2022 Standard of Cover

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Mission, Vision, and Core Values

At the beginning of the accreditation process, the fire department leadership set out to identify mission and vision statements, as well as core values, that accurately identified who we are as a department and where we intend to go. This process involved all members of the department and is a result of that collaboration.

Mission Statement

To become an Internationally Accredited fire department while providing the highest level of emergency response to our citizens, neighbors, and guests of Boulder City. We pride ourselves on being a progressive, community focused fire department that will meet the ever-changing needs of our community while ensuring a safe and secure environment for all members through professional development, unity, and teamwork.

Vision Statement

It is the mission of the Boulder City Fire Department to provide the highest-level public safety services for our community. We protect lives and property through fire suppression, advanced life support (ALS) emergency medical transport, hazardous materials, technical rescue, disaster management, community service, and community risk reduction. It is our number one priority to provide the best emergency services to all Boulder City residents and visitors.

Statement of Core Values

We, the members of the Boulder City Fire Department are committed to the RAPID-C values in our interactions with coworkers and customers:

R Respect – For each other, our department, our customers, our city officials, and the citizens/visitors of Boulder City

A Accountability – Professionally, personally and fiscally responsible for our actions

P Professionalism – In application, appearance, attitude, and standards

I Integrity – Demonstrate honesty and fairness

D Diversity – Be open minded and responsive to the uniqueness of our community without regard to age, gender, religion, or ethnic origin

C Compassion – Demonstrate kindness and empathy

Executive Summary

This standard of cover document is intended to help the residents of Boulder City, the city's leadership, and members of the fire department understand the levels of emergency and non-emergency services provided within the jurisdiction. The document required significant analysis of various factors including community risk assessment, critical task analysis, department service level objectives, response reliability, and distribution and concentration of resources. The composition of the department, available resources and personnel, levels of training, historical demands for service, historical response performance, and anticipated future performance were also considered and analyzed. The results of this analysis will be recommendations to reduce gaps in coverage and community expectations. Recommendations will also be added to the strategic plan and communicated to the city leadership.

The Boulder City Fire Department currently has 21 career firefighters that work on a three-shift rotation and approximately 14 reserve firefighters working a minimum of 48 hours a month. The fire personnel staff an engine and two frontline rescues from Station 121. There are also reserve battalion chief positions that cover up to four 24-hour stand-by shifts per month. They are supported by the fire chief, deputy fire chief, and fire captain in the administration, as well as two civilian support staff to include a fire analyst and the department secretary.

The fire department is an all-hazards, emergency response agency providing fire suppression, emergency medical services, hazardous materials response, and technical rescue emergency response. The department also provides non-emergency services that include public education, code enforcement, plan review, and community risk reduction.

The standard of cover details the historic response performance as well as the emergency response goals for the Boulder City Fire Department. It is a living document developed to keep the community informed of the capabilities of the fire department and any response coverage gaps.

Gaps are analyzed and a plan is developed to reduce or eliminate the gap. This plan was communicated to the city manager and further communicated to the city council in an open meeting. An example of this was the November 17, 2021, city council workshop to discuss response performance gaps identified that showed approximately one half of

the community living outside of the *National Fire Protection Association (NFPA) 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* travel time standard of four minutes. The overall goal of this workshop was to inform the city leadership, gain support for closing the gaps, and to identify funding to add an additional fire station and engine company to increase the coverage of the fire department and reduce this response gap.

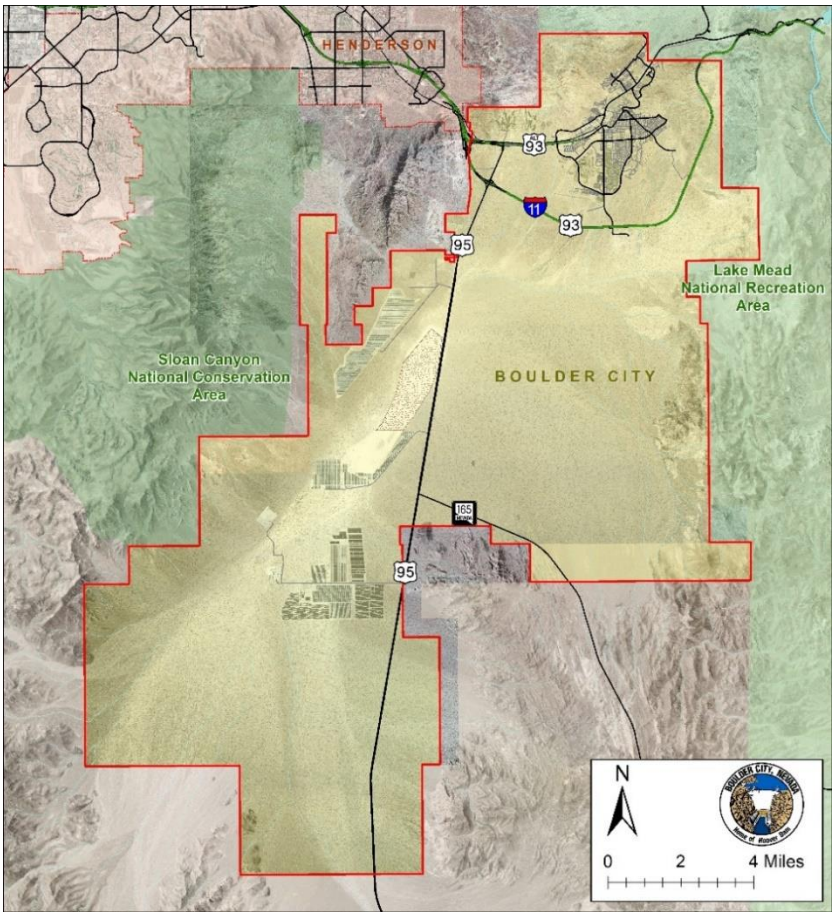
This document would not be possible without the fine work of the men and women of the department who have proudly served the residents, businesses, and visitors of Boulder City since 1960.

Will Gray, Fire Chief

Chapter 1 – Documentation of Area Characteristics

The Boulder City Fire Department currently responds to all 911 calls for assistance within the city of Boulder City except for law enforcement only calls for service. The total population within the city is 14,885[1]. The population is primarily centered in one large cluster on the north end of the city. There are several large solar power generation plants on the west and south side of the city that have staffing, but the facilities typically have few people working day to day.

Boulder City is one of the largest cities in the United States by land. At 208.6 square miles, it currently ranks as the 39th largest city. The city is bordered on the north by the River Mountains. The east boundary abuts to the Lake Mead National Recreation Area along the Eldorado Mountains. The southern boundary follows Highway 165 (Nelson Road) to mile marker 6 and south on U.S. Highway 95 to mile marker 36, toward the town of Searchlight. The west boundary is the edge of the McCullough Mountains as shown on the map below.



The city is divided into three population densities: urban within the main population area, rural around the parameter of populated area, and outlying across most of the jurisdiction. The only area with people operating on a regular basis in the rural density is the city dump and the Boulder Rifle and Pistol Club. The rest of this area is undeveloped, open space; however, it is transected by US Hwy 93, US Hwy 95, and Interstate 11. The section of Interstate 11 is the first section of what will eventually connect Las Vegas to Phoenix. There is consideration from Congress to extend this as far as to the U.S./Canada border to the north and the U.S./Mexico border to the south.

The city currently has a single fire station located on the northwest side of the city. The station houses all the fire department's resources to include a frontline engine, two frontline paramedic rescues (ambulances), a cross-staffed quint, hazardous materials trailer, a technical rescue trailer, and other reserve equipment. The fire administration is also located at the fire station.

The Boulder City Airport is located on the southwest side of the populated area and primarily services general aviation and tourist helicopters/airplanes. The airport does not have commercial service and does not have firefighting equipment on the property.

The city has 23 energy leases covering 11,677 acres for solar power generation facilities that produce a combined 1,946 MW of power. This is sufficient to power over 786,400 homes during the summer months and 1,769,400 during the cooler seasons. The newest facility, Townsite Solar, also has a large battery energy storage system consisting of 120 Tesla Megapacks and is one of the largest of its kind in the country.

The city also has 181.31 square miles of undeveloped/open space, including 136.37 square miles within a conservation easement for the preservation of the Desert Tortoise and other species' habitat.

History Leading to the Current Delivery of Service

The fire department in Boulder City was organized in the fall of 1931, with Robert E. Hewes in charge. The department was staffed by government employees that volunteered to protect the areas they worked and lived in. During the construction of the Hoover Dam and the

[1] 2020 U.S. Census

power generation plant, Six Companies Incorporated maintained the fire department with three units. After the construction was completed and Six Companies Incorporated left, the department went through several transitions in ownership/responsibility until the city was finally incorporated in 1960[2].

The Boulder City Fire Department exists to provide a high level of firefighting and emergency response services to the residents of Boulder City. Prior to 2020, the fire department provided fire suppression, auto extrication, and paramedic level emergency medical services with transport as the main services to the city. There was also limited fire prevention activities. Beginning in 2021, fire department added hazardous materials technician level response, limited rope rescue, and community risk reduction because of the community risk assessment findings.

The fire department is currently staffed with 21 highly trained career firefighters that make up the full-time operational forces. The operational force works a three platoon / 48 - 96 shift schedule (1 captain, 1 engineer, and 5 firefighter/paramedics) operating from Station 121. The firefighters respond on a single fire engine and two frontline advanced life support ambulances. There are five members of the staff and administration that lead and support the operational personnel. Administrative personnel work four 10-hour shifts Monday through Thursday.

The department is further supported by our reserve firefighters to include reserve battalion chiefs. The department strives to maintain twenty reserve firefighters and four reserve battalion chief positions filled, but this number is constantly changing as the reserves are hired full-time elsewhere. The reserve firefighters are paid for their 12- or 24-hour shifts worked, required training, and for special events coverage with a requirement to participate in a minimum of 48 hours per month with the department. These reserve firefighters fill full-time firefighters' vacancies during vacation, sick and or injury. They also provide additional staffing when needed to meet minimum work hour expectation. The reserve battalion chief positions are 24-hour on-call shifts from chief officers that live within the city and can respond immediately to all full alarm assignments.

[2] History of Boulder City Fire Department by Leo Dunbar 1947

Legal Basis for the Existence of the Department

The Boulder City Fire Department was formally established on December 31st, 1959, by Boulder City Ordinance No. 17. This occurred as the construction of the Hoover Dam was completed and the U.S. Bureau of Land Management transferred ownership of the city to the city of Boulder City.

Funding Sources and Restrictions

The city of Boulder City Council provides funding for the operation of the fire department through the following mechanisms:

- Rents and Royalties – 40% (Majority is solar lease revenue)
- Intergovernmental – 35% (Largest portion of this is the Consolidated Tax – 82%)
- Charge for Services – 11%
- Taxes – 5%
- Licenses/Permits – 7%
- Fines – 1%
- Miscellaneous – 1%

The fire department has also received the 2020 Assistance to Firefighters Grant in the amount of $147,952.38 for the purchase of new self-contained breathing apparatus. .

Overall Geospatial Characteristics

Topography

Boulder City is approximately 11 miles south of Henderson and approximately 7.6 miles Northwest of Hoover Dam. The city is situated 2,501 ft. above sea level and is nestled between the River Mountains to the north, the Eldorado Mountains to the east, and the McCullough Mountains to the west. The terrain is rugged and changes in elevation throughout the city. Just northeast of the city is the 5th largest National Park in the US, Lake Mead National Recreation Area. The eastern border of the city is finished off by the Colorado River which divides Nevada and Arizona. To the south is an area known as the Dry Lakebed.

Climate

Boulder City is in the Mohave Desert, which is considered the smallest and driest desert in the United States. The average high temperature in July is 99°F and an average low of 38 °F in January and December. The record high temperature was 117°F in 2020 and the record low temperature was 9°F in 1990. Average annual precipitation is 6.39 inches (U.S. Climate Data) with less than an inch of snow in January. The heat causes a strain on emergency scene personnel requiring increased use of mutual aid or increased hazard mitigation time to account for the safety aspect.

