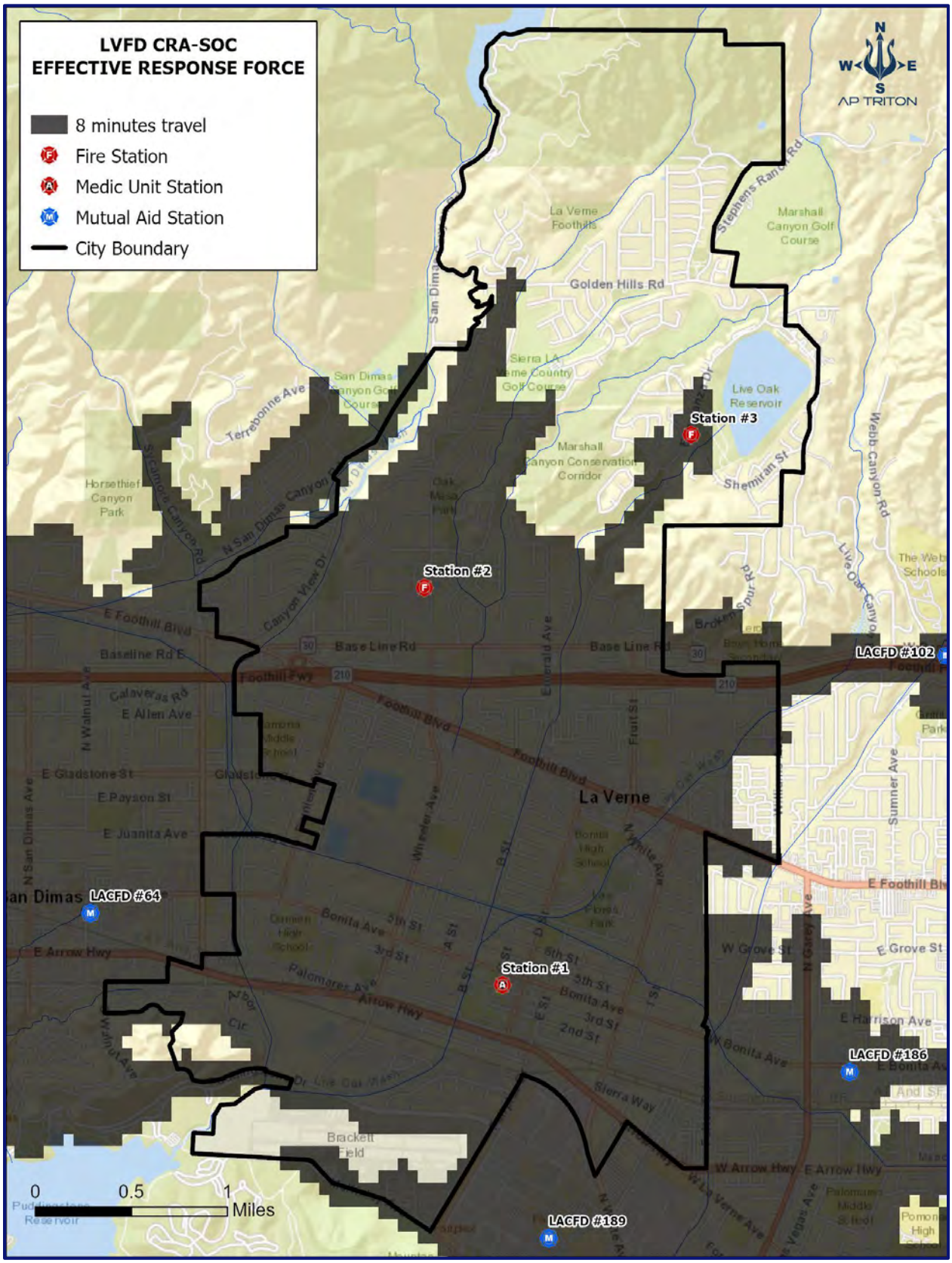
The following is LVFD's first-alarm assignment to achieve ERF by automatically dispatching the neighboring units simultaneously with La Verne units for reported incidents that fit the criteria of an ERF assembly. Note that Truck 185 cannot reach into La Verne according to the travel model, so the trucks will need to come from Los Angeles County #64 or Los Angeles County #86.

Figure 78: Effective Firefighting Force First-Alarm Assignment

ERF (Needs)	Engines	Ladder	Rescue	BC	Staff
Low Risk	5	1	1	1	21
Moderate/High	7	2	1	1	29

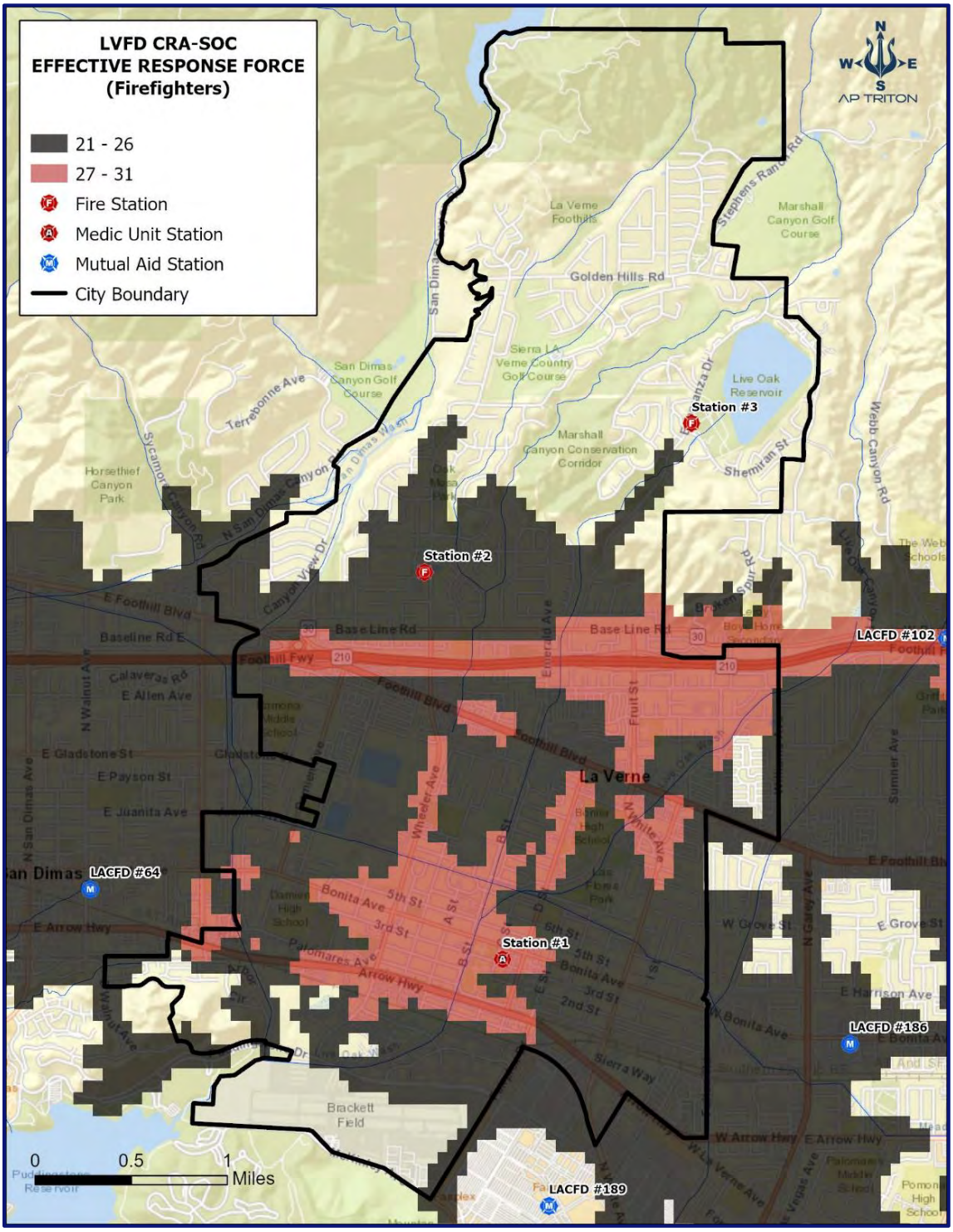
The concentration analysis reviews the physical capability of LVFD's resources to achieve its target ERF travel time to its service area. The following figures depict the physical capability of LVFD and automatic aid units to assemble apparatus and firefighters by area within an 8-minute travel time. The first figure represents the collective apparatus needed to achieve the ERF but only if all units are dispatched at the same time and are available to respond from their respective stations or in close proximity.

Figure 79: Effective Response Force—Apparatus



The next figure represents where the minimum (or more) number of firefighters needed per the critical tasking information provided by LVFD's staff.

Figure 80: Effective Response Force—Firefighters



Station 3 is planned to be staffed and a ladder truck is planned to be staffed at Station 1 in early 2022. Currently, the effective response force uses mutual aid to achieve enough apparatus and firefighters to achieve critical tasking as identified by LVFD staff.

Figure 81: Effective Response Force—Future Needs

ERF (stated)	Engines	Ladder	Rescue	BC	Staff	Staff Need	Deficit
Low Risk	4	1	1	1	19	21	-2
Moderate/High	4	1	1	1	19	29	-10

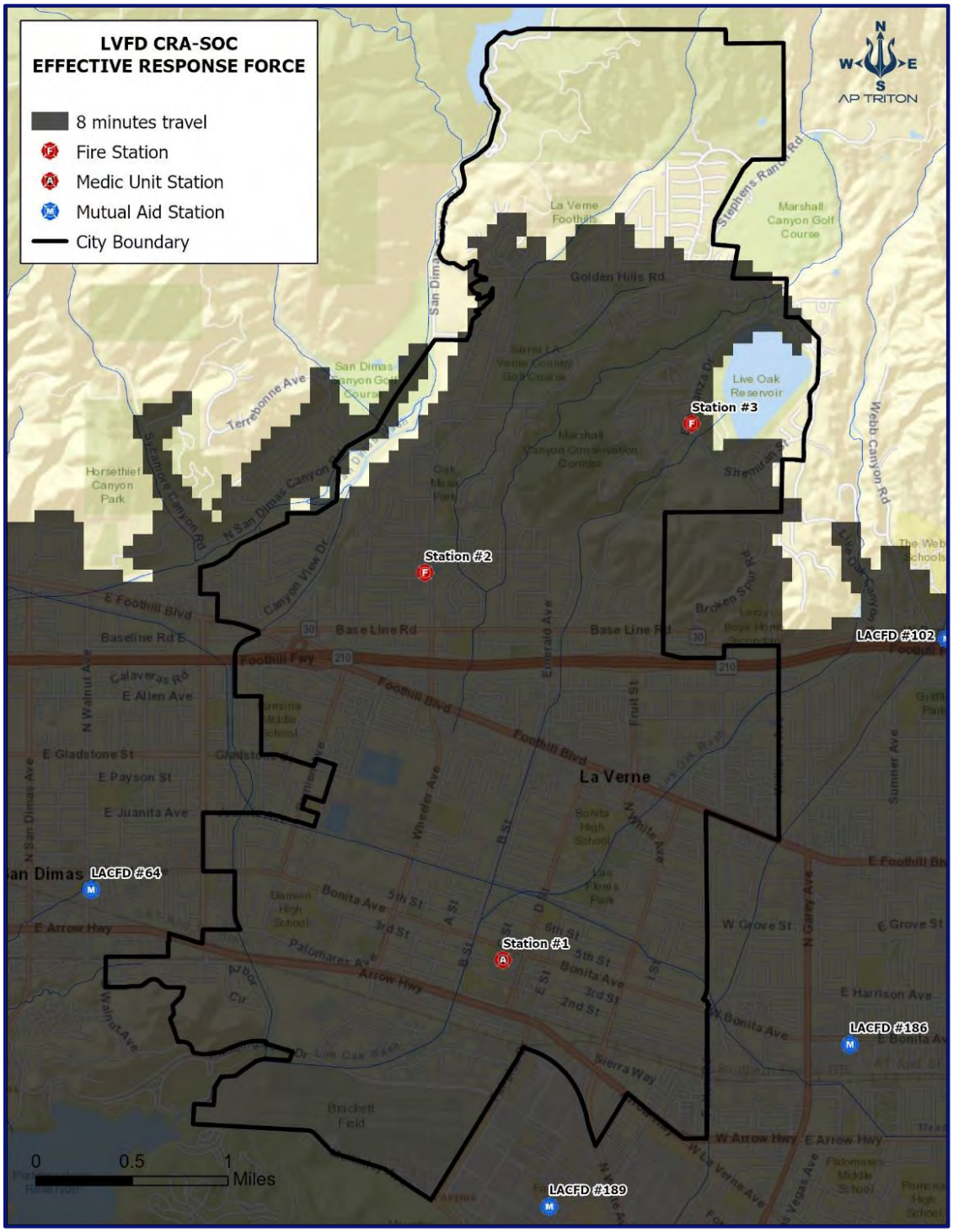
The following is the first alarm assignment to achieve ERF by automatically dispatching the neighboring units simultaneously with La Verne units for reported incidents that fit the criteria of critical tasking identified by LVFD.

Figure 82: Effective Response Force—Future First-Alarm Assignment

ERF (needed)	Engines	Ladder	Rescue	BC	Staff
Low Risk	5	1	1	1	21
Moderate/High	6	2	1	1	29

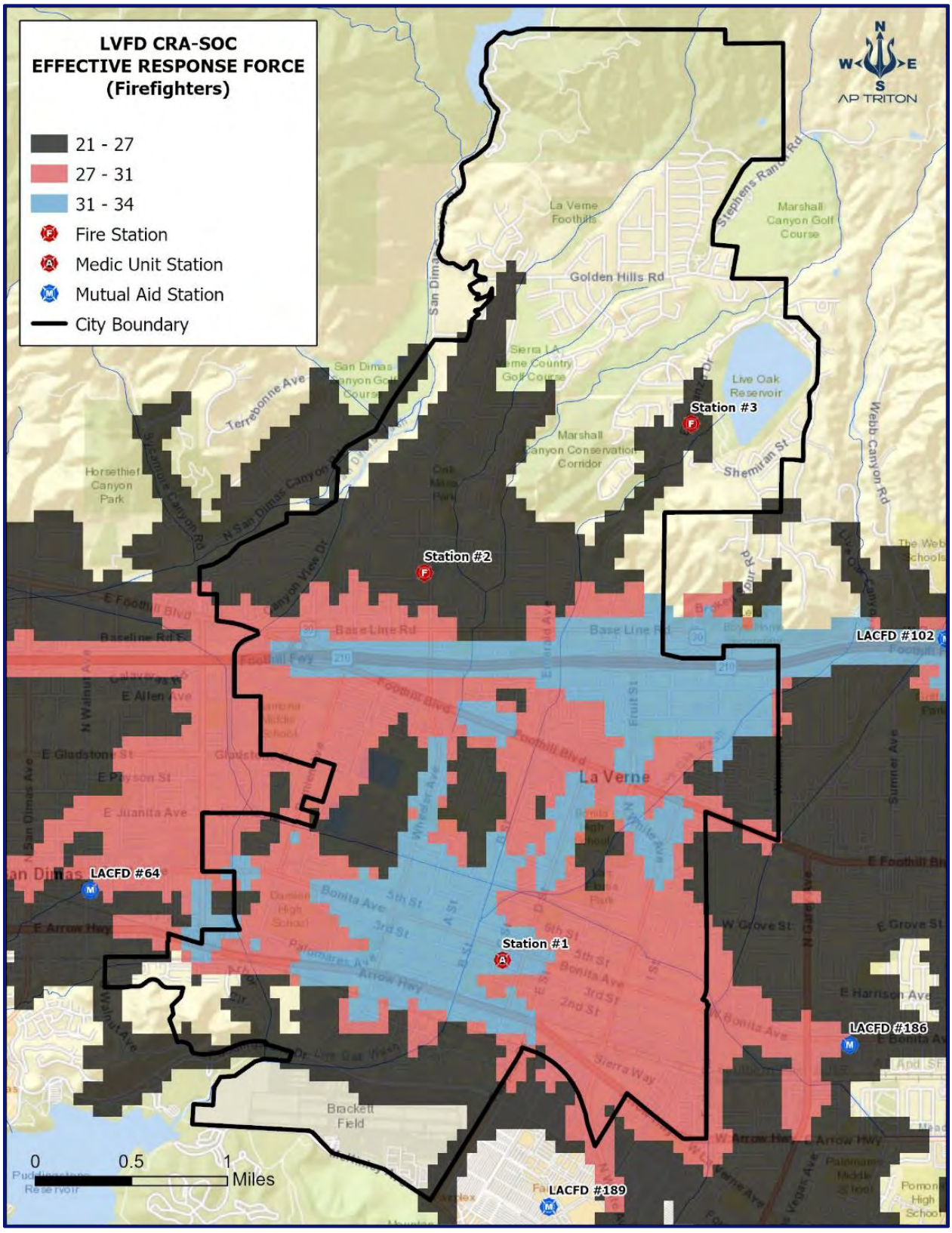
The increased coverage of the area by the ERF with automatic aid is shown in the following figure. Once again, only if all units are dispatched at the same time and are available to respond from their respective stations.

Figure 83: Effective Response Force—Apparatus with Station 3 Staffed



The next figure represents the number of firefighters and the area coverage with the additional staff in Station 3. This includes both LVFD and automatic aid units if dispatched simultaneously.

Figure 84: Effective Response Force—Firefighters with Station 3 Staffed



Resource Reliability

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

Unit Hour Utilization (UHU) calculates the percentage of time a unit is not available for a response because it is committed to an incident during a calendar year. This is important because the higher the percentage, the more time the unit is not available to respond to another incident. This is especially important for agencies like LVFD that measure their performance at the 90th percentile. For example, a unit with greater than 10% utilization cannot provide on-time performance to a 90% target within its response area. This analysis only measures response incidents and does not include other unmeasured activities in the dataset, such as training time and station duties. This was taken from comingled CAD data from various vendors and agencies utilized by LVFD over the time period. There were numerous omissions and improper inputs that affected the analysis from this point forward. As such, a reliable unit Hour utilization analysis was unable to be completed.

Figure 85: Unit Hour Utilization

Unit	2018	2020
Rescue Ambulance 762	0.00	0.00
Rescue Ambulance 763	0.12	0.11
U61	0.00	0.00
Engine 761	0.19	0.20
Engine 762	0.08	0.08
Rescue Ambulance 761	0.00	0.00

Concurrency

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

The following figure shows the number of times that one or more incidents occurred concurrently during the study period.

Figure 86: Concurrent Incident Percentage

Calls Concurrent	Percent*
Single Incident	78%
2 Incidents	18%
3 Incidents	3%
4 Incidents	0.5%
5 or More Incidents	0.5%

*Percentages rounded to the nearest integer.

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

Figure 87: Unit Concurrency

Units/Incident	Percent*
Single Incident	55%
2 Incidents	39%
3 Incidents	4%
4 Incidents	2%
5 or More Incidents	0.1%

*Percentages rounded to the nearest integer.

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

Figure 88: Reliability by Zone Percentage

Unit	Zone 1	Zone 2	Zone 3
Engine 761	41%	3%	N/A
Engine 762	6%	72%	N/A
Engine 763	< 1%	< 1%	N/A
Quint 61	11%	< 1%	N/A
Rescue Ambulance 61	39%	3%	50%
Rescue Ambulance 62	0%	< 1%	N/A
Rescue Ambulance 63	2%	20%	50%
PR61	< 1%	0%	N/A
Utility 762	0%	0%	N/A

*Percentages rounded to the nearest integer.

Response Performance

Incident data for the period between January 1, 2018, and December 31, 2020, were evaluated in detail to determine LVFD's current performance.

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

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

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

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

LVFD's response performance was compared to the national consensus standard for response performance found in the National Fire Protection Association's Standard 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*, 2020 Edition. In addition, the dispatch center's performance was compared to standards found in the National Fire Protection Association's Standard 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2019 Edition.

The following figure summarizes the performance standards used in this section to evaluate performance compared to NFPA 1710's standards. LVFD goals, as communicated to the study team, are also listed. Note that neither a percentile nor average calculation was specified by LVFD.

Figure 89: Summary of Performance Goals

Incident Interval	Performance Goal
911 call answer time (time from the first ring to answer).	Within 15 seconds, 90% of the time
Call process time (time from acceptance at the dispatch center until notification of response units).	Within 60 seconds, 90% of the time
Turnout time (time from notification of response personnel until the initiation of movement towards the incident).	Within 60 sec., 90% of the time (EMS) Within 80 sec., 90% of the time (Fire); LVFD: 90 seconds, all calls
First unit travel time (time from initiation of response until the arrival of the first unit at the incident).	Within 4 minutes, 90% of the time LVFD: 3 minutes, 30 seconds
First unit response time (time from dispatch until the arrival of the first unit at the incident).	Within 5 min., 90% of the time (EMS) Within 5 min., 20 seconds, 90% of the time (Fire) LVFD: 6 minutes, all calls
Full effective response force travel time (time from dispatch until all units initially dispatched arrive at the incident. Response resources needed for a moderate risk building fire are used for the evaluation).	Within 8 minutes, 90% of the time

In keeping with NFPA Standards 1710 and 1221 and LVFD'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 time was 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 because it does not identify the number and extent of events with times beyond the stated performance goal.

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

Detection

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

Call Processing

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

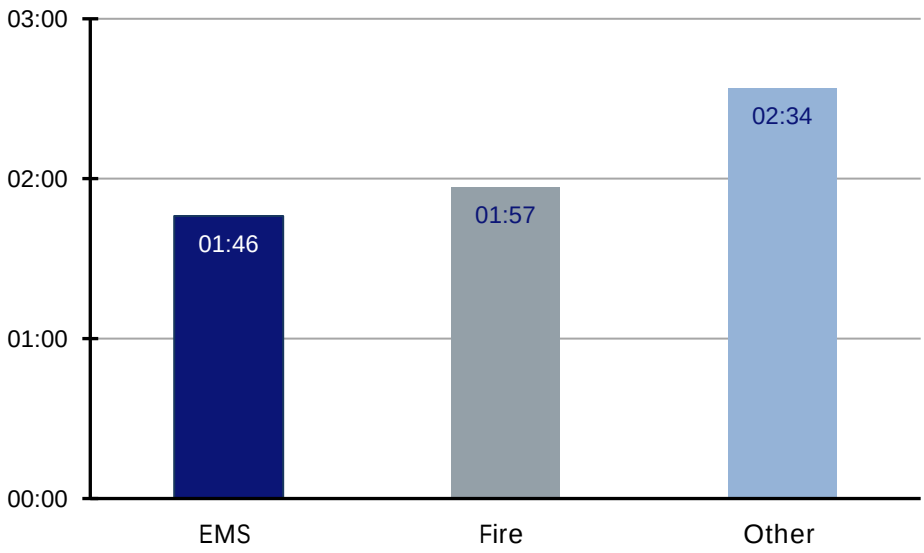
NFPA Standard 1221 recommends that 911 calls be answered within 15 seconds, 90% of the time (within 20 seconds, 95% of the time). However, according to the CAD records supplied to us, the City's dispatch center did not record the call received time in a manner that enabled us to analyze this metric reliably.

The second part of the call processing phase, called "dispatch time," begins when the call is received at the dispatch center and ends when response units are notified of the incident. NFPA 1221 standards recommend that this phase occurs within 60 seconds, 90% of the time. LVFD had changed dispatch providers between the City and the County and these providers had CAD vendor changes. The data provided was comingled for this analysis.

The following figure illustrates the City's and County's dispatch center's performance from the time it receives the call until it notifies response units. Overall performance during the study period was well over the NFPA guideline.

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

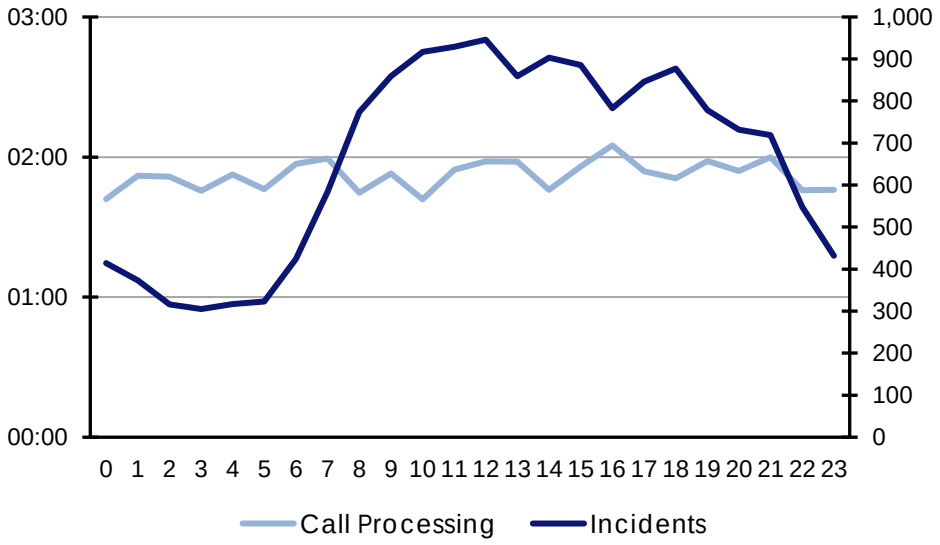
Figure 90: Call Processing by Incident Type



Triton requested call transfer times from LVPD to L.A. County Communications and was advised that the data was not available.