	Jan	Feb	Mar	Apr	May	Jun
Average high in °F	53	59	65	73	83	94
Average low in °F	38	42	46	53	62	71
Av. precipitation in inch	0.75	0.79	0.94	0.24	0.24	0.12

	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F	99	98	90	78	62	53
Average low in °F	77	75	69	58	46	38
Av. precipitation in inch	0.55	0.91	0.63	0.28	0.47	0.47

(U.S. Climate Data)

Population

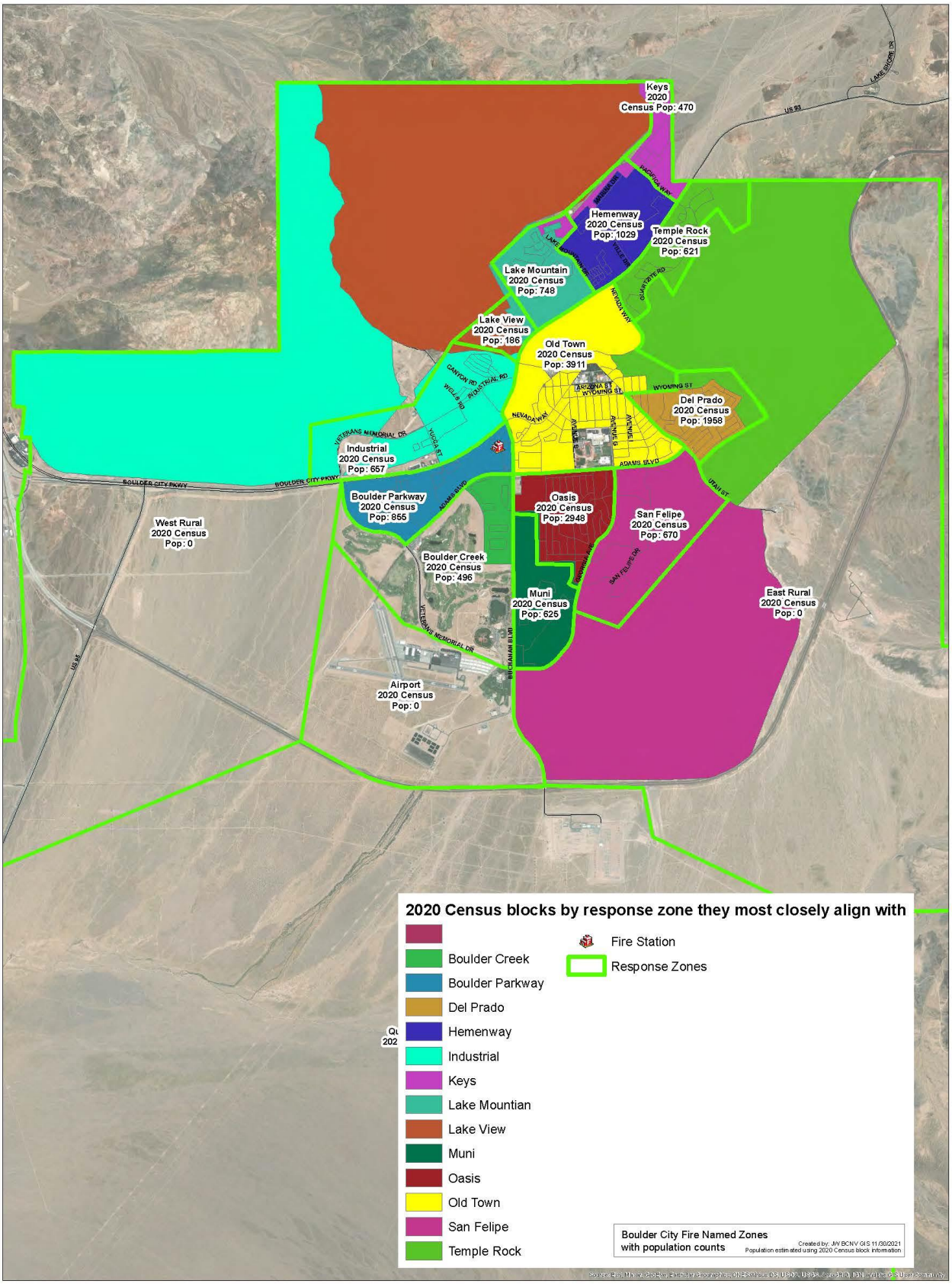
The city has a population estimated at 14,885 according to the 2020 U.S. Census. This is a decrease from 15,023 counted during the 2010 U.S. Census. The city has 30.2% of the population that is 65 years old or older compared to the national average of 16.5%. It also has a lower population of people under 18 years old with 15.9% of the population compared to the national average of 22.3%.

The racial profile of the population is 83.2% white/non-Hispanic, 9.1% Hispanic or Latino, 1.5% Asian, 1.0% Black or African American, and 5.2% other[3].

The city has approximately 7,423 households with a median home value of $287,000.00 in 2021 (National Average - $217,000.00). The median household income is just below the national average at $61,787 (National Average - $62,843.00) and the persons in poverty just below the national average at 9.2% (National Average – 11.4%).

The population density is further evaluated by neighborhood zones as shown in the map below. The city GIS department was limited to an overlay of the U.S. Census data and the department's current neighborhood zones. While this is not ideal, it give an estimate of the population based on each neighborhood as much of the larger areas is open desert without any residents. The results show that the largest group of people live in the Old Town and Oasis neighborhoods. The smallest population groups are in the Keys and Lake View neighborhoods.

[3] 2020 U.S. Census


Keys
2020
Census Pop: 470
Hemenway
2020 Census
Pop: 1029
Temple Rock
2020 Census
Pop: 621
Lake Mountain
2020 Census
Pop: 748
Lake View
2020 Census
Pop: 186
Old Town
2020 Census
Pop: 3911
Del Prado
2020 Census
Pop: 1958
Industrial
2020 Census
Pop: 657
Boulder Parkway
2020 Census
Pop: 855
Oasis
2020 Census
Pop: 2948
San Felipe
2020 Census
Pop: 670
West Rural
2020 Census
Pop: 0
Boulder Creek
2020 Census
Pop: 496
Muni
2020 Census
Pop: 625
East Rural
2020 Census
Pop: 0
Airport
2020 Census
Pop: 0
US 93
BOULDER CITY PKWY
VETERANS MEMORIAL DR
ADAMS BLVD
WYOMING ST
NEVADA WAY
IRAN ST
SAN FELIPE DR
2020 Census blocks by response zone they most closely align with
Boulder Creek
Boulder Parkway
Del Prado
Hemenway
Industrial
Keys
Lake Mountian
Lake View
Muni
Oasis
Old Town
San Felipe
Temple Rock
Fire Station
Response Zones
Boulder City Fire Named Zones
with population counts
Created by: JW BCNV GIS 11/30/2021
Population estimated using 2020 Census block information

Community Development and Growth

The city has a controlled growth management plan in the city ordinances that controls growth within the city. The ordinance limits the total number of allotments for dwellings for each construction year to 120 dwellings, of which 35 allotments can be designated for hotel rooms.

The controlled growth ordinance has prevented the rapid growth seen throughout the Las Vegas valley. This has allowed Boulder City to maintain its small-town charm and better plan for the slow changes that may occur from year to year.

Current residential construction is limited to the area around Boulder Creek Golf Course at the Boulder Hills development and the Tract 350 land beginning in 2022.

The remaining community growth tends to occur within the solar fields in the land south of the populated area of the city. There are still areas that are in the process of being developed in the coming years.

Transportation Network

Boulder City has Interstate 11, U.S. Highway 95, and U.S. Highway 93 within the city limits.

- **Interstate 11** is the newest section of a roadway that will eventually connect Reno, Nevada to Nogales, Arizona. It is considered a key connector to unify the triangle formed by Las Vegas, Phoenix, and Los Angeles. The interstate travels just south of the populated area of the city from Henderson, Nevada to the Hoover Dam. This is the primary transportation route for commercial vehicles traveling through the city to the Las Vegas or Phoenix metro areas. It has also been the location for several semi accidents/fires since it was added.
- **U.S. Highway 95** travels the entire western side of the city connecting the Las Vegas metro area to the Laughlin, Nevada area.
- **U.S. Highway 93** travels along the north side of the city toward Lake Mead and the Hoover Dam. Much of the highway traffic that used this route in the past has moved onto I-11 that goes around the southside of the populated area of the city.

Physical Assets Protected

The total real property assessed value was assessed at $945,937,942.00 in 2020 by the Clark County Assessor's Office. The property is divided into four main categories: residential, commercial, industrial, and solar.

Residential Property

The city has approximately 5,901 single-family residential structures, 178 duplex/triplex occupancies, and 569 multifamily units in 42 structures for a value of more than $808,000,000.00 and a total of 7,423 households. The single-family residential structures include 507 mobile homes/long-term RVs, and 1082 condos.

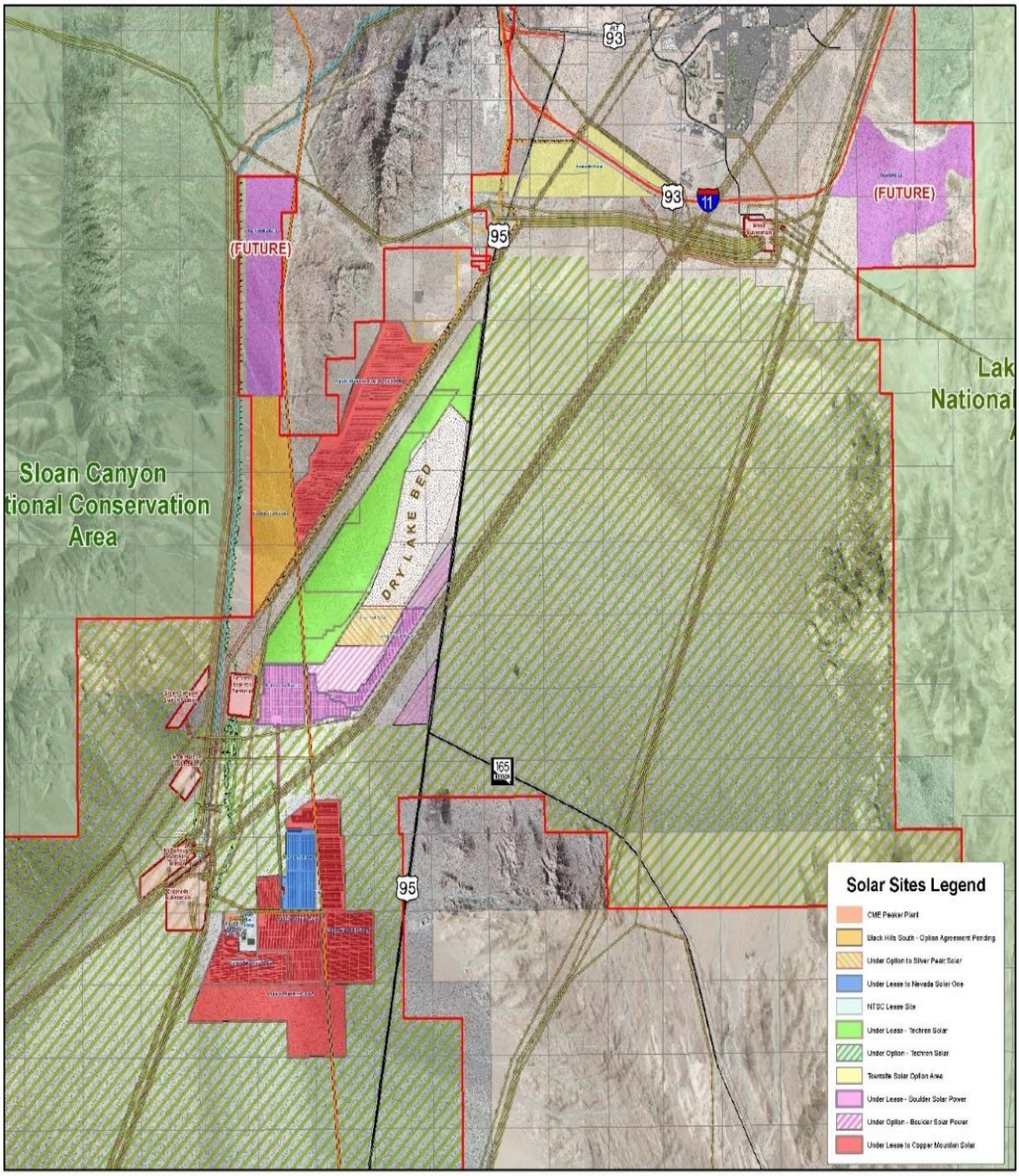
Commercial/Industrial Property

The city has a mix of light commercial and light industrial located primarily in three neighborhood zones: Industrial, Boulder Parkway, and Old Town. There are a total of 777 commercial and industrial occupancies within the city. The commercial occupancies range from small independent businesses and restaurants, regional gas station chains, to an Alberton's grocery store. The industrial occupancies, outside of the solar leases, would be classified as light industrial and include businesses such as Fisher Space Pens, Rocky Research, and Industrial Control Systems.