The workload at the dispatch center can influence call processing performance. The following figure illustrates performance at different times of the day compared to LVFD's response workload. Call processing time is relatively stable throughout the day and evening.

Figure 91: Call Processing by Hour of Day

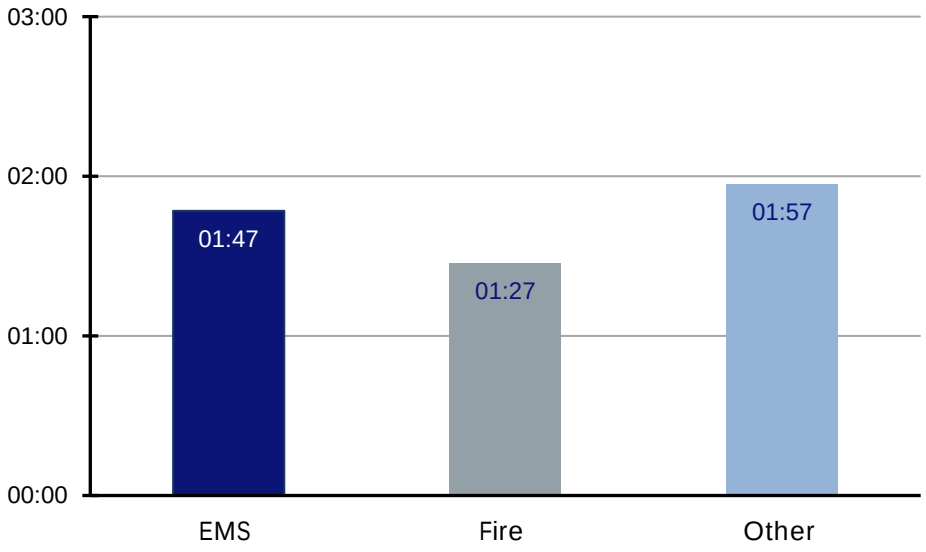


Turnout Time

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

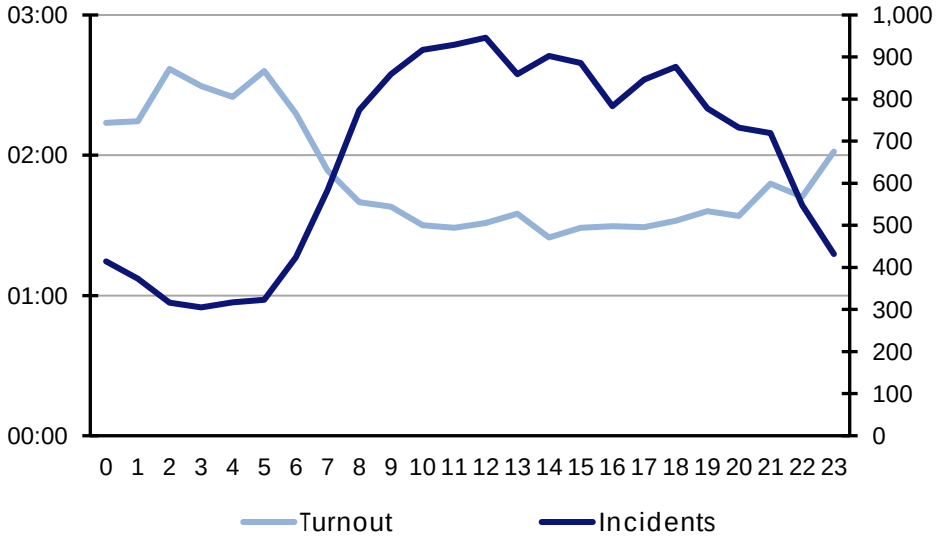
The performance goal for turnout time is within 60 seconds, 90% of the time for priority emergency incidents. The following figure lists turnout time by incident types. Turnout times for all incident types exceed standards. During the study period, turnout time for priority incidents was within 1 minute, 49 seconds, 90% of the time.

Figure 92: Turnout Time by Incident Type



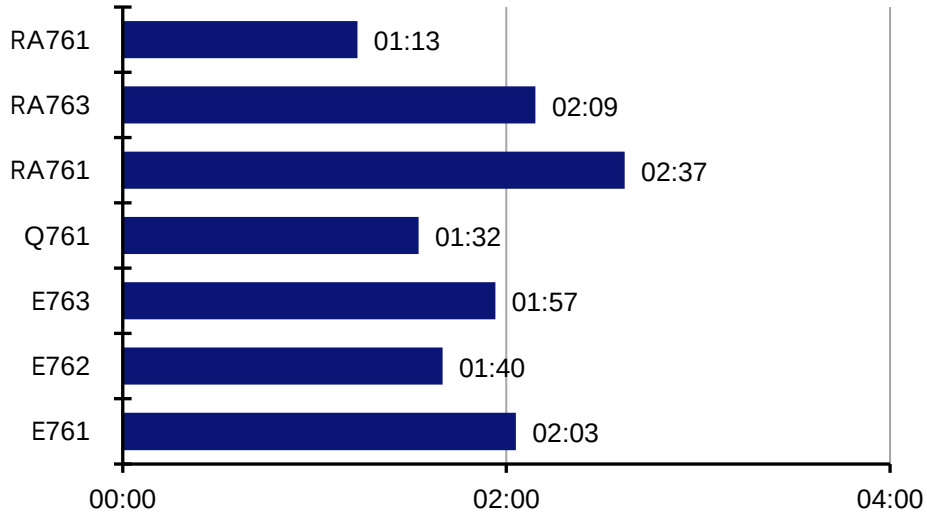
Turnout time can vary by the hour of the day. In this case, turnout time varied by 66 seconds between the early morning hours and daytime hours, as shown in the following.

Figure 93: Turnout Time by Hour of Day



The following figure shows turnout time by unit at the 90th percentile performance measure.

Figure 94: Unit Turnout Time Performance at the 90th Percentile

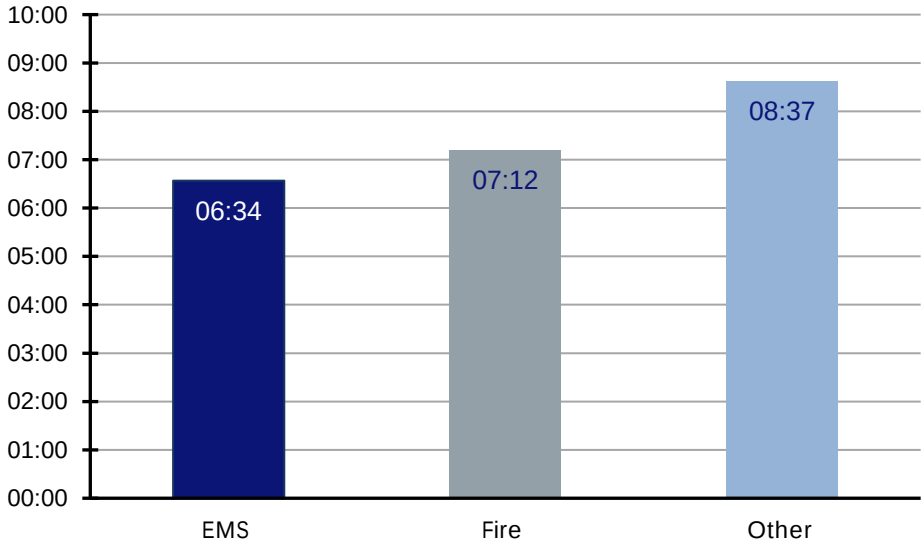


Distribution & Initial Arriving Unit Travel Time

Travel time potentially is 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 also are factors. This phase begins with the initial apparatus movement toward the incident location and ends when response personnel and apparatus arrive at the emergency's location. According to NFPA 1710, the performance goal should be four minutes for the first response unit to arrive at an incident.

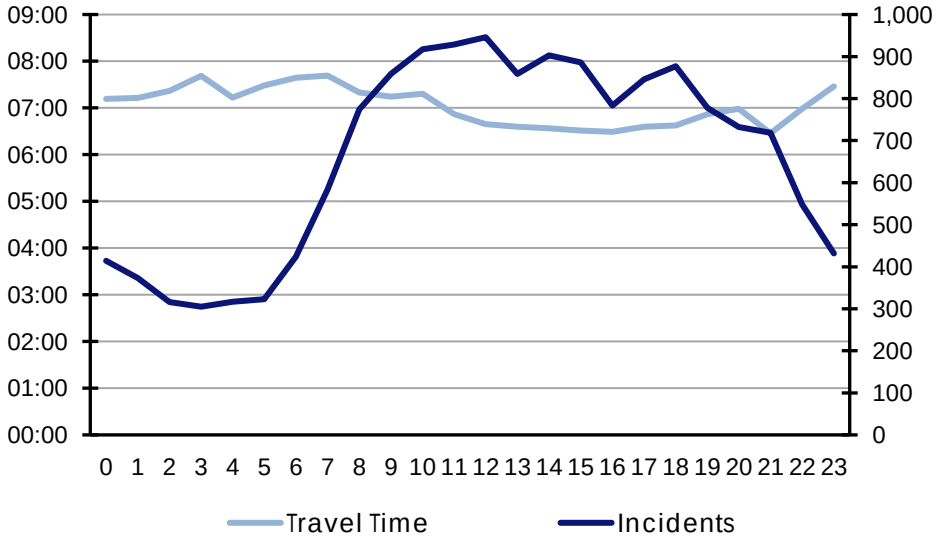
The following figure lists travel times for all priority incidents and incident types. LVFD's travel times exceeded its goal and NFPA recommendations in all incident types. Travel time for all incident types was within 7 minutes, 1 second, 90% of the time.

Figure 95: Travel Time by Incident Type



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

Figure 96: Travel Time by Hour of Day



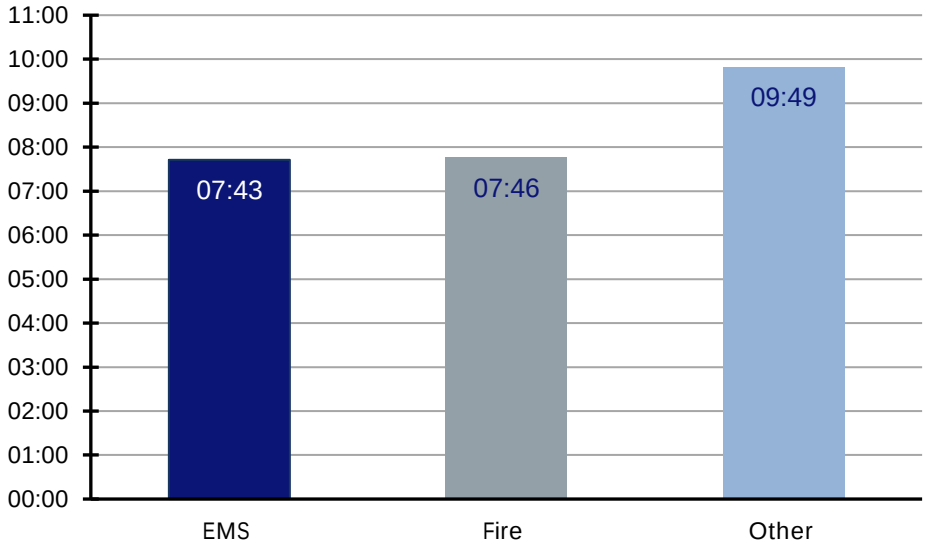
To provide an on-time response, a response unit must be available within four travel minutes of the incident. During the study period, 93% occurred within four travel minutes of a fire station.

First Arriving Unit Response Times

Response time is defined as that period between the notifications of response personnel by the dispatch center that an emergency is in progress until the arrival of the first fire department response unit at the emergency. When turnout time and travel time are combined, the performance goal for response time is within 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.

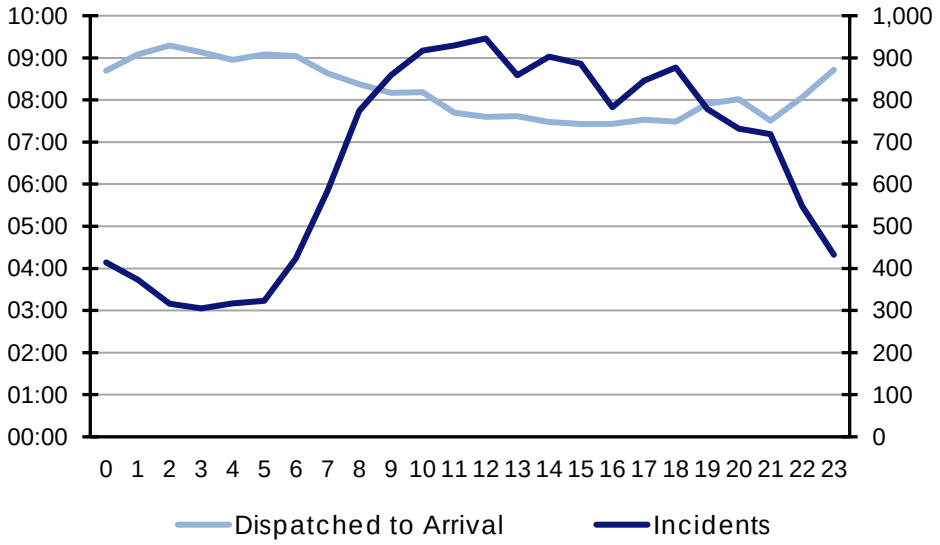
The following figure illustrates the response time for priority incident types. Overall, response time for all priority incidents was within 8 minutes, 12 seconds, 90% of the time.