Solar Lease Property

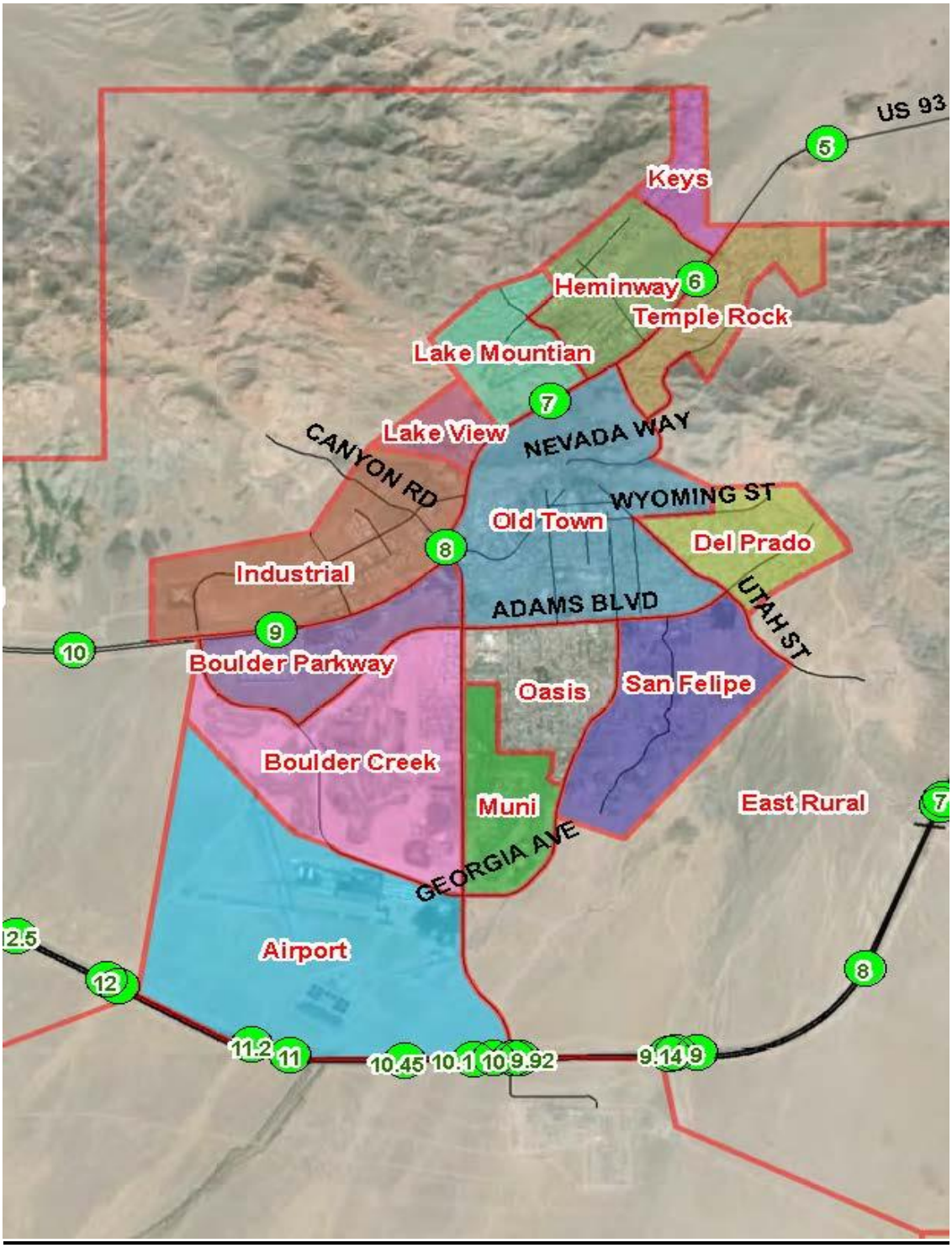
The city has over 11,600 acres of solar leases located on the south side of the city property. This includes approximately 2,000 Mega Watts of energy production which is enough to power 786,400 homes daily and up to 1,769,400 homes in the winter months. The leases are located along I-11 and U.S. 95. The leases generate over $18,000,000 annually for the city to be used as general fund and capital improvement project. A map of the solar fields is below.

Eldorado Valley
Solar Development Areas



Boulder City Fire Department Neighborhood Planning Zones

The Boulder City community is divided into neighborhood zones which are used as the geographical planning zones. There are fourteen planning zones that are easily recognizable to the residents of the city and allow for effective communication of risk by city area.



Chapter 2 – Description of Department Programs and Services

Boulder City Fire Department protects all 208.6 square miles of the city's jurisdiction by deploying an all-hazards response. The department strives to maintain a response that addresses the identified risks within the city. This can be challenging with one of the largest cities in the United States by land area, 39th in the U.S., but only 13% of the land is populated.

Response Types

The Boulder City Fire Department is responsible for an all-hazards response. This means that any emergency that occurs in the city, outside of a law enforcement only incident, is the responsibility of the fire department to respond to and help to mitigate. It has been identified that within the city there are fire, emergency medical, hazardous materials, and technical rescue risks. Within each of these classifications of risk are three categories: low, moderate, and high risk. The different risk classifications and categories of each require a specific response package based on national standards set in *National Fire Protection Association (NFPA) 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. This standard establishes industry best practices for resource management on emergency scenes using a critical task analysis. The critical task analysis for each risk category and classification allows fire departments to deploy the appropriate number of emergency personnel to mitigate the hazard safely and effectively.

In addition to all-hazard emergency response, the fire department responds to non-emergent calls for service such as power lines down, suspicious odors, fire alarm resets, public assists, and police department calls for assistance. All these responses are conducted by the on-duty staffing.

Fire Suppression

The fire department responds to several different fire suppression incidents. These include single unit fire responses for trash/rubbish fires, palm tree fires, and passenger vehicle fires. There are also multi-unit responses to semi fires and utility fires. Structure fires in Boulder City typically require mutual aid assistance from Henderson Fire Department.

Fire suppression risk levels are defined as follows:

- **Fire/Still – Low Risk (Single Company Response) -** *3-Axis Risk Score 7.38* **-** The department classifies any single company fire response as a fire/still – low risk. These include car fires, trash fires, small grass fires, and any other small fire incidents.

- **Structure Fire – Moderate Risk (Structures with an occupancy hazard score below 35) –** *3-Axis Risk Score 52.55* **–** These are single family residential structure fires. This response includes Engine 121, Truck 121, Rescue 121, Battalion 12, 1203, and six mutual aid units from Henderson Fire for a minimum of fifteen personnel. (Henderson Fire sends a total of 16 personnel to help the department attain the effective response force)
- **Structure Fire – High Risk (Structures with an occupancy hazard score of 35 or higher)** - *3-Axis Risk Score 73.48* – These fires are large multi-family residences, commercial, and industrial fires that have higher risk associated with them and require a larger response. This response includes Engine 121, Truck 121, Rescue 121, Battalion 12, 1203, and seven mutual aid units from Henderson Fire for a minimum of nineteen personnel. (Henderson Fire sends a total of 20 personnel to help the department attain the effective response force)

Emergency Medical Services (EMS)

The fire department responds to all medical calls for service within the city and provides paramedic level transport. The EMS calls range from minor injuries from a

fall to cardiac arrest incidents. The highest risk incidents are mass casualty incidents which are defined as five or more patients in a single incident. These have historically been isolated to large motor vehicle accidents in Boulder City.

The department transports many patients to hospitals outside of Boulder City due to the nature of their medical problem or at the patient's request. This has a significant effect on the reliability due to the extended turnaround times that can range from an hour and a half to Henderson Hospital to two hours for St. Rose Sienna.

Emergency medical services risk levels are defined as follows:

- **EMS Low Risk –** *3-Axis Risk Score 15.84* – These incidents include emergency medical calls such as falls, broken bones, lacerations, and psychiatric patients. A typical response is a minimum of two advanced Life Support (ALS) personnel in rescue (ambulance).
- **EMS Moderate Risk –** *3-Axis Risk Score 34.1* – These incidents require ALS skills and care including cardiac arrest. These incidents include emergency medical calls such as diabetic emergencies, strokes, chest pains, allergic reactions, and respiratory distress calls. The response for a moderate risk call is an engine and a rescue for a total of five ALS personnel.
- **EMS High Risk –** *3-Axis Risk Score 44.23* – Mass Casualty Incidents - These incidents typically include large vehicle accidents with injuries (at least five patients) on the highways and I-11. Active shooting/hostile events or other large incidents that involve a high number of patients would also be classified as EMS High Risk. This response includes Engine 121, Rescue 121, Rescue 122, Battalion 12, 1203, three mutual aid units from Henderson Fire, and two Community Ambulances for a minimum of fifteen personnel. (Henderson Fire sends a total of 8 personnel and Community Ambulance provides 4 personnel to help the department attain the effective response force)

Hazardous Materials (Hazmat)

The department responds to low-risk hazmat incidents most often. Moderate risk events have occurred at gas stations and with highway accidents involving semi-trucks. A low-risk hazmat incident is defined as a spill or leak of five gallons or less of fuel, oil, or antifreeze. This can easily be handled by a single unit response without specialized training. A moderate-risk hazmat incident is defined as all spills of Fuels,

oil, or antifreeze greater than 5 gallons. A spill of any other chemical (liquid, solid or gas) and requiring the deployment of the Hazmat Team. The highest risk incidents include but are not limited to highway transportation incidents involving bulk tankers or large fixed facilities.

Hazardous materials risk levels are defined as follows:

- **Hazmat Low Risk –** *3-Axis Risk Score 3.46* – Low Risk Hazmat calls include but are not limited to Carbon Monoxide incidents; leaks or spills of 5 gallons or less of fuel, oil, or antifreeze. One Engine can handle these responses.
- **Hazmat Moderate Risk –** *3-Axis Risk Score 25.92* – Medium Risk Hazmat calls include but are not limited to all spills of Fuels, oil, or antifreeze greater than 5 gallons. A spill of any other chemical (liquid, solid or gas) and requiring the deployment of the Hazmat Team. The initial response to this type of incident is Engine 121, Rescue 121, and 1203 (Safety) for a minimum of nine personnel.
- **Hazmat High Risk –** *3-Axis Risk Score 73.48* – High Risk Hazmat Incidents include but are not limited to highway transportation incidents involving bulk tankers or large fixed facilities. These hazmat incidents require the use of regional mutual aid. The initial response to these incidents is Engine 121, Engine 122, Rescue 121, Battalion 12, and 1203 for a minimum of nine personnel.