Figure 97: Response Time—Dispatch to Arrival by Incident Type



The next figure shows response times and the number of incidents by the hour of the day for all incidents. Response time is slowest during the nighttime hours and fastest during the day. Generally, LVFD's best response times occur during the day when response activity is at its highest.

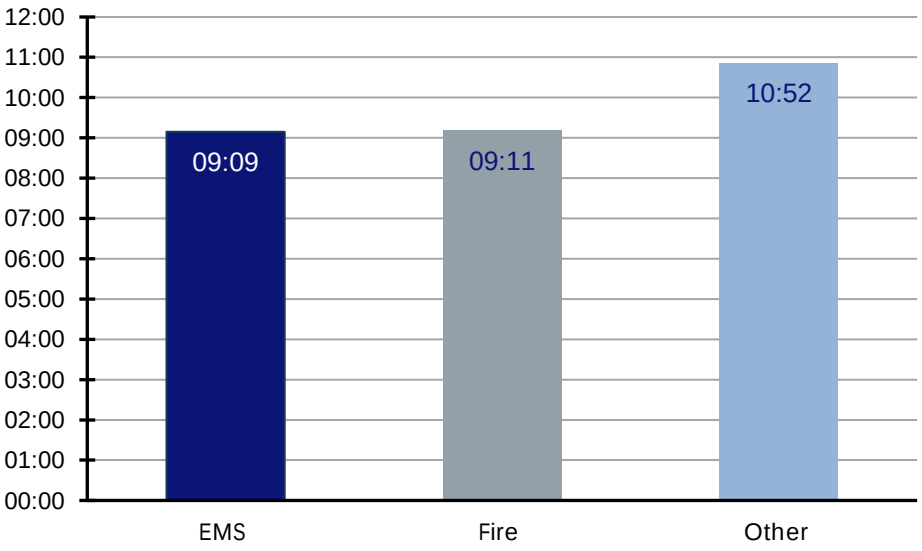
Figure 98: Response Time—Dispatch to Arrival by Hour of Day



First Arriving Unit Received-to-Arrival Time

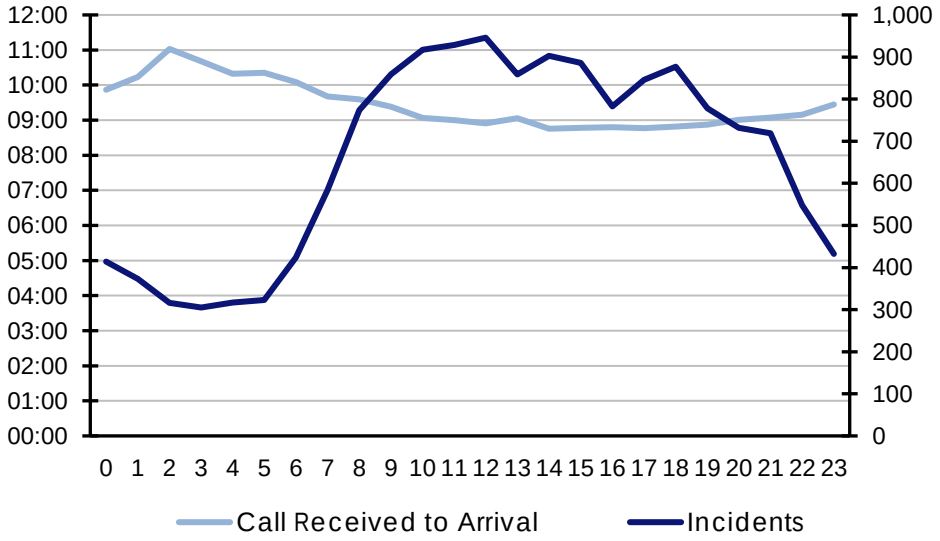
From the customers' standpoint, response time begins when an emergency occurs. Their first contact with emergency services is when they call for help, usually by dialing 911. The received-to-arrival time phase combines the answer/transfer, call processing, turnout, and travel time phases. When the performance goals are combined, received-to-arrival time should be within 6 minutes, 90% of the time for all priority incidents. The following figure shows received-to-arrival performance for priority incidents within the LVFD service area. Overall, the received-to-arrival time was within 10 minutes, 52 seconds, 90% of the time.

Figure 99: Response Time—Received-to-Arrival by Incident Type



The next figure shows received-to-arrival performance by time of the day compared to incident activity by time of day. From the customers' standpoint, received-to-arrival is quickest during the day and slowest during the early morning hours.

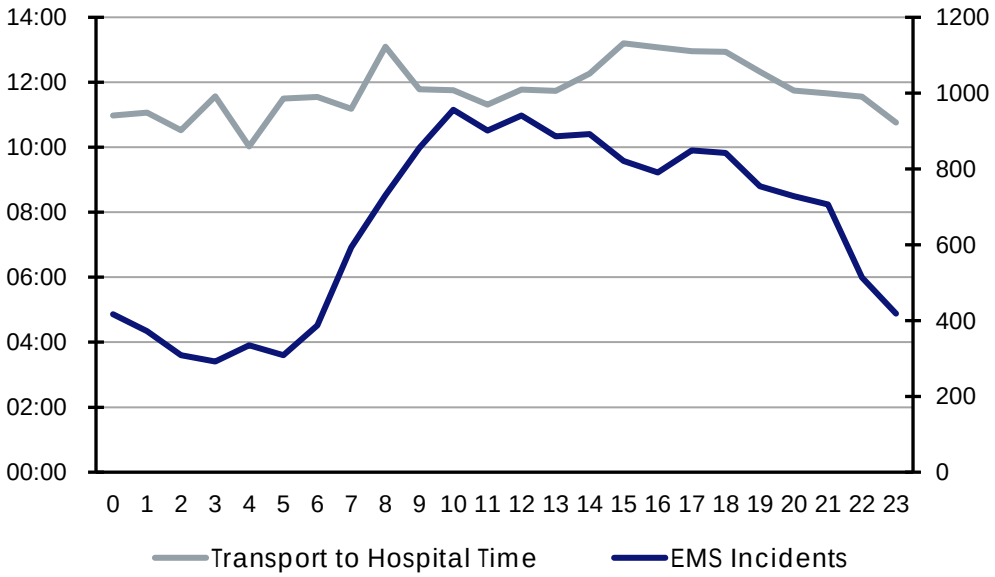
Figure 100: Response Time—Received-to-Arrival by Hour of Day



EMS Transportation Analysis

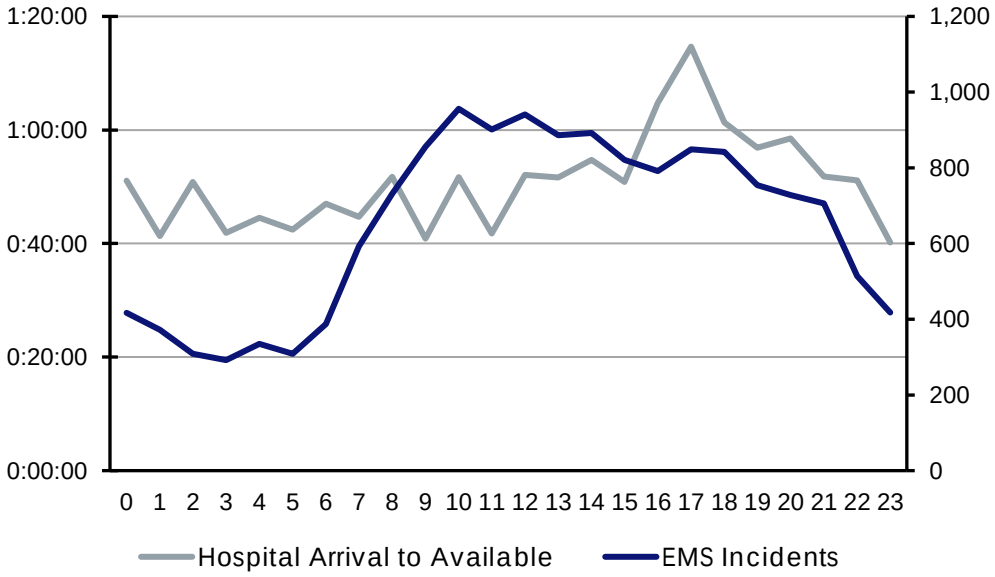
The additional time spent on the related activities is measured when patients are transported. One is the time spent from the scene to the hospital. This can vary depending not only on factors such as the traffic, weather, and time of day but also on the patient's choice of hospital or the patient's condition that warrants a specialized facility. The following figure shows the travel time variance during the hour of the day against the level of EMS incident workload.

Figure 101: Scene to Hospital Travel Time Duration



Travel time for transport-capable units increases during the daytime and peaks in the late afternoon hours, presumably due to increased traffic inhibiting the transport unit. The following figure measures the time spent for a unit to arrive at the hospital, deliver the patient, and prepare the unit to be declared available for service.[26] This is measured by the hour of the day against the EMS incident workload.

Figure 102: Hospital Arrival to Unit Available Duration



Units become available for service most quickly during the morning hours. This time increases as the afternoon and evening approach. There can be several causes for this trend. First, busier emergency rooms may take longer to accept the patient from EMS crews. Shift change hours relative to workload may impact the length of time available from the hospital. The actual cause takes further internal investigation by LVFD.

Additional Units Analysis

Fire stations should be located, staffed, and equipped to provide response resources using two primary considerations:

1. To provide response times that ensure units arrive in time to mitigate an emergency incident effectively.
2. To provide sufficient resources to ensure a reliable response to predictable emergency service requests.

The first consideration suggests that fire stations and response units should be located to minimize travel times to emergencies. The second consideration suggests that additional resources should be available to respond during periods of higher incident activity. The additional resources should be of the type necessary for predictable requests for service.

The second consideration is a dynamic approach to deployment and provides two benefits. First, additional response resources (apparatus and personnel) can be made available during times when each is predictably needed. Second, because these resources may not be needed or assigned during slower workload periods, the fire department can maximize its ability to match resources based on predictable system demand.

Peak-demand (workload) periods occur daily in most systems. The following figure illustrates LVFD's workload by station and time of day during 2019 (the only year where the NFIRS data was somewhat valid). Workload is based on each fire station's response zone. As noted, the number of incidents occurring that year in Zone 3 was too low to be significant.

Figure 103: Incidents by Station & Time Period (2019)

LVFD Zone	No. Incidents 0800–1959 hours	No. Incidents 2000–0759 hours	Incidents/Hour 0800–1959 hours	Incidents/Hour 2000–0759 hours
Zone 1	1,304	591	0.30	0.13
Zone 2	1,035	535	0.24	0.12
Zone 3	*The number of incidents was too small to be statistically significant*			

A process called "queuing analysis" has been used to determine the number of units needed in each station area by the time of day. This process utilizes probability analysis to determine the number of units needed in each station response area (zone) to reduce the likelihood that a response unit would not be available to serve an incident to 10% or less.

This analysis uses the variables incidents per hour, number of available response units, and average time committed per incident to determine the probability of incidents during the day and night hours. In this study, Triton utilized CAD data from LVFD's dispatch center.

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

Using the data from 2019, the following figure illustrates the current deployment and proposed deployment plan for both day hours 0800–1959 (8:00 a.m.–7:59 p.m.) and night hours 2000–0759 hours (8:00 p.m.–7:59 a.m.) using the current fire station response zones. In addition, the figure includes the current and proposed probability of wait analysis based on the current station response zones.

Figure 104: Current Status & Wait-Time Probabilities

Zone	Day Units	Night Units	Probable Wait—Day	Probable Wait—Night
Zone 1	2	2	1%	0%
Zone 2	1	1	11%	6%

As shown, Zone 2 slightly exceeds a 10% probability of waiting during the day and the night. Ideally, each response zone or fire station should have a 10% or less wait time probability.

However, it must be pointed out that Station 1 has both a fire unit and a rescue ambulance. If only the fire unit was considered, the probability would increase to 14%. Despite this, the type of call that these units respond to can differ. When only fire incidents are considered, there is not a need for additional fire units due to the lower workload of these call types. The wait probability is shown in the following figure.

Figure 105: Current Status & Wait Probability—Fire Incidents

Zone	Day Units	Night Units	Probable Wait—Day	Probable Wait—Night
Zone 1	1	1	4%	2%
Zone 2	1	1	3%	1%

When only the higher workload EMS calls are considered, a peak load analysis is utilized to determine which hours of the day an additional unit may be needed. The current rescue ambulance covers all zones in La Verne. Using only EMS calls by the hour of day, by the day of the week, and multiplied by the average commitment time spent on calls (.47/ 28 minutes currently) divided by 52, the UHU for the rescue ambulance is as shown in the following figure.[27]

Figure 106: Current Peak Load Analysis—EMS

Hour	SUN	MON	TUE	WED	THU	FRI	SAT
0	0.11	0.06	0.09	0.06	0.09	0.10	0.09
1	0.14	0.09	0.06	0.06	0.14	0.10	0.10
2	0.03	0.05	0.06	0.05	0.09	0.06	0.09
3	0.04	0.05	0.11	0.05	0.06	0.06	0.06
4	0.11	0.05	0.04	0.07	0.14	0.09	0.12
5	0.05	0.05	0.09	0.13	0.05	0.03	0.05
6	0.05	0.09	0.12	0.07	0.05	0.06	0.05
7	0.06	0.14	0.16	0.13	0.16	0.15	0.10
8	0.17	0.18	0.24	0.17	0.15	0.18	0.13
9	0.16	0.20	0.33	0.13	0.19	0.16	0.14
10	0.17	0.22	0.24	0.16	0.29	0.30	0.16
11	0.16	0.19	0.11	0.16	0.21	0.22	0.20
12	0.15	0.24	0.13	0.23	0.24	0.19	0.23
13	0.23	0.26	0.20	0.14	0.24	0.18	0.15
14	0.23	0.22	0.21	0.19	0.18	0.15	0.13
15	0.14	0.20	0.13	0.22	0.24	0.21	0.23
16	0.24	0.18	0.14	0.17	0.15	0.17	0.11
17	0.24	0.17	0.12	0.19	0.12	0.21	0.14
18	0.21	0.20	0.17	0.16	0.18	0.20	0.16
19	0.14	0.18	0.18	0.13	0.19	0.19	0.16
20	0.20	0.10	0.24	0.12	0.12	0.10	0.21
21	0.21	0.14	0.18	0.11	0.14	0.19	0.14
22	0.17	0.09	0.09	0.06	0.11	0.09	0.15
23	0.05	0.06	0.08	0.12	0.06	0.14	0.12

When the UHU exceeds .30 for dual-role staffed rescue ambulances, an additional unit should be considered. In the previous figure, only three hours of the day neared or exceeded this benchmark. With the loss of the private basic life support ambulance to transfer minor conditions for hospital transportation, the LVFD rescue ambulance will incur additional time transporting to the hospital, awaiting transfer to the hospital staff, and return travel to the City. To simulate this, the average commitment time was raised to .98/59 minutes. The result is in the following figure.

Figure 107: Potential Peak Load Analysis—EMS

Hour	SUN	MON	TUE	WED	THU	FRI	SAT
0	0.23	0.13	0.19	0.13	0.19	0.21	0.19
1	0.30	0.19	0.13	0.13	0.30	0.21	0.21
2	0.06	0.09	0.13	0.09	0.19	0.13	0.19
3	0.08	0.09	0.23	0.09	0.13	0.13	0.13
4	0.23	0.11	0.08	0.15	0.28	0.19	0.25
5	0.11	0.11	0.19	0.26	0.11	0.06	0.11
6	0.09	0.19	0.25	0.15	0.09	0.13	0.11
7	0.13	0.30	0.34	0.26	0.34	0.32	0.21
8	0.36	0.38	0.49	0.36	0.32	0.38	0.26
9	0.34	0.41	0.68	0.26	0.40	0.34	0.28
10	0.36	0.45	0.51	0.34	0.60	0.62	0.34
11	0.34	0.40	0.23	0.34	0.43	0.45	0.41
12	0.32	0.49	0.26	0.47	0.49	0.40	0.47
13	0.47	0.55	0.41	0.30	0.49	0.38	0.32
14	0.47	0.45	0.43	0.40	0.38	0.32	0.26
15	0.30	0.41	0.26	0.45	0.49	0.43	0.47
16	0.51	0.38	0.28	0.36	0.32	0.36	0.23
17	0.51	0.36	0.25	0.40	0.25	0.43	0.28
18	0.43	0.41	0.36	0.34	0.38	0.41	0.34
19	0.28	0.38	0.38	0.26	0.40	0.40	0.34
20	0.41	0.21	0.49	0.25	0.25	0.21	0.43
21	0.43	0.30	0.38	0.23	0.28	0.40	0.28
22	0.36	0.19	0.19	0.13	0.23	0.19	0.32
23	0.11	0.13	0.17	0.25	0.13	0.28	0.25

The analysis shows that an additional peak hour unit may be necessary during various hours between 7 a.m. and 11 p.m. However, if single-role responders are utilized for the rescue ambulance service, higher UHUs are not unusual in the private sector.

Performance Measures

Dynamics of Fire in Buildings

Predictably, most fires within buildings develop slowly 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.

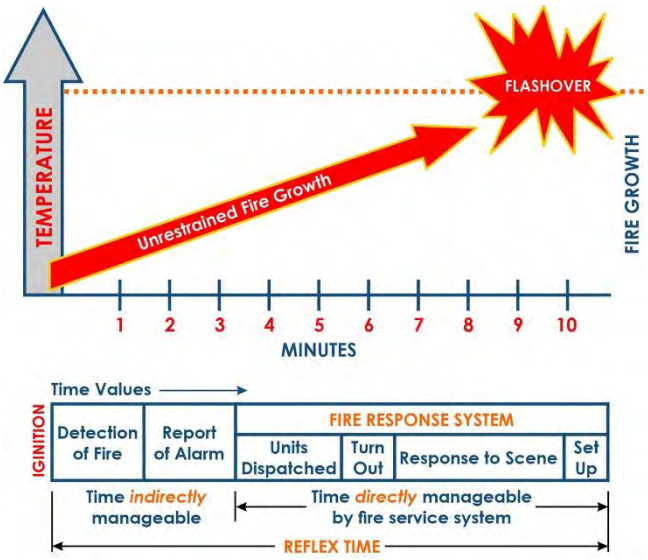
However, if it is *known* that victims are trapped inside the building, a rescue attempt can be performed without additional personnel ready to intervene outside the structure. Further, there is no requirement that all four arrive on the same response vehicle. Many fire departments rely on more than 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 108: 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 109: Fire Extension in Residential Structures—United States (2011–2015)

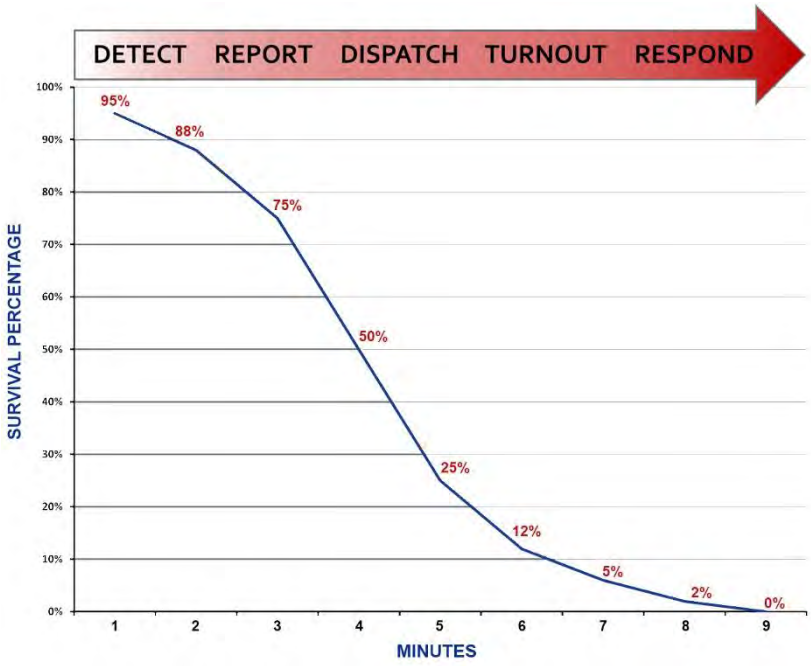
Extension	Civilian Deaths — Rates per 1,000 Fires —	Civilian Injuries — Rates per 1,000 Fires —	Average Dollar Loss per Fire
Confined to room or origin or smaller	1.8	24.8	$4,200
Confined to floor of origin	15.8	81.4	$36,300
Confined to building of origin or larger	24.0	57.6	$67,600

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 110: 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 a detailed analysis of the historical performance of the La Verne Fire Department. For this analysis to prove beneficial to agencies 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.

LVFD should commit to a continual process of analyzing and evaluating actual performance against the Standards of Cover study which will require enhanced 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 is a five-step model.

Figure 111: 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 agency service area

Phase 2—Determine the Type & Methods of Collecting Data

- 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 & 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 III:
FINDINGS & RECOMMENDATIONS

Findings

Fiscal Findings

- The recent opening of Fire Station 3 will improve response and service levels.
- Recurring City revenues have increased by only $1.4 million from FY 16 to FY 20 and are budgeted to decrease in FY 21.
- Recurring expenses have remained relatively consistent between FY 16 and FY 21.
- General Fund reserve balances have been maintained at approximately 30% of annual expenditures
- The City has established financial and purchasing policies to protect the taxpayers' resources.
- The Department does not currently have a formal capital asset replacement plan.

Service Demand & Performance Findings

- LVFD is very close to reaching its overall turnout time goal, but the travel time results miss the department's objective. This and call processing results inflate the total response time results.
- LVFD has mutual aid, not simultaneously dispatched (automatic) aid units.
- There is a spike in hospital turnaround time in the afternoon.
- The current fire department responses are inadequate for a city of this size, excluding the use of mutual aid resources.
- The City cannot meet its ERF on initial structure fire alarms, which is 21 personnel according to LVFD staff's critical tasking.
- LVFD does not utilize the ERF recommendations found in the 2020 version of NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* when determining critical tasking or alarms assignments.
- As the City increases in size with structures that may be multistory or multifamily, the department must provide sufficient first response resources.
- The Gold Line project and updated Old Town Specific Plan will increase risk and demand for services.

Quality Control & Data Collection Findings

- Changing vendors made it difficult to analyze incident and unit data. In some cases, due to the lack of information, certain analyses could not be completed.
- The CAD data timestamping has many omissions.
- CAD data had several hand entries noted with some mistakes in unit designations.
- The CAD data did not track Chief Officers responding to structure fires.
- The La Verne Fire Department is currently not conducting outcome measures that indicate whether changes made by the LVFD have achieved their purpose.

Other Findings

- The La Verne Fire Department does not have a formal Community Risk Reduction (CRR) plan that identifies and prioritizes the community's risk.
- LVFD has exceeded the capacity for Fire Station 1 to accommodate existing and future administrative and operational needs.
- The current level of administrative support is inadequate for a department the size and complexity of LVFD.

Conclusions & Recommendations

Recommendation 1: Evaluate staffing levels required for administrative support services.

Description: LVFD should perform a time and motion study to evaluate the current needs related to administrative support of the fire department.

Outcomes: The regulatory and statutory requirements of today's fire service have become complex and demanding. Providing an appropriate level of administrative support frees up operational staff to concentrate on maintaining operational readiness and other key functions.

Estimated Financial Cost: The estimated cost relates to staff and Human Resources personnel's time to perform the studies and evaluate the results for subsequent personnel planning processes.

Recommendation 2: Begin tracking performance and outcome measurements.

Description: LVFD needs to look at ways to provide performance and outcome measurements to share with the community and the elected officials. These could be done with some of the following examples but should not be limited to only these items. Compared to the amount of property saved, property loss could be made with the tax assessor's information. As an example, it is a powerful message to be able to demonstrate every year that LVFD experienced a one-million-dollar fire loss for the year and was able to save five million dollars of property. How often is the fire contained to the room of origin? How long does it take to get water on the fire? How long does it take to get a fire control? How many animals have been saved for the year? It is great to have an effective firefighting force on the scene within 8 to 9 minutes, but does it serve the community well if the structure is a complete loss?

Outcomes: Outcome measures will determine if a program or practice is working. Each year the City of La Verne approves a budget to provide funding to operate the agency. Does the funding allow the organization to develop and implement what they believe are the best strategies to improve services? Outcome measures permit the City and the fire department to determine if program activities are beneficial. Additional reasons to develop outcome measures include:

- Identify practices that are effective.
- If a practice is effective, how is it measured?
- Identify any practices that need to be improved.
- Provide documentation to the City Council whether their funding is working.
- Assists in building transparency and understanding for the program.