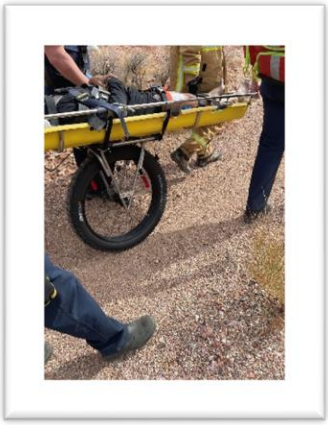
Technical Rescue

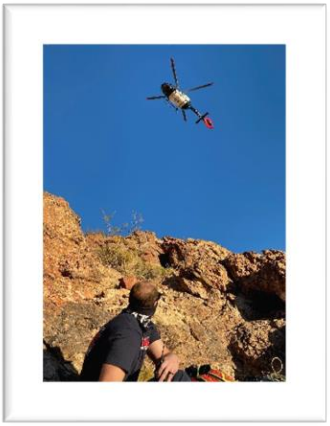
The department's most common technical rescue response is to moderate risk – auto extrications. This is largely due to US Hwy-95 along the east side of the city and Interstate 11. The extrications have ranged from a single car with a trapped individual to overturned semi-trucks with a trapped driver. This has led the department to increase the cache of extrication tools as well as heavy duty Paratech Stabilizing Struts.

Technical rescue risk levels are defined as follows:

- **Technical Rescue Low Risk –** *3-Axis Risk Score 3.0* – These incidents are limited to a stuck elevator. Due to local building height limitations, there are very few commercial buildings with elevators and a few residential elevators. A typical response is a single engine.

- **Technical Rescue Moderate Risk –** *3-Axis Risk Score 9.38* – Motor vehicle accidents with entrapment have historically been the most common technical rescue for the department. The primary technical rescue risk within Boulder City is auto and large vehicle extrication as the result of motor vehicle accidents on the three local highways, Interstate-11, US Highway 95, and US Highway 93. These accidents typically occur at high rates of speeds and result in significant injuries. Engine 121 has a full complement of electric extrication tools. The initial response to this type of incident is an engine and a paramedic rescue for a total of five ALS personnel.
- **Technical Rescue High Risk –** *3-Axis Risk Score 25.0-59.39* – The high-risk for technical rescue is divided into two separate groups with the same initial response. The first group, with a *3-axis risk score of 25.0*, is water rescue, swift water rescue, and confined space. The water rescues are limited to the fishing pond and the RV boat/duck pond. The deepest section is in the fishing pond at 15ft. The swift water risk is limited to the many stormwater drainages around the city but can swell during the summer monsoons. The confined risk is limited to the facility at San Diego Gas and Electric (SDG&E) in the Eldorado Valley and some of the city water utility. SDG&E has an onsite response team. The city utility has very few permitted confined spaces. The second group for the technical rescue high risk is Mountain High Angle Rescue with a *3-axis risk score of 59.39*. The city is surrounded by mountains on all sides that are used for recreational activity. The initial response to this type of incident is Engine 121, Rescue 121, Rescue 122, Battalion 12, and 1203 (Safety) for a minimum of nine personnel.





Other Calls for Service

The department responds to many other calls for service that are non-emergent. These calls range from police assist calls such as providing a ladder to get on the roof to investigate a potential crime or to force entry into a secured area. It also includes public assists such as helping get an immobile individual into their house after a doctor's visit or assisting with smoke detectors.

Mutual Aid Partner – Henderson Fire Department

Many of the risks require a significant number of personnel to respond that often exceeds that of the Boulder City Fire Department daily staffing. This is an issue that is being addressed in the long-term by exploring the addition of a second fire station, staffed with a three-person engine company, and a cross-staffed ambulance. Henderson Fire Department has been a great neighbor and sends additional resources as needed for higher risk incidents that need more personnel and/or equipment that Boulder City Fire Department does not currently have. This includes a standard 2nd alarm mutual aid response of sixteen firefighters and personnel on all working residential structure fires and twenty firefighters and officers for a working commercial structure fire. Without this support, the fire department could not safely operate at the level of service currently being provided.

Chapter 3 – Overview of the All-Hazards Risk Assessment of the Community

Risk Assessment Introduction

The Boulder City Fire Department created a comprehensive community risk assessment document in 2021. The risk assessment document is considered confidential due to the detailed information within it. This section is intended to provide an overview of the methodologies used, risk levels identified, and other significant information.

The Boulder City Fire Department responds to four primary risk types within the boundaries of the city to include fire suppression, emergency medical services, hazardous materials, and technical rescue. The city does not have a significant amount of vegetation to warrant a formal wildland fire suppression response.

Methodologies Used

It is critical that an organization clearly identify the risk assessment methodology that is used to classify and categorize risks. This methodology must be documented in a logical manner so that the process can be reproduced and allow others to arrive at the same results. For this process, the department utilized two tools for determining risks: an occupancy hazard assessment tool and the three-axis risk assessment formula identified in the *Center for Public Safety Excellence – Quality Improvement for the Fire and Emergency Services*, pages 26-27. The department further modified the 3-axis process to better understand the impact of each risk classification and category (low, moderate, high) on the resources available in Boulder City.

Risk assessment is developed to help the fire department and the community understand the risks within the city. By identifying the risks, the fire department and the community leaders can make educated decisions about the management of those risks. To understand the risks a community faces, information on the potential risks needs to be collected and analyzed. The probability of an event happening can then be predicted based on historical occurrences. In most communities, the fire department serves in a broader scope than in the past. Most departments now are considered all-hazard response agencies. This is in part due to the shifting of the primary focus of the department from firefighting and

prevention, to providing emergency medical services (EMS), emergency medical transport, hazardous materials response, and technical rescues. Within the community, each of these response types have different risk classifications and categories associated with them and all impact the community differently.

After collecting a significant amount of data, the community is broken down into manageable zones for analysis. The use of neighborhoods allows for an in-depth look at smaller geographical areas. The use of neighborhoods allows the department to look at the zone over time in that they stay the same. The neighborhood zones are beneficial as well for clearly communicating with the residents and engaging them in the process.

It is important to look at the overall impact a risk has on each neighborhood and the overall community. To accomplish this, the risk is evaluated in a three-axis model. The axes on this model represent frequency, impact on the community, and impact on daily staffing. An additional factor considered for fixed facilities was the facility's hazard score taken from the records management system.

The processes for each risk classification are listed below:

1**. Structural Fire Risk**: The occupancy hazard score and the critical task analysis were considered first to help determine the effects on daily staffing. The occupancy hazard score considers the following sixteen factors:

a) Number of Employees
b) Average Exposure Separation
c) Number of Floors
d) Square Footage
e) Property Value
f) Occupancy Load
g) Occupancy Access
h) Occupant Mobility
i) Warning Alarm Systems
j) Exits
k) Construction Type
l) Regulatory Oversight
m) Capacity to Control

n) Human Activity Hazard Index
o) Fire Load
p) Available Water Flow

These factors were applied to every commercial and industrial building within the city limits. The results were a range of scores from 15-49. The department also applied the scoring to an average single family residential structure and arrived at a score of 24. It was determined that scores from 15-24.9 would be considered low risk; scores from 25-34.9 would be considered moderate risk; and scores from 35 and up would be considered high risk. Maximum risk was reserved for occupancies that the command staff determined presented extreme risks to responders, occupants, and/or impact to the community.

Once these scores were determined, the 3-axis risk model was applied to each risk range to identify the final risk score. Each leg of the 3-axis model was given a range of 1-10. The department used Heron's Formula, modified for tetrahedrons, to determine the risk score:

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

- P = Probability
- C = Consequence to the Community
- I = Impact on Daily Staffing

Probability was calculated by identifying the total number of incidents in 2020 for each risk type. For example, the total number of all Alpha and Bravo level EMS incidents were considered when determining the BLS EMS risk score. Next, group of calls was divided by the total number of incident responses for the year of 2020.

2 = Below 1%
4 = 1% – 5%
6 = 6% - 10%
8 = 11% to 15%
10 = 16% and up

Impact on Daily Staffing was calculated by using the response personnel identified in the critical task analysis. For example, a Bravo level EMS call gets an initial response of two firefighters or a single unit. The staffing needed was broken down to determine the score for the axis as follows:

2 = Single Unit (2)
4 = Two Units (5)
6 = Three Units (7)
8 = Three Units + Henderson Fire (16)
10 = Three Units + Henderson Fire (20)

Consequence to the Community has three categories to choose from. One should select the highest risk in each category in the priority below.

- First consideration - potential loss of lives.

  2 = 1-2 people
  4 = 3-4 people
  6 = 5-6 people
  8 = 7-8 people
  10 = 9 people and higher

- Second consideration - cost to replace the item(s) involved.

  2 = Below $500,000
  4 = $501,000 to $1,000,000
  6 = $1,000,001 to $1,500,000
  8 = $1,500,001 to $2,000,000
  10 = $2,000,001 and greater

- Third consideration – for use on moderate and high-risk fire categories (occupancy hazard assessment score)

  2 = 0 – 15
  4 = 16 – 25
  6 = 26 – 35
  8 = 36 – 45
  10 = 46 and greater

(When determining the consequence to the community, one should select the highest possible score).

2. <u>Low Risk Fire, EMS, Technical Rescue, and Hazmat Risk</u>: each are determined using the 3-axis model without consideration for the occupancy hazard assessment, unless the hazmat is located within a fixed facility.

3-Axis Risk Scores

Risk Classification	Risk Category	3-Axis Risk Score	Personnel Needed (Min.)
Fire – Still/Single Engine Response	**Low**	**8.48**	**3**
Fire – Residential Structure (Occupancy Hazard Score below 35)	**Moderate**	**33.94**	**15**
Fire – Commercial Structure (Occupancy Hazard Score 35 and Higher)	**High**	**73.48**	**19**
EMS – Single ALS Unit	**Low**	**15.87**	**2**
EMS – Two ALS Unit Response	**Moderate**	**33.94**	**5**
EMS – Mass Casualty Incident	**High**	**59.40**	**15**
Hazmat – Small Spill/Leak of Fuel/Oil/Antifreeze	**Low**	**4.90**	**2**
Hazmat – Large Spill/Leak of Fuel/Oil/Antifreeze	**Moderate**	**16.25**	**9**
Hazmat – Large/Multi-Jurisdictional Response	**High**	**73.48**	**9**
Technical Rescue – Elevator Stuck	**Low**	**4.90**	**3**
Technical Rescue – Auto Extrication	**Moderate**	**24.17**	**5**
Technical Rescue – Water Rescue	**High**	**32.12**	**9**
Technical Rescue – High Angle Rope	**High**	**45.52**	**9**

Risk Type Descriptions

The department has identified common risks found at each level. These risks are found throughout the community. The chart below lists them by color code that correlates with the chart that follows. The goal is to help the reader easily identify risk types and level when reviewing the charts.

Risk	Examples of the Risk
Fire • Low Risk • Moderate Risk • High Risk	Low – Trash, small vehicle, etc. Moderate – Residential Structure Fire High – Commercial/Industrial Structure Fire
Emergency Medical Services (EMS) • Low Risk • Moderate Risk • High Risk	Low – Broken bone, bleeding, sick Moderate – Advanced life support needed and Cardiac arrest incidents High – Mass-casualty incidents
Hazardous Materials (Hazmat) • Low Risk • Moderate Risk • High Risk	Low – Small spills of oil, fuel, or antifreeze Moderate – Larger spills and leaks or any quantity of other chemicals. High – Large scale spill or leak requiring a regional hazmat response.
Technical (Tech) Rescue • Low Risk • Moderate Risk • High Risk	Low – Stuck elevator Moderate – Auto extrication and water rescue High – Rope rescue and confined space rescue

Highest Risk by Neighborhood

The department identified the highest risk in each risk classification by neighborhood zone. This was done by engaging each of the crews to list the highest risk in assigned areas of the city. The results were compared across the crews and the command staff to ensure they were all in agreement. This was done for each geographical planning zone (neighborhood zone) and included in

the community risk assessment. Incident counts for 2020 were also includes for each zone. An example is shown below for the historic downtown neighborhood referred to as Old Town.