Estimated Financial Cost: Staff time to review and develop a measurement system.

Recommendation 3: Develop and implement a Community Risk Reduction Plan.

Description: LVFD should identify ways to focus on the community's risk and the demands of services based on future development and growth. This can be accomplished by developing a long-term Community Risk Reduction Plan. This plan should also include the appropriate training for the department staff.

Outcomes: A CRR plan will allow the department to focus on the community's risk and make sure this is a continued focus with the future development and changes occurring in the community. This can be accomplished through the LVFD staff or by having an outside company develop the CRR plan.

Estimated Financial Cost: Staff time or the cost of having an outside organization develop the CRR plan. Additionally, the cost of having someone come into the department and provide the CRR training to establish the foundation for the programs and the plan.

Recommendation 4: Continue to staff Fire Station 3.

Description: LVFD has recently opened Fire Station 3 and is staffing a 3-person engine crew 24 hours a day.

Outcomes: Opening this station (Station 3) improved response to an area of the City that was underserved and includes most of the City's wildland-urban interface fire threat.

In addition, the staffing of this station adds valuable secondary coverage to the areas served by Fire Stations 2 and 1.

Estimated Financial Cost: $1,546,472

Recommendation 5: Renegotiate Automatic Aid Agreement with LA County Fire.

Description: Currently, LVFD has an Automatic Aid Agreement with County Fire that does not include all areas within the City, nor does it call for simultaneous dispatch in the event of a reported structure fire. Currently, L.A. County units are dispatched after the LVFD units are assigned and en route.

Outcomes: Developing a policy that automatically and simultaneously dispatches automatic aid units with amounts tied to structural risk levels will improve the department's effective firefighting response performance.

Estimated Financial Cost: Staff time to develop an updated Automatic Aid policy.

In the event LVFD is unable to negotiate and update the Automatic Aid policy, AP Triton recommends the following:

Recommendation 6: Increase staffing at Fire Stations 2 and 3 by one firefighter per shift, resulting in four-person staffing each shift per station.

Description: LVFD is unable to assemble an effective response force without Automatic Aid. Absent an improved Automatic Aid agreement with L.A. County, LVFD should add additional staffing to the LVFD engines at Stations 1 and 3.

Outcomes: The addition of firefighters will result in a first alarm response for structure fires of 13 firefighters. While this number is shy of the ERF recommended by the 2020 version NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, , it will provide the department with an improved initial attack capability until Automatic Aid resources can be dispatched and arrive. Of note, the minimum ERF recommended by NFPA 1710 for a low to moderate risk structure fire is 17.

Estimated Financial Cost: $920,031

Recommendation 7: Place greater emphasis on quality assurance of data inputs.

Description: It is critical that documentation of events for the fire department be correct, especially for those requesting them, such as attorneys, insurance companies, and property owners. In addition, reliable and accurate performance analyses cannot occur without quality control. AP Triton recommends that the officers in charge review and verify that the information is complete and correct. If not, return it to the author to correct. In addition, it is recommended that LVFD meet with the dispatch center to find ways to improve the data reflected in the fire records management system. Tracking unit performance is critical to a defensible report of actions in the case of litigation. Additionally, the response time objectives need to be designated as average or industry-standard percentiles.

Outcomes: The risk of litigation for poorly written records will be reduced. An accurate and defensible analysis of performance can be completed on a regular basis. A proper review may be able to shed light on the cause for the spike in hospital turnaround in the afternoon.

Estimated Financial Cost: Staff time to review individual documentation for errors and omissions. Staff time to meet with the dispatch center to resolve data errors and improve call processing time.

Recommendation 8: Evaluate the workload for the Ambulance Operator Program to determine if the demand validates the need for two 24-hour units.

Description: On March 19, 2022, LVFD converted their single firefighter paramedic staffed ambulance to two 24-hour units staffed by non-safety EMT-level ambulance operators. The level of EMS calls in the City creates a higher wait time probability during the daytime hours when the workload is the greatest due to delays (wait time) at the hospital when transferring patients and return time to the City.

Outcomes: The additional rescue ambulance is projected to reduce the wait time probability and, therefore, response times for the majority of incidents faced by LVFD.

Estimated Financial Savings: Salaries, benefits, apparatus, and equipment will decrease financial costs to the department budget when deploying one 24-hour unit and one 12-hour Peak Time Unit as estimated in the following figure.

Figure 112: Cost Savings Using One 24-Hour Unit and One Peak Time Unit

Expenses	Two 24-Hour Units	One 24-Hour Unit & One 12-Hour Peak Time Unit		
		24-Hour Staffed Unit	Peak Time 12-Hour Employee	Total Cost
Annual Hours	2,920	2,920	1,460	
Straight-Time	2,080	2,080	1,460	
Overtime	840	840	—	
Civilian EMT				
Straight-Time Rate	$15.00	$15.00	$15.00	
Overtime Rate	$22.50	$22.50	$22.50	
Straight-Time Costs	$31,200	$31,200	$21,900	
Overtime Costs	$18,900	$18,900	—	
Salary Cost Per Position	$50,100	$50,100	$21,900	
Payroll Taxes	$3,833	$3,833	$1,675	
Health Insurance	$24,077	$24,077	—	
Workers' Comp—14%	$7,014	$7,014	$3,066	
Pension Costs—27%	$8,424	$8,424	$5,913	
Per Position	*$93,448*	*$93,448*	*$32,554*	
Total Employees	12	6	6	
Total Costs	$1,121,372	$560,686	$195,326	$756,012
Savings with 12-Hour Peak Time Unit				$353,360

The use of non-safety EMT employees working a typical fire department schedule of 48 hours on shift followed by 96 hours off shift produces a significant built-in overtime cost of 840 hours annually. To staff two full-time units using the fire department deployment model requires a minimum of 6 employees. Staffing a 12-hour peak-time unit seven days a week using a similar three-shift deployment model with six personnel working an average of just over 28 hours per week and does not require overtime payments. This would be less than required to qualify for full-time benefits such as health insurance. Savings with employees not qualifying for health insurance would be approximately $350,000 annually. Should the employees qualify for health insurance benefits, savings would be reduced to $221,000 annually. Costs associated with the second unit being reduced to a peak time unit are marginal and not considered in this projection.

Recommendation 9: Modify response assignments so that all incident types can receive sufficient resources, based on the critical task analysis.

Description: LVFD provided its critical task analysis defining the minimum number of personnel needed by incident type. This analysis is in keeping with national recommendations. In a few cases, this analysis defines staffing needs that are not achievable given current resources (e.g., mid-rise and high-risk commercial building fires). In other cases, LVFD is not sending sufficient resources on the first alarm to meet the staffing needs defined in the critical task analysis (e.g., aircraft emergencies and technical rescues). All critical tasking should be reviewed to confirm that resources are sent are consistent with risk and available internal and external resources.

The following figure illustrates the minimum emergency incident staffing recommendations of the Commission on Fire Accreditation, International (CFAI). The following definitions apply to the figure:

- Low Risk: Minor incidents involving small fires (fire flow less than 250 gallons per minute), single patient non-life-threatening medical incidents, minor rescues, small fuel spills, and small wildland fires without unusual weather or fire behavior.
- Moderate Risk: Moderate-risk incidents involving fires in single-family dwellings and equivalently sized commercial office properties (fire flow between 250 gallons per minute to 1,000 gallons per minute), life-threatening medical emergencies, hazardous materials emergencies requiring specialized skills and equipment, rescues involving specialized skills and equipment, and larger wildland fires.
- High Risk: High-risk incidents involving fires in larger commercial properties with sustained attack (fire flows more than 1,000 gallons per minute), multiple patient medical incidents, major releases of hazardous materials, high-risk rescues, and wildland fires with extreme weather or fire behavior.

Figure 113: CPSE Staffing Recommendations Based on Risk

Incident Type	High Risk	Moderate Risk	Low Risk
Structure Fire	29	15	6
Emergency Medical Service	12	4	2
Rescue	15	8	3
Hazardous Materials	39	20	3

Outcomes: The updated tasking should be used for automatic aid dispatching and for understanding the critical tasking risk level with the needed units.

Estimated Financial Cost: Staff time to develop the response run order protocols for reported structural fires that match the critical needs of personnel totals.

Recommendation 10: Closely monitor the progress of development related to the updated Old Town Specific Plan and prepare to add a staffed engine company in addition to the currently staffed ladder truck at Fire Station 1.

Description: The projected impact of the Gold Line and anticipated development consistent with the updated Old Town Specific Plan will increase risks and demand for service in the area served by Fire Station 1. AP Triton is projecting that the addition of this resource will be needed within the next five years or sooner, depending on the pace of development.

Outcomes: Alignment of available resources with increased risk and service demands.

Estimated Financial Cost: $1,665,372

Recommendation 11: Formalize, adopt, and fund a capital replacement plan.

Description: The Department does not currently have a formal capital asset replacement plan.

Outcomes: Fiscal constraints, including financial capacity and an inability to contemplate all capital expenditures that may arise in a budget cycle, introduce uncertainty and an inability to budget and plan for every contingency. GFOA recommends that governments establish Capital Planning Policies that undertake a multi-year planning and budgeting process to accumulate funding for anticipated capital needs. The plan should be specific to LVFD and consider items such as facilities, apparatus, land acquisition, and other major capital projects. Adopting a formal multi-year plan can provide the City and the department with a tool to properly anticipate and financially prepare for capital needs.

Though maintenance and replacement of capital projects should be funded each year through the budgeting process, establishing a capital asset replacement plan provides additional flexibility in a strong capital asset management program.

Estimated Financial Cost: As the City informally has the elements for a capital improvement/replacement plan, the main upfront cost to implement will be staff time.

Recommendation 11: Initiate the process of identifying a new location and architect for the purpose of constructing a new Fire Station 1 to maintain a high degree of safety, efficiency, long-term sustainability, and effectiveness.

Description: LVFD should redesign, reengineer, and rebuild the current station or identify a location in close proximity to the current location, acquire land, and contract with a qualified architectural engineering firm to plan for construction of a new station that will accommodate the current and future needs of the department:

- The design and construction should take into consideration compliance with NFPA 1500 *Standard on Fire Department Occupational Safety, Health, and Wellness*, NFPA 1710 *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* as well as NFPA 1851 as it relates to planning for space to accommodate storage, care, and maintenance of structural firefighting gear.
- Additional full-time staffing to total nine firefighters per 24-hour shift.
- Gender separate restroom and shower facilities.
- Accommodations for enhanced administrative support.
- Construct the facility to comply with OSHA exhaust emissions requirements.

Outcomes: A facility that meets all health and safety requirements and will accommodate the current and future needs of the community.

Estimated Financial Cost: Construction costs are estimated to be approximately $1,000 per square foot.

Recommendation 12: Work with frequent users of EMS services to reduce utilization.

Description: Most fire service agencies have patients and facilities who routinely call multiple times for a response from the local fire department. While some of these patients undoubtedly have acute medical challenges that require a response and assessment, many others have chronic illnesses and have become reliant upon first responders as their primary care provider. Others are living alone but struggling to live independently, relying instead on first responders to address their routine challenges. A smaller subset may be relying upon first responders for social needs or may have mental health challenges that cause them to call inappropriately for first responders. Fire agencies can also have a significant response workload at single facilities such as nursing homes, assisted living, and mobility-impaired resident facilities.

Many calls for service are legitimate medical emergencies, while some are lift-assists that occur when a mobility-impaired resident falls and needs assistance getting up. First responders, in these cases, perform a quick assessment of the latter group and assist them back into place. While this may seem to be an appropriate service to provide to the residents of such facilities, in many cases, it is a liability shift and/or a staffing shift from a fee-for-service facility to the taxpayer-provided emergency responders. Further, it can misuse critical emergency response resources to address decidedly non-emergent responses.

Outcomes: Enhanced availability of resources to respond to emergencies.

Estimated Financial Cost: Staff time.

Section IV:
APPENDICES

Appendix A: Risk Classifications

The following are the risk classifications determined by incident type.

Risk Assessment Methodology

Developing a risk score to determine risks in a community is necessary to provide an organization with a method for creating response protocols for an incident. The Three-Axis Heron model establishes a score by reviewing probability, consequence, and impact factors and assigning a score between 2–8 in each category.[28] A description of the incident types for each risk at the end of this Appendix.

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

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

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

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

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

Probability

Probability is the likelihood of an incident occurring in the community over time. This axis reflects the probability of a particular type of incident occurring (which contributes to the level of risk). Many factors include the time of day, location, hazard present, the year's season, building construction and maintenance, demographic factors, and more. It can range from a rare event to one that occurs often.