2020 Highest Risk by Neighborhood – Old Town

Fire	EMS	Hazmat
Moore's Mobile Home Park and El Dorado Mobile Home Park These structures are older models and placed relatively close together. **1009 Nevada Way** Nevada Inn	**Cardiac Arrest** **Heat Emergencies**	**Public Works – Misc. Chemicals**
Tech Rescue	**Wildland**	Critical Infrastructure
Extrication from MVAs **Electrical Substation**	**None**	CCSD Schools Boulder City Hall Boulder City Police Department Water Tower

2020 – Incident Counts for Old Town

Fire	EMS	Hazmat
Low Risk…….5 **Moderate Risk……0** **High Risk……0**	**Low Risk…….58** **Moderate Risk……..217** **High Risk……0**	**Low Risk…….……0** **Moderate Risk……1** **High Risk……0**
Tech Rescue	**Service Calls**	
Low Risk……..0 **Moderate Risk……9** **High Risk……0**	**Service Calls……105**	

Fire Risk

The first risk discussed in this document is fire risk. This risk ranges from a small trash can fire to a large, multi-company commercial structure fire. It includes trash fires, car fires, semi-truck fires, small grass fires, shed and outbuilding fires, residential structure fires, commercial fires, and industrial fires. The section also includes a chart listing the high-risk occupancies identified during the community risk assessment process.

High Risk Occupancies with Required Fire Flows and Response Data

Business Name	Address	Hazard Assessment Score	Effective Response Force Staffing	Property Value	Fire Flow (GPM) (* = partially Sprinkled)	Maximum Occupancy
San Diego Power & Electric Power Generation Plant –	701 El Dorado Valley Dr	37	15	No Data	5400	30
Boulder City Hospital	901 Adams	49	20	$11,800,000	2520	370
Boulder City Hall	801 California	30	15	No Data	1289	128
Boulder City Police Department	1005 Arizona	39	15	$796,000	1501	90
Boulder Theater	1225 Arizona	47	20	$419,000	1007	300
Homestead	1401 Medical Park Drive	37	20	$6,700,000	4419	100
Veteran's Home	100 Veterans Memorial Drive	36	20	$28,200,000	1583	400
Mountain View Care Center	601 Adams	37	20	$2,300,000	1402	150
Bowling Alley	504 California	29*	15	$243,000	1101	80
Antique Market	1101 Arizona Ave	31*	15	$295,000	858	100
Boulder Dam Hotel	1305 Arizona	43	15	$1,100,000	1932	270
Nevada Inn	905 Nevada Way	43	15	$2,000,000	3520	108
Lake View Terrace	180 Ville Drive	40	20	$5,600,000	3968	100

***Some occupancies with lower scores were included as high risks based on local knowledge, surrounding buildings, construction concerns, or contents.**

Elevated or Restricted Driveway Fire Risks

Boulder City has several mountains/hills around it. The department located the driveways that have significantly elevated or long, narrow driveways that can present challenges during firefighting operations. These addresses were further validated by having the crews go to every address and confirm which ones the engine could access and which ones the rescue could access. These addresses are added to the Boulder City Police Communication Center CAD system to alert the crews to bring Support 123 (hose tender) to any reported fires at these locations. The fire flow was also tested at the nearest hydrants to these addresses to ensure adequate water was in place to address the increased risk.

Elevated or Restricted Driveway Fire Risks

Address	Engine Access	Rescue Access
613 Keys	**No**	**Yes**
615 Keys	**No**	**Yes**
1005 Yates	**No**	**Yes**
1302 Alpine	**Limited**	**Yes**
1304 Alpine	**Limited**	**Yes**
1309 Alpine	**Limited**	**Yes**
1311 Alpine	**No**	**Yes**
1313 Alpine	**No**	**Yes**
1315 Alpine	**No**	**Yes**

1310 Alpine	Yes – Collapse Zone Concerns	Yes
1314 Alpine	Yes – Collapse Zone Concerns	Yes
1408 Denver	No	Yes
Hillside	Yes – Tight/No Turnaround	Yes
382 Laurel	No	Yes
384 Laurel	Yes – Limited	Yes
Linda	Yes – No Turnaround	Yes
1306 Mountainview	No	No
1415 Nob Hill	No – Steep Entrance (Dirt)	Yes
1400 San Felipe	Yes	Yes
1402 San Felipe	No – No Turnaround	Yes
1404 San Felipe	No – No Turnaround	Yes
1414 San Felipe	No – No Turnaround	Yes
1420 San Felipe	Yes	Yes
1424 San Felipe	Yes	Yes
1321 Sierra Vista Place	No	Yes
1400 Sierra Vista Place	No	Yes
1402 Sierra Vista Place	Yes	Yes
224 Hallett Cove Court	Yes	Yes
226 Hallett Cove Court	Yes	Yes
228 Hallett Cove Court	Yes	Yes
1401 Cherokee Court	No	Yes
1402 Cherokee Court	No	Yes
1404 Cherokee Court	No – Steep & No Turnaround	Yes
1403 Garnet Place	No	Yes
1404 Garnet Place	No	Yes
1405 Garnet Place	No	Yes
1402 Highland	No – Has a 5” Standpipe Connection	Yes
1503 Lynn Drive	No – Steep & Narrow	Yes
1500 Mendota Drive	No – Narrow Drive	Yes
1502 Mendota Drive	No	Yes
1406 Pueblo Drive	No	Yes
1407 Pueblo Drive	No – Narrow	Yes
1409 Pueblo Drive	No	Yes
1415 Pueblo Drive	No	Yes
1417 Pueblo Drive	No	Yes
1421 Pueblo Drive	No	Yes
1423 Pueblo Drive	No	Yes
1431 Pueblo Drive	No	Yes
1433 Pueblo Drive	No	Yes

Fire Risk Summary

In summary, the main fire risk in Boulder City continues to be a low-risk vehicle, highway transportation vehicle fires, and moderate risk (residential) fire. Nationally, residential structure fires are the most common type of structure fires and tend to injure or kill the most people. From 2016-2021, the department responded to 21 incidents properly classified as structure fires. The small number of structure fires are not sufficient to establish a reliable trend. The highway transportation vehicle (semi-truck) fires seem to be related to increased traffic,

high summer temperatures that heat up the brakes, and hills in and around the city along Interstate 11.

Additionally, the homes located on elevated or restricted driveways present a significant risk during a fire to these occupancies. The department's engines cannot access the structures for a traditional fire attack. A special support vehicle was developed, and new policies and training implemented, to limit the additional fire risk at these structures.

EMS Risk

Emergency medical services (EMS) calls for service account for most incidents in the city. EMS incidents in 2020 accounted for 81.9% of the total calls for service. The higher-than-normal percentage of EMS calls is largely due to the city having almost double the national average of residents over 65 years old. The leading calls for service include trauma, abdominal pain, sick person, behavioral disorder, falls, and altered level of consciousness.

Nature	2020 Totals	Percent of Total
Trauma Injury	310	15.78%
Abdominal Pain	141	7.18%
Sick Person	125	6.36%
Behavioral Disorder	123	6.26%
Falls	116	5.91%
Altered Level of Consciousness/Unconscious	111	5.65%
Unknown Medical	105	5.35%
Respiratory Problem	100	5.09%
Chest Pain	83	4.23%
Dizziness/Syncope	81	4.12%
Weakness	79	4.02%
Seizure	62	3.16%
CVA/Stroke	44	2.24%
Cardiac Arrest	35	1.78%
Chronic Pain	35	1.78%
Diabetic Problem	34	1.73%
Dehydration Symptoms	32	1.63%
Urinary Problem	29	1.48%
Back Pain (No Trauma)	27	1.37%
Flu Symptoms	27	1.37%
Nausea/Vomiting	27	1.37%
Obvious Death	21	1.07%
Nosebleed	18	0.92%
Sepsis (Suspected)	17	0.87%
Hypertension/Hypotension	16	0.81%

EMS Risk Summary

Based on the above information, EMS continues to be the largest demand for service for the Boulder City Fire Department. The department responded to 1,964 EMS calls for service in 2020 or 5.38 EMS calls per day. The number of EMS related calls is higher if one considers that several assistance calls to residents that fall or need other assistance due to physical or medical conditions, but they do not need anything other than a lift assist. Additional consideration should be given for the time required for each EMS call for service. A large percentage of the calls requires a patient transport into the Henderson and Las Vegas area hospitals. Often, both frontline rescues are transporting patients into these hospitals at the same time leaving the city without a frontline ambulance. Additional EMS calls for service require that Community Ambulance be requested from the Henderson area which adds considerable time to the response.

Traumatic injury, abdominal pain, sick person, and behavioral disorders, and falls account for 41.5% of the total EMS calls in the city. It is assumed that this is due to the higher-than-average elderly population and the presence of COVID in 2020.

Hazardous Material Risk Summary

The hazmat risk in Boulder City is divided into two distinct groups: small fuel/oil/antifreeze spills and leaks from auto and CO alarms and major incidents involving highway transportation accidents and fixed facilities such as found within the solar power generation facilities.

Boulder City's three roadways are transportation routes for a large variety of chemicals ranging from fuel to acids to radioactive waste. Most of these transport vehicles are designed to withstand collisions and therefore reduce the risk of a large-scale highway event in our jurisdiction. There is additional risk of a large-scale fuel spill on the airport property from aircraft refueling operations. Due to the potential for a hazardous chemical release, and proximity to large populations of residents, the department is equipped and trained to respond to and begin mitigation efforts for these types of incidents.

All occupancies that are required by federal and/or state law to report their hazardous materials storage have information recorded through a state database

and the 2021 Boulder City Fire Department Community Risk Assessment document.

Technical Rescue Risk Summary

The most common technical rescue risk for the department is auto extrication on the two US Highways and Interstate 11. The department responds to several calls of this nature on an annual basis. These incidents would be classified as a moderate risk event; however, some have resulted in a mass casualty incident. These events are labor and resource intensive. Larger events typically require mutual aid support from Henderson Fire Department's heavy rescue.

There are also occasional accidents and injuries within the open space recreational areas that require technical rescue to include the River Mountains during mountain biking events and the remote areas to the southeast that involve off-road vehicles.

Chapter 4 – Program Goals and Objectives

Program goals and objectives are critical to help ensure that there is continuous improvement across each of the department's programs, fire suppression, emergency medical services (EMS), hazardous materials, technical rescue, emergency communications, training, domestic preparedness, and community risk reduction. Community risk reduction is further divided into fire and EMS prevention, public education, code enforcement, and fire investigations. The goals and objectives within this chapter are intended to help the department keep moving forward in a posture of continuous improvement based on internal and external stakeholder expectations.

As defined in CPSE's *Quality Improvement for the Fire and Emergency Services*, goals are strategic in nature with a clearly defined result. Objectives are tactical or enabling, are used to accomplish a goal, are result-oriented, and follow the SMART format (specific, measurable, attainable, realistic, and time-bound). Each of the goals are developed to attain a desired positive outcome for the program and/or members of the community. Finally, the program goals and objectives will be appraised annually during the accreditation and strategic planning staff retreat.

Program Specific Goals and Objectives

Fire Suppression – Incidents in this category include all fire suppression related activities to include trash fires, car fires, semi fires, structure fire, and industrial fires.

- Develop a methodology for determining fire suppression outcomes for structure fires by December 2022.
    - Develop a scoring sheet for initial conditions found at a structure fire by July 2022.
    - Develop a scoring sheet for structure and contents conditions at completion of the incident by July 2022.
    - Identify a review process to evaluate the fire suppression outcomes and the actions taken on the incident to look for areas of improvement by December 2022.
    - Evaluate all structure fires using the outcome methodology beginning in 2023.

Emergency Medical Services – Incidents in this category account for nearly 80% of the department's calls for emergency services.

- Develop a methodology for clearly defining EMS saves by February 2022.
- Develop a methodology for determining patient outcomes for cardiac arrests and strokes by July 2022.
- Develop a methodology for and begin tracking cardiac arrest survival by June 2022.

Hazardous Materials – Incidents in this category are defined as spills or leaks of five or more gallons of oil, fuel, or antifreeze or any other hazardous chemical.