Figure 114: Probability or Likelihood of Occurrence

Score	Category	Probability or Likelihood
2	Minor	Unlikely: < .02% of total call volume. Expected to occur very rarely.
4	Low	Possible: .02%–.07% of total call volume. Expected to occur rarely.
6	Moderate	Probable: .07&–.3% of total call volume. Expected to occur monthly.
8	High	Likely: .3%–2% of total call volume. Expected to occur multiple times per week.
10	Extreme	Frequent: > 2% of total call volume. Expected to occur one or more times per day.

Consequence

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

Figure 115: Consequence to the Community

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

Impact

The third factor in determining the risk is the fire department's impact and the critical tasking needed to control or mitigate an incident. This includes the number of emergency responders and apparatus available, whether available internally or from external agencies. It measures the department's ability to respond to a given risk or incident while continuing to provide service to the remaining parts of the district.

Figure 116: Impact on Operational Forces

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

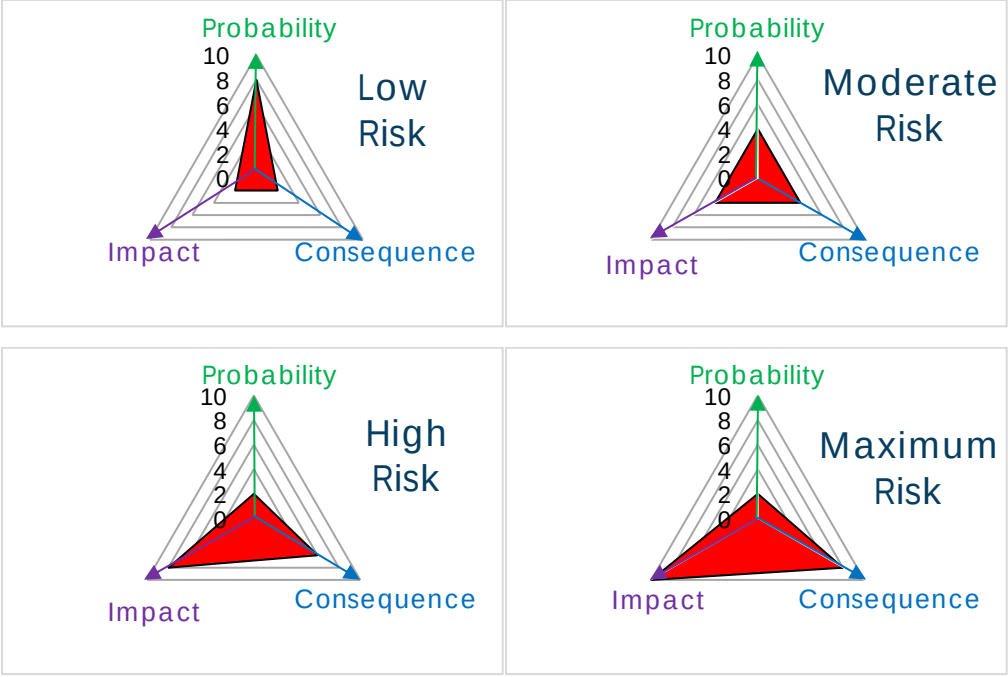
Fire Response

LVFD 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. Fire risks for a vehicle fire are considered low compared to a maximum risk for a school that houses students. This scoring is applied to four different categories of fire incidents in LVFD to provide staffing needs to meet critical tasks on the fire ground.

Figure 117: Fire Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	8	2	2	4	4	4	2	6	8	2	8	10
Score Assigned	16.25			19.60			36			59.4		

Figure 118: Fire Risk Classifications



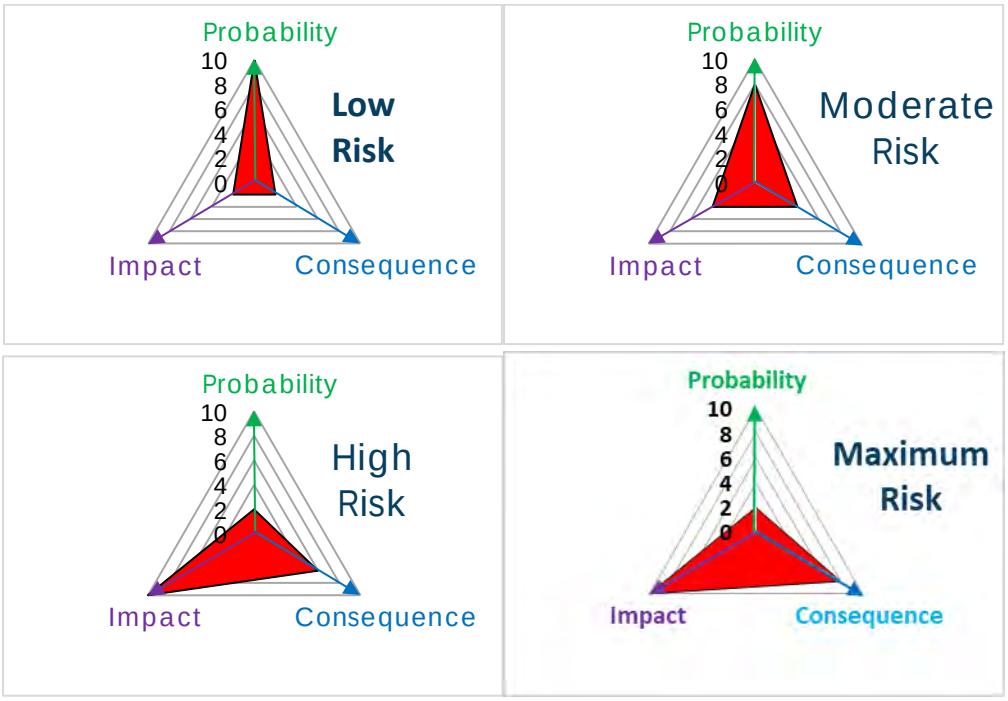
Emergency Medical Services

LVFD provides advanced life support emergency medical care in the City of LA Verne. Low-risk incidents range from a medical assist to a maximum for an active shooter.

Figure 119: EMS Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	10	2	2	8	4	4	2	6	10	2	8	10
Score Assigned	20.2			33.94			45.52			59.40		

Figure 120: EMS Risk Classifications



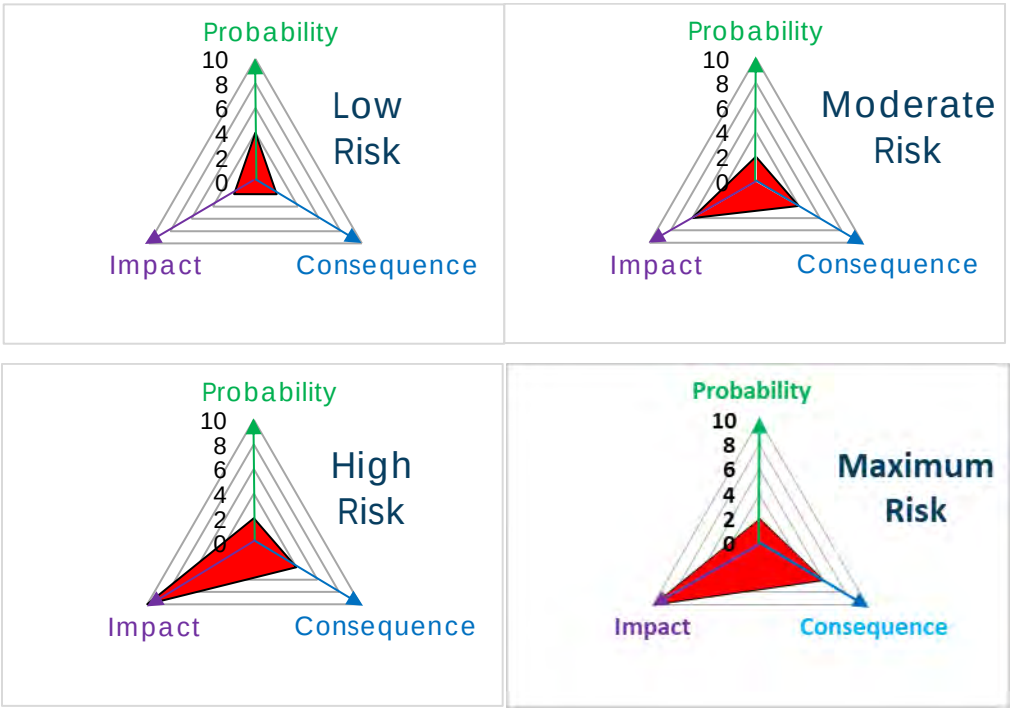
Technical Rescue

Rescue services can vary from a low-risk incident such as accessing a locked vehicle with a child inside to a confined space incident (maximum) that potentially requires many personnel to mitigate the incident.

Figure 121: Technical Rescue Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	4	2	2	2	4	6	2	4	10	2	6	10
Score Assigned	8.49			8.49			28.1			48		

Figure 122: Technical Rescue Risk Classification



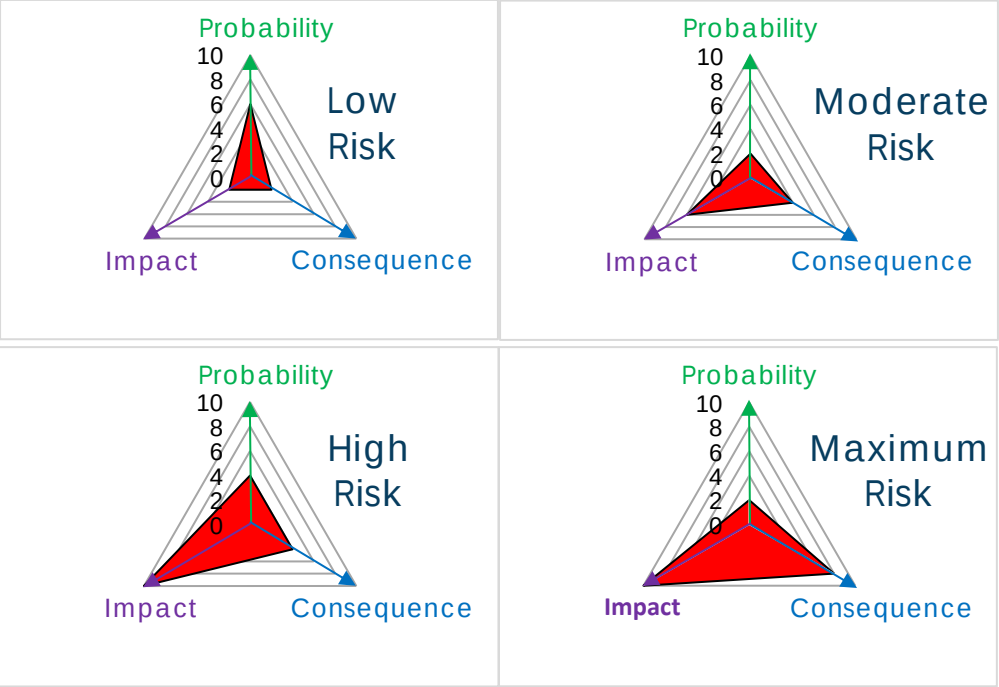
Hazardous Materials

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 LVFD, but higher risks may need assistance from outside resources.

Figure 123: Hazardous Materials Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	6	2	2	4	4	6	2	4	10	2	8	10
Score Assigned	12.33			19.80			41.57			59.40		

Figure 124: Hazardous Materials 3-Axis Risk Assessment



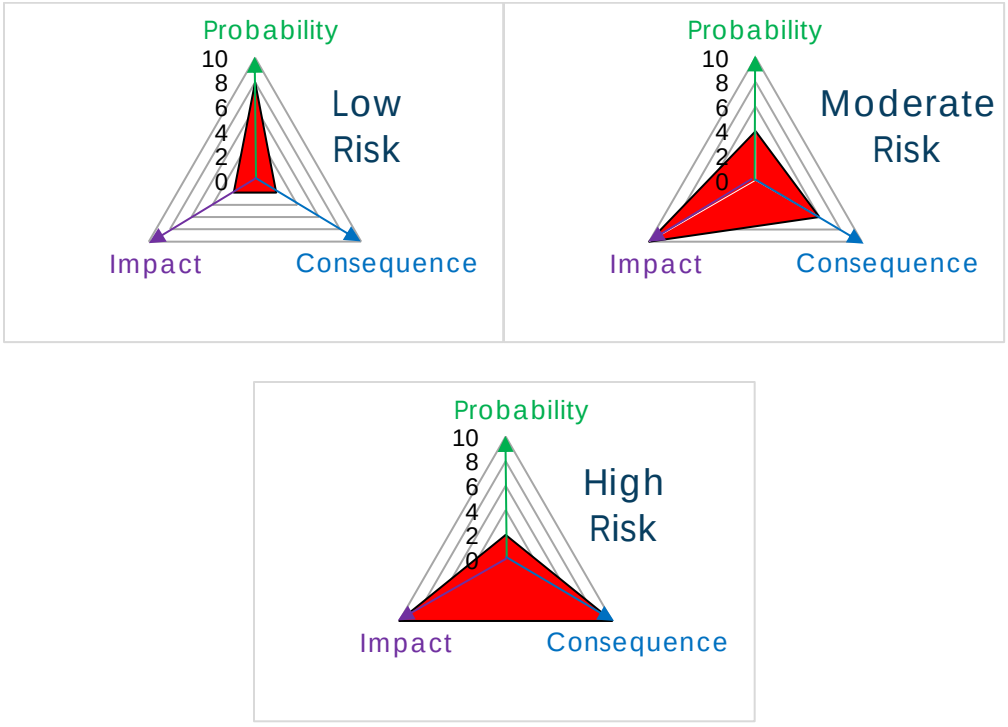
Wildland Fires

The types of wildland fire risk vary from small grass fires to large forest fires requiring many internal and external resources.

Figure 125: Wildland Fires Response Risk Assessment

Description	Low			Moderate			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I
	6	2	2	4	6	10	2	10	10
Score Assigned	12.33			53.74			73.48		

Figure 126: Wildland Fire 3-Axis Risk Assessment



Fire Risks

Low Risk

These incidents are considered low in risk and are minor in scope and intensity. It requires a single fire apparatus and crew to manage fires involving passenger vehicles, fences, trash or dumpster, downed power lines, residential or commercial alarm investigations, or an odor investigation.

Moderate Risk

These incidents are the first alarm response needed to manage a moderate fire risk incident. These incidents include smoke in a building, small outside building fires, commercial vehicle fire, a single-family residence, lightning strike to a building, automatic fire alarm at a high-risk occupancy, or a hazardous materials pipeline fire.

High Risk

These incidents are a second alarm response needed to manage a high fire risk incident. These incidents include smoke in a high-life hazard property (school, skilled nursing, etc.), single-family residence with injured or trapped victims, multi-family residential building, or a moderate-sized commercial/industrial occupancy.

Maximum Risk

A third alarm response is needed to manage a maximum fire risk incident. These incidents include a hospital, assisted living facility, fire in an apartment building, high-rise building fire, a large commercial or industrial occupancy, hazardous materials railcar, or storage occupancy. Incident assignments will include additional command staff, recalling off-duty personnel, mutual aid assistance for other critical tasking needs.

EMS Risks

Low Risk

A single EMS unit can manage a low-risk EMS incident involving an assessment of a single patient with a critical injury or illness, no-life threatening medical call, lift assist, or standby.

Moderate Risk

A two-unit response is required to control or mitigate a moderate risk EMS incident. It involves assessing and treating one or two patients with critical injuries or illnesses or a motor vehicle crash with 1–2 patients.

High Risk

A multiple-unit response is required to control or mitigate a high-risk EMS incident. It involves 3–8 patients with injuries ranging from minor to critical. Patient care will involve triage, BLS, ALS treatment, and a coordinated transport of patients.

Maximum Risk

A multiple unit response is required to control or mitigate a maximum risk EMS incident. It involves more than nine patients with injuries ranging from minor to critical. Patient care will involve triage, BLS, ALS treatment, and a coordinated transport of patients. If this is an active shooter incident, the response may require a casualty collection area unit to treat patients, not in the hot zone.

Technical Rescue

Low Risk

A single fire unit can manage a low-risk technical rescue incident involving rescues that are minor in nature, such as a child locked in a vehicle, elevator entrapment, or minor mechanical entrapment.

Moderate Risk

A two-unit response is required to control or mitigate a moderate technical rescue risk incident. Support is not usually required from a technical rescue team. This type of incident involves a motor vehicle crash that requires patient extrication, removal of a patient entangled in machinery or other equipment, or a person trapped by downed power lines.

High Risk

A multiple-unit response is required to control or mitigate a high-risk technical rescue incident. This type of incident may involve full-scale technical rescue operations ranging from structural collapse to swift water rescues. It may involve multiple motor vehicles that require extrication, commercial passenger carriers, or a vehicle impacting a building. Support is usually needed required from a technical rescue team. This incident may require multiple alarms.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum risk technical rescue incident. Support is required from a specialized technical rescue team and may have multiple operations locations. This type of incident will involve full-scale technical rescue operations such as victims endangered or trapped by structural collapse, swift water, or earth cave-ins.

This incident will require multiple alarms and may expand beyond the identified critical tasking. Recall of off-duty personnel or assistance from auto or mutual aid may occur during a disaster or when additional alarms and command staff are needed.

Hazardous Materials

Low Risk

A single fire unit can manage a low-risk hazardous materials incident involving carbon monoxide alarms and other unknown hazmat investigations without symptomatic victims, less than 20 gallons of fuel, natural gas meter incident, downed power lines, equipment, or electrical problems, or attempted burning. Automatic alarms that may originate from a hazardous material.

Moderate Risk

A two-unit response is required to control or mitigate a moderate risk hazardous materials incident. Direct support is not usually required from a hazardous materials team. This type of incident involves a carbon monoxide alarm with symptomatic patients, a fuel spill 20–55 gallons, or a gas or petroleum products pipeline break not threatening any exposures.

High Risk

A multiple-unit response with a hazmat team is required to control or mitigate a high-risk hazardous materials incident. Support is needed for a Level 2 hazmat incident that involves establishing operational zones (hot/warm/cold) and assigning multiple support divisions and groups. This response includes a release with 3-8 victims, gas leaks in a structure, hazmat alarm releases with victims, flammable gas or liquid pipeline breaks with exposures, fuel spills greater than 55 gallons, fuel spills in underground drainage or sewer systems, transportation or industrial chemical releases, or radiological incidents. Additional assistance may be required to expand operations past the identified critical tasks.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum risk hazardous materials incident. Support is required from an on-duty hazmat team and their specialized equipment. This type of incident involves establishing operational zones (hot/warm/cold) and assigning multiple support divisions and groups. Examples include nine or more contaminated or exposed victims, a large storage tank failure, hazmat railcar failure, or a weapon of mass destruction incident. This incident will require multiple alarms and may expand beyond the identified critical tasking. Recall of off-duty personnel or assistance from auto or mutual aid may occur during a disaster or when additional alarms and command staff are needed.

Wildland Urban Interface

Low Risk

A single fire unit can manage a low-risk wildland firefighting incident involving a fire minor in scope, structures not threatened, and Red Flag conditions do not exist. These include low risk wildland or grass fires include an outside smoke investigation, illegal or controlled burns, or small vegetation fires.

Moderate Risk

Multiple units are needed to manage a moderate risk wildland firefighting incident involving a significant fire in brush, brush pile at a chipping site, grass, or cultivated vegetation. Red Flag conditions do not exist, and structures may or may not be threatened.

High Risk

Multiple units or alarms are needed to manage a high-risk wildland firefighting incident. The level is associated with Red Flag warnings with structures that may or may not be threatened. This fire involves a significant wildfire in brush, grasses, cultivated vegetation. And woodland areas. Additional alarm assignment, command staff, recall of off-duty personnel, and mutual aid assistance may require the operations to extend beyond the identified critical tasks.

Appendix B: Strategic Partners—Stakeholder Interviews

Triton interviewed a wide variety of the City of La Verne 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. Based on the information reviewed, the team identified a series of observations and recommendations, and felt they were significant enough to be included in this report.

Stakeholders were identified within the following groups: Elected Officials, City Management, Department Heads, Business Community Leaders, Community volunteers, Chief Officers, and Labor Leaders.

Business Community Leaders & Community Volunteers

Describe your expectations of the fire department:

- Show up when we need them.
- Respect for our community.
- Transparency and honesty.
- Good communication.
- To be a partner where they benefit, we benefit and all work together.
- Be clear about expectations of the Community Emergency Response Team's role.

What do you think the fire department is doing particularly well?

- The Deputy Fire Marshall does a great job.
- Communication and customer service is good.
- Serve the City of La Verne well, focusing on fire and medical issues.
- Confident that they will respond, with a calm demeaner.
- Work through challenges, overcome challenges when possible and improve in any way that they can.
- The Fire Chief and Rank & File are diligently focusing on improving morale.

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

- Attend and participate in business-based community events.
- Participate in quarterly training with outside businesses, organizations, such as Brackett Field and the University of La Verne.
- Cross training with the Police Department; i.e., "active shooter," etc.

ELECTED OFFICIALS, CITY MANAGEMENT and DEPARTMENT HEADS

What strengths contribute to the success of the La Verne Fire Department?

What do you do well?

- We have a smaller department and are more responsive to the needs of our community.
- Training and the types of calls they respond to gives them strength.
- The new Fire Chief's approach to revitalize the Department is one of many of his strengths.
- Communication is very good.
- Provide support to the community for both Fire Protection and Emergency Medical services.
- Works well with neighboring communities.
- The Fire Department delivers very good service.
- Opportunities for partnerships are becoming mutually beneficial.
- The Department's Engineers and Captains have familiarity within their response area.
- Community residents love having their own Fire Department and enjoy supporting it.
- Responses to emergency medical incidents and good customer service is a testament to the Department's dedication to their community.

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

- Medical response procedures need to be reviewed and updated.
- Improve the partnership with County.
- Relations do not feel like partnership.
- Succession.
- The Fire Department wants to be an equal partner.
- Resurrect CERT, Fire station tours, etc.

What do you see as the top critical issues facing the department today?

- History between the Union and the City
- Significant development within the city which will be four or five-story structure / mixed-use; i.e., Hotel, Offices, and residential apartments.
- Existing condition of Station #1.

Chief Officers, Labor Leaders, Rank & File

What strengths contribute to the success of the Department? What do you do well?

- Adaptability which is based on size and direct interaction with the community.
- Flexibility
- "Safety" which plays a big part in awareness of safety in the community.
- Provision of information to citizens.
- Having our own Fire Department, we know our community extremely well.
- Customer service
- Responsive with resources we have.
- Partnerships are becoming mutually beneficial.
- Referencing the City of La Verne, we cooperate and support our city.
- Participating and/or attending community events.
- The Fire Department is focused and serves the community on a personal level.

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

- Reduce collateral duties.
- Address the deficiency in staffing levels for Operations and Administration.
- Initiate weekly, bi-weekly, or monthly updates.
- Increase staffing.

- Focus on retention.
- Regional approach to training.

What do you see as the top critical issues facing the department today?

- Staffing, recruitment, and retention.
- Safety and funding.

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

- Leverage all internal and external opportunities and, continue to be objective.
- Partner with stakeholders.
- Station #3 offers an opportunity to provide enhanced response time.
- Developing a regional approach and cross-train with LA County.
- Retention, recruitment, safety, and funding.

If you could change one thing in the fire department, what would it be?

- Attitudes
- Perspective
- Current culture
- Increase staffing levels.
- Training
- Training for Specialized teams.
- We are a full-service City and protecting the citizens is important.

Appendix C: Table of Figures

Appendix D: References

[1] City of La Verne - About La Verne.

[2] Census - Search Results 2020.

[3] City of La Verne - Mission Statement.

[4] Zoning-Map-PDF (lavergnetn.gov).

[5] City of La Verne - Economic Development.

[6] City of La Verne - Strategic Vision.

[7] https://www.lavernefire.org/wp-content/uploads/2019/02/La_Verne_AG.pdf.

[8] www.census.gov/data.html.

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

[10] www.census.gov/data.html.

[11] Races in La Verne, California (CA): White, Black, Hispanic, Asian. Ancestries, Foreign-born residents, p*lace of birth - Detailed Stats* city-data.com.

[12] www.homefacts.com/earthquakes/California/Los-Angeles-County/La-Verne.html.

[13] www.homefacts.com/earthquakes/California.html.

[14] LVFD Vegetation Management Community Wildfire Protection Plan.

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

[16] www.sce.com/wildfire/psps.

[17] dot.ca.gov/programs/traffic-operations/census.

[18] The City of LA Verne General Plan June 1999.

[19] Fire Loss in the United States During 2018, NFPA.

[20] www.ucrdatatool.gov/offenses.cfm.

[21] Ibid.

[22] City of La Verne Agenda Report, Engineer's Department, 7-20-20, Resolution No, 20-61.

[23] City of La Verne Agenda Report, Finance Department, 7-20-20, Resolution No. 20-60.

[24] The 2020–2021 Dispatch Center Data was incident data. The 2018–2019 dispatch data was in unit data format. The department did not report unit data in their RMS. Unit charts in this report reflect these issues.

[25] 2016–2040 RTP/SCS Final Growth Forecast by Jurisdiction.

[26] No cleared scene time given for dispatch data 2020–2021.

[27] The actual time on scene had many missing elements and misinputs from the CAD data.

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