- Have all fulltime uniformed members of the department trained to the hazmat technician level by December 2023.
    - Send eight members of the department to hazmat technician school in 2022 beginning in July.
    - Send eight members of the department to hazmat technician school in 2023 beginning in July.
- Develop an initial hazmat response plan for each risk level by June 2022.
- Design and equip the department hazmat trailer to meet the specific hazmat risks within Boulder City by July 2022.
- Revise the hazmat response plan when the department reaches full capacity by December 2023.

Technical Rescue – Incidents in this category are defined as auto accidents involving extrication, swift water, and rope rescue incidents.

- The appropriate personnel will be appropriately trained and equipped to effectively reach a patient involved in a technical rescue incident (auto extrication and rope rescue), stabilize the patient to ensure no further harm occurs, and begin patient treatment prior to the arrival of our mutual aid partners by December 2023.
    - Begin rope rescue awareness and operations level training and certification for all line members in the spring of 2022.
    - Complete a rope rescue specific risk assessment of the city by July 2022.
    - Develop a rope rescue response plan for each risk level by August 2022.

- Identify and train at least two personnel per shift at the rope rescue technician level by December 2023.
- Participate in at least one multi-jurisdictional rope rescue training evolution annually.
- Annually conduct swift water safety and operations level training.

Response Time Performance – This category is directly related to the time it takes from the point that someone calls "911" until a fire department unit arrives on scene. The fire department continuously monitors response time performance during the year and communicates this information to the firefighters, the police communication center, and the city leadership.

- Develop a process requiring station captains to report excessively long turnout and response times to the deputy chief by March 2022.
- Annually obtain all response time performance for each risk type and level at the station and shift level by November 30th. This data will be used during the annual accreditation and strategic planning staff retreat.
- Annually improve on the previous year's response time performance by ten percent until the response time goal of 6 minutes and 20 seconds for the first arriving unit is accomplished.

Identified Response Gaps – This category seeks to reduce the gaps in response that have been identified through the community risk assessment process and the response time performance appraisals. The department identified a significant gap in response capabilities during the development of the 2021 Community Risk Assessment. The department identified that over half of the population was located outside of the response standard set in the *National Fire Protection Association (NFPA) 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. This gap in coverage was communicated to the city leadership in meetings and at a City Council Workshop on November 17, 2021.

- Determine the cost for a new fire station to cover the greatest number of people outside of the current response area of Station 121 by January 2022.
- Determine the cost for staffing for a new fire station by January 2022. This will include a total of nine fire personnel.

- Complete the FEMA SAFER Grant in January 2022 to cover the cost of funding the new positions.
- Conduct an annual gap analysis and present any significant findings to the city leadership and city council during the annual fire department report.

Emergency Communications – This category is under the jurisdiction of the Boulder City Police Department and requires coordination between the police department and fire department leadership teams.

- Develop a process to communicate areas of success and needed improvement to the leadership of the Boulder City Police Department quarterly, at a minimum by March 2022.
- Develop a process to have each line member of the fire department visit the communication center annually for process familiarity and interpersonal relationship development in 2022.

Training – This category involves all response related training to include fire suppression, emergency medical services, hazardous materials, and technical rescue.

- Ensure that all post incident analysis reports are reviewed at least quarterly (March, June, September, and December 1st) and training deficits are incorporated into the upcoming training sessions.
    - Ensure that all high-risk training needs are addressed within 30 days of the review, providing funding is available.
- Develop individual and crew performance standards for initial fire attack with the goal of having initial water flowing at fire scenes within three minutes of the engine arriving by February 2022.

Community Risk Reduction – This category has goals and objectives directly related to the efforts taken to reduce the risks associated with each emergency response service provided.

- Provide a minimum of one free community CPR class each quarter for the purpose of increasing community recognition and abilities related to cardiac resuscitation beginning in 2022.
- Provide a minimum of two Stop the Bleed classes annually to reduce the effects of emergencies related to traumatic blood loss beginning in 2022.

- Provide a minimum of one risk reduction class for our senior citizen community annually beginning in 2022.

Program Goals and Objectives Appraisal Process

The department conducts an annual accreditation and strategic planning retreat in December. The retreat includes all chief officers, the training officer, and the fire analyst, at a minimum, during the entire two-day session. Each program lead(s) comes before the leadership to present the annual appraisal of the program they oversee. This process is documented in the program appraisal methodology. The process is as follows:

1. Bring all appraisals for the past year.
2. Bing a list of training sessions that took place during the year for the program.
3. Bring a list of identified training that is needed in the coming year.
4. List positive and negative outcomes from the previous year's incidents. This will require research of the narratives from the program incidents.
5. Present an overview of the response performance (response times from the accreditation manager).
6. Identify any safety issues/near-misses from the year that were identified in the PIA's.
7. Discuss the goals that were reached for the program during the past year and identify goals for the program for the upcoming year.
8. For programs that require members to maintain certifications, provide a list of the personnel by shift and their current certification(s) level (e.g., Confined Space Technician, Extrication Operations, etc.).
9. Needs for the upcoming year (supplies, certifications, etc.) for budget consideration.
10. Assessment of PIA compliance for their program.
11. Any other pertinent information that makes the program more effective and efficient.

This information will be presented to the senior staff and accreditation team during the meeting. The program lead/coordinator will work with senior staff through the questions that may arise from this information. After this is completed, a SWOT analysis will be conducted by the senior staff and program lead/coordinator of the program being presented. A SWOT analysis is a relatively simple strategic planning tool. We will briefly discuss the following:

(S) Strengths relating to your program
(W) Weakness within the program (perceived or actual)
(O) Opportunities for the coming year
(T) Threats (internal and external) that may affect your program

The final activity at the annual retreat is to review, revise, and/or develop goals specific to each program based on the outcome of each presentation. The past year's response performance is also considered in this process. The updated goals and objectives are also added to the department's goals and objectives tracker to ensure they are reviewed at least monthly.

Chapter 5 – Current Deployment and Performance

The fire department currently responds out of a single fire station with a daily staffing of seven firefighters. The personnel include a fire captain, a fire engineer, and five firefighters. These seven are supported by the fire chief, deputy fire chief, captain (administration – training and safety), and two administrative support staff. The department also has a cadre of reserve (part-time) firefighters and reserve battalion chiefs that can fill vacancies, as well as respond to emergency callbacks.

Fire Station 121

Station 121 is located at 1101 Elm Street and is staffed 24 hours a day/7 day a week.

The station has the following frontline, cross-staffed, and reserve units:
Engine 121 – 2020 Pierce Impel – 1,750 GPM Pump – Staffed with 3 fulltime personnel
Rescue 123 – 2016 Ford E-450 – Staffed with 2 fulltime personnel
Rescue 121 – 2012 GMC Savana G4500 – Staffed with 2 fulltime personnel
Battalion 12 – 2016 Ford F-250 4x4 – Reserve Battalion Chief Vehicle – Staffed when Chief 1 is unavailable.
Chief 1202 – Chief Officer Response during business hours
Safety 1203 – Operational Safety Officer – Admin position with after hour response requirement.
Rescue 122 – 2012 GMC Savana G4500 – Reserve
Rescue 124 – 2000 International 4700 – Reserve
Truck 121 – 2010 Pierce Arrow – 75ft Quint with 1,500 GPM Pump – Cross-Staffed
Engine 122 – 2007 Pierce Quantum – 1,500 GPM Pump – Reserve
Support 122 – 2007 Polaris Ranger – Cross-Staffed
Support 123 – 2000 Dodge 2500 4x4 (Hose Tender) – Cross-Staffed
Hazmat Trailer – 2021 LoadRunner 8.5'x 18' Enclosed Trailer (10K rated)
Technical Rescue Trailer – 2022 Haulmark 8.5'x 20' Passport Enclosed Trailer (10K Rated)

The department has paramedic level and advanced EMT level responders. All apparatus are always staffed with a minimum of one paramedic, however, there are normally two paramedics on each unit.

Critical Task Analysis

The department resources are deployed based on industry best practices using guidance from *National Fire Protection Association (NFPA) 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. This helps ensure that firefighter safety and the safety of the community are a priority. NFPA 1710 is the foundation for the critical task analysis that was completed for this document. It documents the initial tasks that must be completed at the start of an incident and identifies how many people are needed to accomplish each critical task.

Boulder City Fire Department has limited staffing and relies on mutual aid from Henderson Fire Department to meet the effective response force for several risk categories and classifications. Henderson Fire Department has predetermined response packages to support the incidents based on the risk.

- Structure Fire 2nd Alarm – 2 Engines, 1 Truck, 1 Rescue, 1 Battalion Chief, 1 Safety Officer. (16 personnel). This is requested automatically on all confirmed working structure fires.
- Structure Fire 3rd Alarm – 1 Additional Engine and 1 Additional Rescue (6 personnel)
- Medical 2nd Alarm – 1 Engine, 2 Rescues, and 2 Community Ambulances. (12 personnel)
- Hazmat 2nd Alarm – 1 Engine, Hazmat Team, 1 Truck, 1 Battalion Chief. (9 personnel)

First-Due Engine/Still Alarm – The effective response force for a first engine company is a minimum of two firefighters and an officer as follows:

- Scene Safety Officer/Initial Incident Command – 1
- Assist with call as needed – 2

EMS Low Risk (BLS calls) (Alpha Calls) – The effective response force is a minimum of two personnel as follows:

- Scene Safety Officer/Info Gathering & Recording – 1
- Assist with patient care – 1

EMS Moderate (ALS & Cardiac Arrest) – The effective response force is a minimum of five personnel as follows:

- Scene Safety Officer/Info Gathering & Recording – 1
- Assist with patient care – 1
- ALS patient care provider – 1
- Cardiopulmonary Resuscitation – 2

EMS High Risk (Mass Casualty Incident) – The effective response force is a minimum of fifteen personnel as follows:

- Incident Command – 1 (Chief Officer – BCFD)
- Scene Safety Officer – 1 (Operations Safety Officer – BCFD)
- Triage – 2 (2nd Engine – HFD)

- Assist with patient care and transport – 8 (2 Rescues – BCFD & 2 HFD Rescues)
- Engineer/Pump Operator – 1 (Engineer – E121 – BCFD)
- Fire Control/Extrication – 2 (Captain/Firefighter – E121 – BCFD)
- *Tactical Reserve – 2 (2nd Engine – HFD)

*Additional resources will be requested from HFD based on the specific nature of the incident. A Medical 2nd Alarm from HFD includes one Engine, two Rescues, and two Community Ambulances.

Fire Still – Low Risk Fire – These fires include non-structure fires such as: vehicles fires, dumpster fires, and other small non-structure related fires. The effective response force is a minimum of three personnel as follows:

- Water Supply – 1 (1st Engine – BCFD)
- Engineer/Pump Operator – 1 (1st Engine – BCFD)
- Initial Attack Line – 2 (This is FF from water supply and the company officer) (1st Engine – BCFD)

Fire - Moderate Risk – Structure Fire with an occupancy hazard score up to 34.9 – The effective response force is a minimum of fifteen firefighting personnel as follows:

- Water Supply – 1 (1st Engine – BCFD)
- Engineer/Pump Operator – 1 (1st Engine – BCFD)
- Initial Attack Line – 2 (This is FF from water supply and the company officer) (1st Engine – BCFD)
- Incident Commander – 1 (Chief Officer – BCFD)
- Incident Safety Officer – 1 (Operations Safety Officer – BCFD)
- Back-up Attack Line – 2 (1st Rescue – BCFD)
- Initial Rapid Intervention Crew – 2 (Truck 121 – BCFD)
- Search and Rescue – 3 (2nd Engine – HFD)
- Utilities – 1 (2nd Engine – HFD)
- Ventilation and Truck Ops – 2 (Truck – HFD)
- * Tactical Reserve – 4 (3rd Engine – HFD)

Fire – High Risk – Structure Fire with an occupancy hazard score 35 or more – the effective response force is a minimum of nineteen firefighting personnel as follows:

- Water Supply – 1 (1st Engine – BCFD)
- Engineer/Pump Operator – 1 (1st Engine – BCFD)
- Initial Attack Line – 2 (This is FF from water supply and the company officer) (1st Engine – BCFD)
- Incident Commander – 1 (Chief Officer – BCFD)
- Incident Safety Officer – 1 (Operations Safety Officer – BCFD)
- Back-up Attack Line – 2 (1st Rescue – BCFD)
- Initial Rapid Intervention Crew – 2 (Truck 121 – BCFD)
- Search and Rescue – 3 (2nd Engine – HFD)
- Utilities – 1 (2nd Engine – HFD)
- Ventilation and Truck Ops – 2 (Truck – HFD)
- Rapid Intervention Crew – 4 (3rd Engine – HFD
- * Tactical Reserve – 4 (4th Engine – HFD)

Technical Rescue Low Risk – the effective response force for a Technical Rescue Low Risk/Stuck in an Elevator call is a minimum of two personnel as follows:

- Incident Command/Incident Safety Officer – 1 (Rescue – BCFD)
- Support of operations – 1 (Rescue – BCFD)

Technical Rescue Moderate Risk – the effective response force for a Technical Rescue Moderate Risk - Auto Extrication, Low Angle Rope, and Mountain Rescue call is a minimum of five personnel as follows:

- Incident Command/Incident Safety Officer – 1 (1st Engine Company Officer – BCFD)
- Vehicle Extrication – 2 (1st Engine – BCFD)
- Advanced Life Support Patient Care – 2 (1st Rescue – BCFD)

Technical Rescue High Risk – the effective response force for Technical Rescue High Risk – High Angle Rope, Swiftwater, and Confined Space is a minimum of nine personnel as follows:

- Incident Commander – 1 (Chief Officer – BCFD)
- Safety Officer – 1 (Operations Safety Officer – BCFD)
- Scene Size-up & Technical Rescue Assessment– 1 (1st Engine Officer – BCFD)
- Patient Contact – 2 (1st Engine – BCFD)
- Technical Rescue Interventions Based on Assessment – 4 (2 Rescues – BCFD)

*Based on findings, a request for Henderson Fire will be made for needed resources.

Hazmat – Low Risk – These include carbon monoxide calls and leaks or spills less than 5 gallons of fuel, oil, and antifreeze. The initial response force for a Hazmat – Low/Level I incident is a minimum of three personnel as follows:

- Incident Command/Incident Safety Officer – 1 (1st Engine Company Officer – BCFD)
- Monitoring or Spill/Leak Mitigation – 2 (1st Engine – BCFD)

Hazmat – Moderate Risk – the effective response force for a Hazmat – Moderate incident is a minimum of nine personnel as follows:

- Incident Commander – 1 (Chief Officer – BCFD)
- Hazmat Incident Safety Officer (Technician) – 1 (Operations Safety Officer – BCFD)
- Isolate Area/Size-up/Set-up Emergency Decontamination – 3 (Engine 121 – BCFD)
- Incident Mitigation – 2 (1st Rescue – BCFD)
- Initial RIT – 2 (2nd Rescue – BCFD)

Hazmat – High Risk – the effective response force for a Hazmat – High incident is a minimum of nine personnel as follows:

- Incident Commander – 1 (Chief Officer – BCFD)
- Hazmat Incident Safety Officer (Technician) – 1 (Operations Safety Officer – BCFD)
- Isolate Area/Size-up/Set-up Emergency Decontamination – 3 (Engine 121 – BCFD)
- Incident Mitigation – 2 (1st Rescue – BCFD)
- Initial RIT – 2 (2nd Rescue – BCFD)

*Additional resources as required for the complexity of the incident will be requested from HFD. HFD will send a Hazmat 2nd Alarm upon request with an engine, the hazmat team, a truck, and a battalion chief for a total of nine additional fire personnel.

The Boulder City Fire Department uses several methods to evaluate the performance. This includes analyzing incident counts annually to look for trends. This includes looking at time of day and day of week for each risk category. In Chapter 6, response time performance is analyzed as well to determine where improvements can be made through technology, policy, or behavioral changes. The department also looks at response reliability across the various neighborhoods in the city which is also documented in Chapter 6 of this document. Finally, the department is in the process of developing an outcome measurement process to better understand the impacts of the services provided to the community, potential changes that are needed in the service delivery model or tactics, and training provided to have the best possible outcomes based on the available resources. Below are charts and explanations of the current findings.

Incident Counts by Risk

The department has studied the incident counts by risk category for the past three years. This is done to identify trends and to ensure the response can consistently meet the demand. The worldwide COVID-19 pandemic that began in 2020 will affect the trends and it may be a couple of years after the pandemic ends before an accurate trend can be determined.

Fire Suppression	FY 2020-2022	FY 2022	FY 2021	FY 2020
Low Risk	52	----	28	24
Trash Fires			----	----
Vehicle Fires			----	----
Utility Fires			----	----
Wildland Fires			4	8
Structure Fires			4	9

EMS	FY 2020-2022	FY 2022	FY 2021	FY 2020
Basic Life Support			352	569
Advanced Life Support			1407	1353
Transports to Boulder City Hospital			547	748
Transports to Other Area Hospitals			524	509
Treat and Release			682	648
EMS Refusals			6	17

Hazmat	FY 2020-2022	FY 2022	FY 2021	FY 2020
Low Risk			7	22
Moderate Risk			----	1
High Risk			----	----

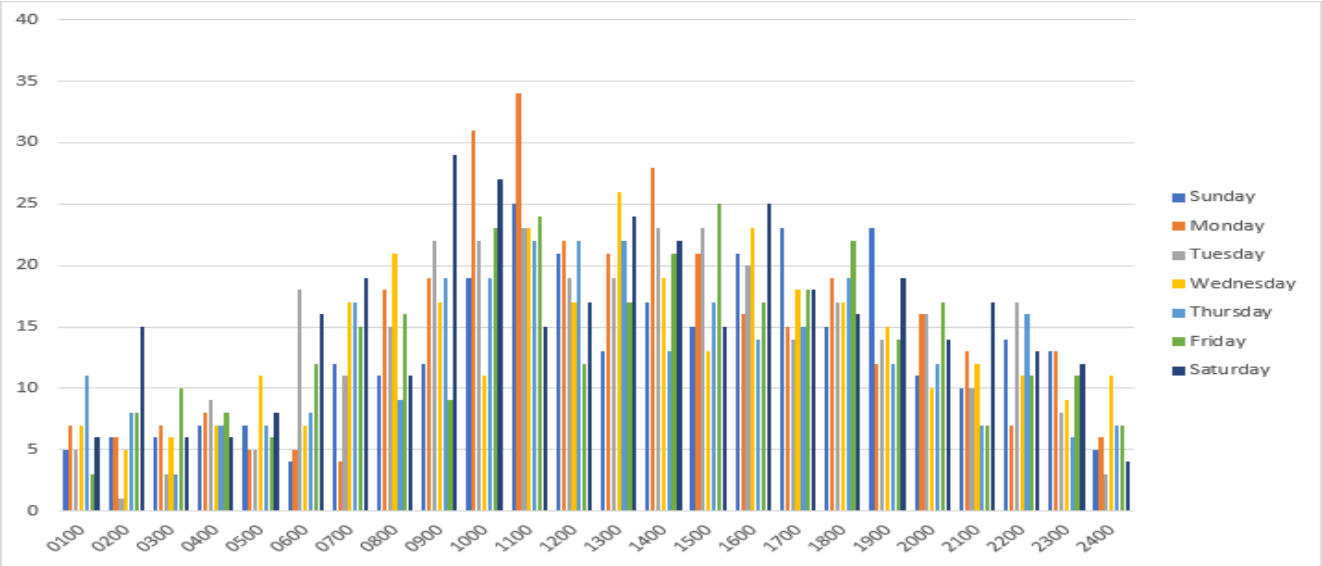
Technical Rescue	FY 2020-2022	FY 2022	FY 2021	FY 2020
Auto Extrication			40	36
Rope Rescue Calls			----	----
Search and Rescue			----	----
Water Rescue			----	----

Other Calls	FY 2020-2022	FY 2022	FY 2021	FY 2020
Misc.			31	24
Public Assist			571	326
Police Assist			----	----
False Call			----	----
Mutual Aid			32	23

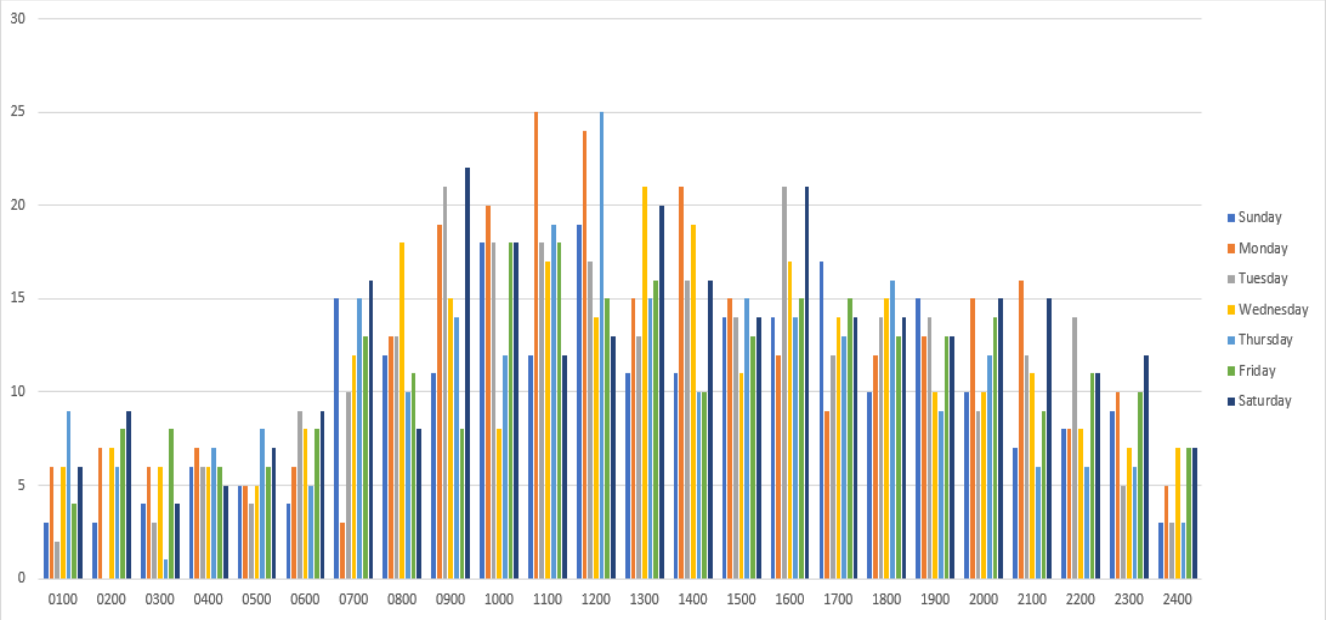
Incidents by Time of Day and Day of Week

Incidents are also analyzed by the time of day and the day of the week that they have occurred. This allows the department to look for trends that may be able to be altered by community risk reduction efforts such as fires occurring during the dinner hours in residential homes which tend to be cooking fires. Efforts can be made to increase public education regarding these specific fires to help reduce them. The time and day of week analysis also helps when considering bringing on an alternate work schedule to assist during peak demand times without requiring additional regular shift staffing.

2021 All Incidents by Hour and Day of Week

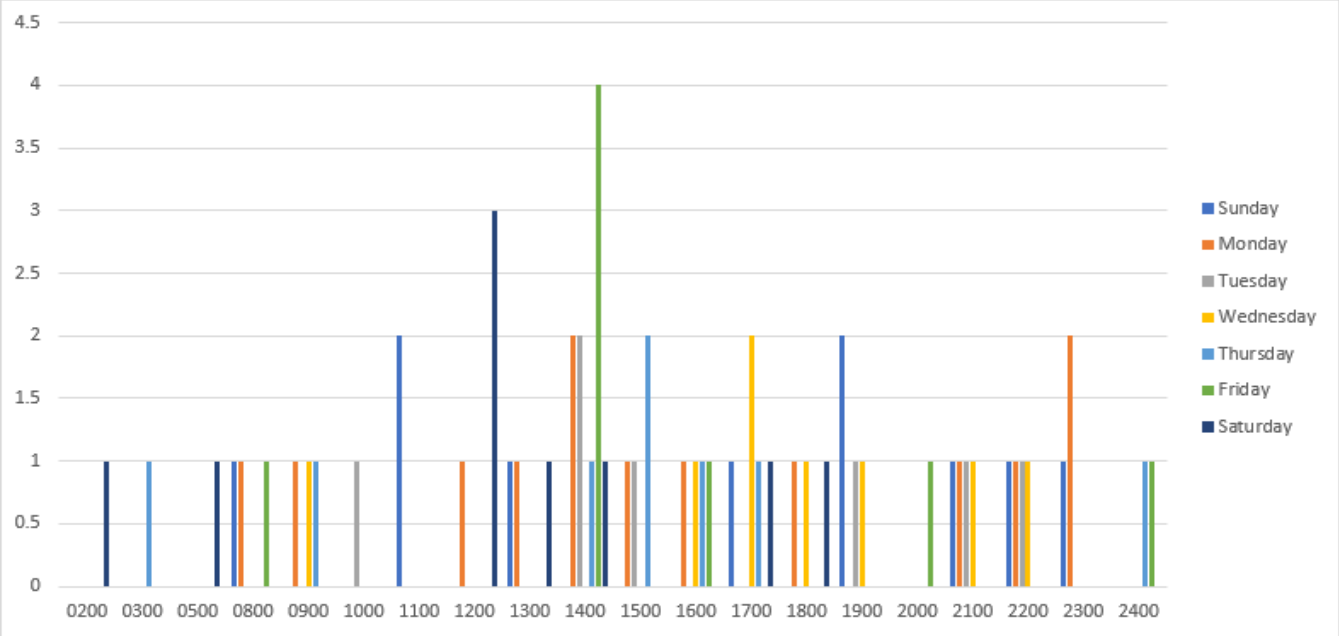


2021 EMS Incidents by Hour and Day of Week



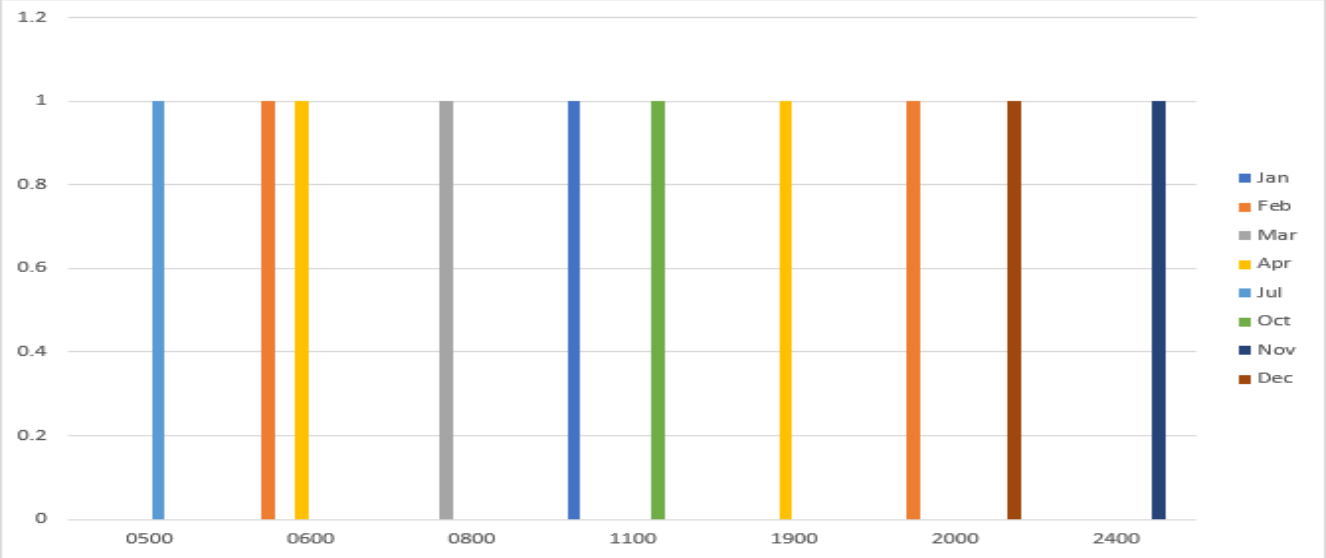
* The data is consistent with much of the country in showing a decrease in EMS calls for service during overnight hours with a daytime peak from 0900 to 1600.

2021 Fire Incidents by Hour and Day of Week



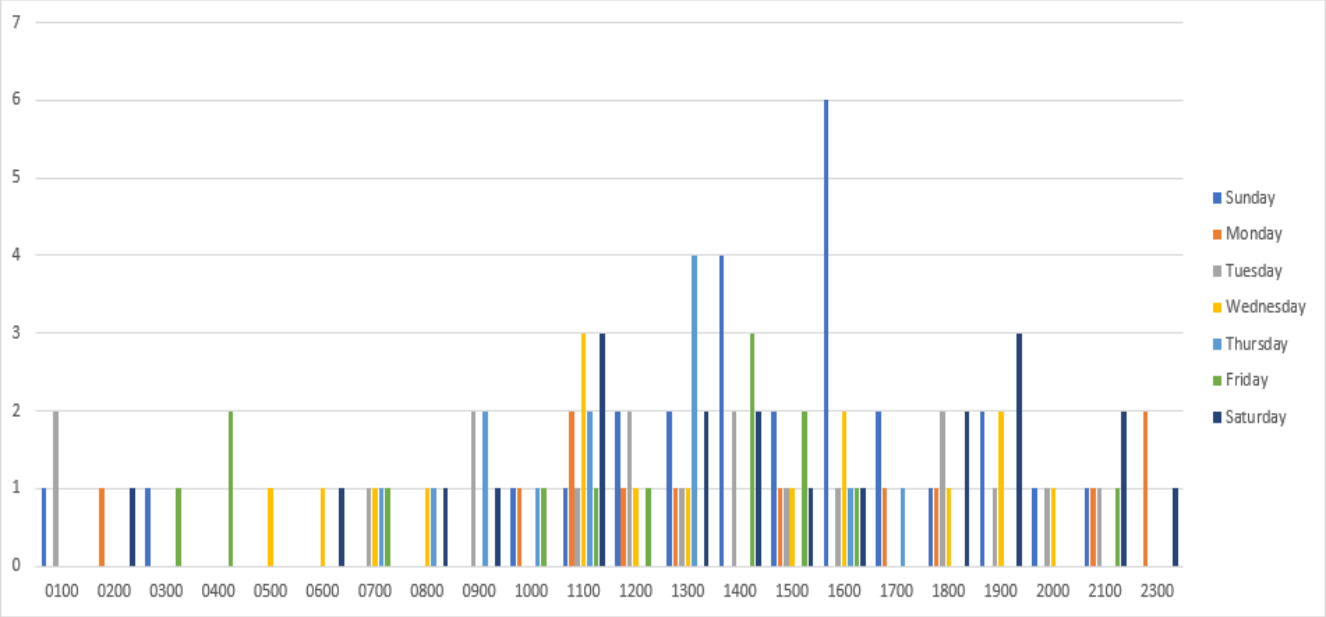
* There is not sufficient data to identify a clear trend for structure fires. This may be clearer with a three to five year look at these incidents.

2021 Hazmat Incidents by Hour and Day of



* There is not sufficient data to identify a clear trend for hazardous materials incidents. This may be clearer with a three to five year look at these incidents.

2021 Technical Rescue Incidents by Hour and



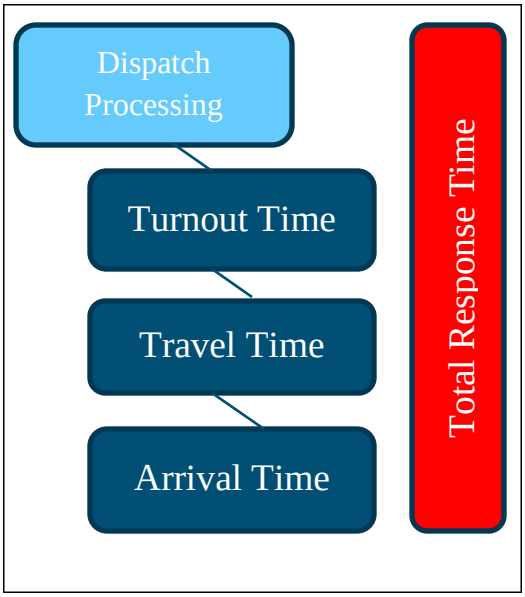
* The technical rescue incidents for this graph were all auto extrication incidents for this period, and as such, will be during normal daytime driving times. Due to the smaller population and the distance from the Las Vegas Metro Area, there is not a normal rush hour. Instead, there is a constant flow of tourist travel and highway travel that tends to be light. However, strong winds from the West can create near zero visibility times across Highway 95 next to the Dry Lakebed which tend to cause a lot of auto extrication incidents.

Chapter 6 – Evaluation of Current Deployment and Performance

The Boulder City Fire Department has instituted a process to allow for the constant evaluation of deployment of resources and overall performance. This is done through a series of reporting cycles and appraisals. The fire department follows documented and adopted methodologies to evaluate the current deployment and performance. Before the process can be described, one must first explain how the response time goals are established.

Response Time Elements

The fire department has established response time standard goals for all risk classifications and categories based on the standards set in *National Fire Protection Association (NFPA) 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* and *National Fire Protection Association (NFPA) 1221: Standard of the Installation, Maintenance, and Use of Emergency Services Communications Systems.* These standards establish industry best practices for the time it takes to receive and dispatch an emergency call for service, turnout a fire crew, travel to the scene, and for the total response time.



The elements of response time are broken down into soft data and hard data. Soft data is controlled outside of the fire department's control and this time data is not accurately tracked. It can be influenced to some degree by community risk reduction efforts but relies on the community fully. The hard data includes the dispatch processing time, turnout time (the time it takes for firefighters to hear the alert for the call and to get into the apparatus), and the travel time from the station to the emergency. These three elements totaled equal the total response time. The fire department has set goals for each of these elements.

The dispatch processing goal, as established in NFPA 1221, is eighty seconds 90% of the time. The turnout time goal is ninety seconds 90% of the time, which is a combination of the NFPA 1710 standard of sixty seconds and allows an extra thirty seconds to account for night calls and calls that occur during training sessions. The travel time goal for the first unit in Urban Density #1 is 4:00 minutes and Urban Density #2 is 8:00 minutes 90% of the time. The travel time goal for the balance of the response, the effective response force (ERF), is 8:00 minutes 90% of the time for EMS (low- and moderate-risk), technical rescue, and hazmat and 12:00 minutes 90% of the time for high-risk EMS, moderate- and high-risk structure fires (as much of this response is met through mutual aid from Henderson Fire Department). This establishes the following total response time goals:

Urban Density #1 – Airport, Boulder Creek, Boulder Parkway, Industrial, Muni, Oasis, Old Town, and Lake View neighborhoods

- First unit total response time for all emergent calls of **6:50 minutes 90% of the time**
- An effective response force total response time of **10:50 minutes 90% of the time (low-risk and moderate-risk EMS, hazmat, and technical rescue)**
- An effective response force total response time of **14:50 minutes 90% of the time (high-risk EMS, moderate-risk structure fire, and high-risk structure fires)**

Urban Density #2 – Lake Mountain, Heminway, Keys, Temple Rock, Del Prado, and San Felipe neighborhoods

- First unit total response time for all emergent calls of **10:50 minutes 90% of the time**
- An effective response force total response time of **10:50 minutes 90% of the time (low-risk and moderate-risk EMS, hazmat, and technical rescue)**
- An effective response force total response time of **14:50 minutes 90% of the time (high-risk EMS, moderate-risk structure fire, and high-risk structure fires)**

Rural Density – East and West Rural Neighborhoods

- First unit total response time for all emergent calls of **10:50 minutes 90% of the time**
- An effective response force total response time of **14:50 minutes 90% of the time**

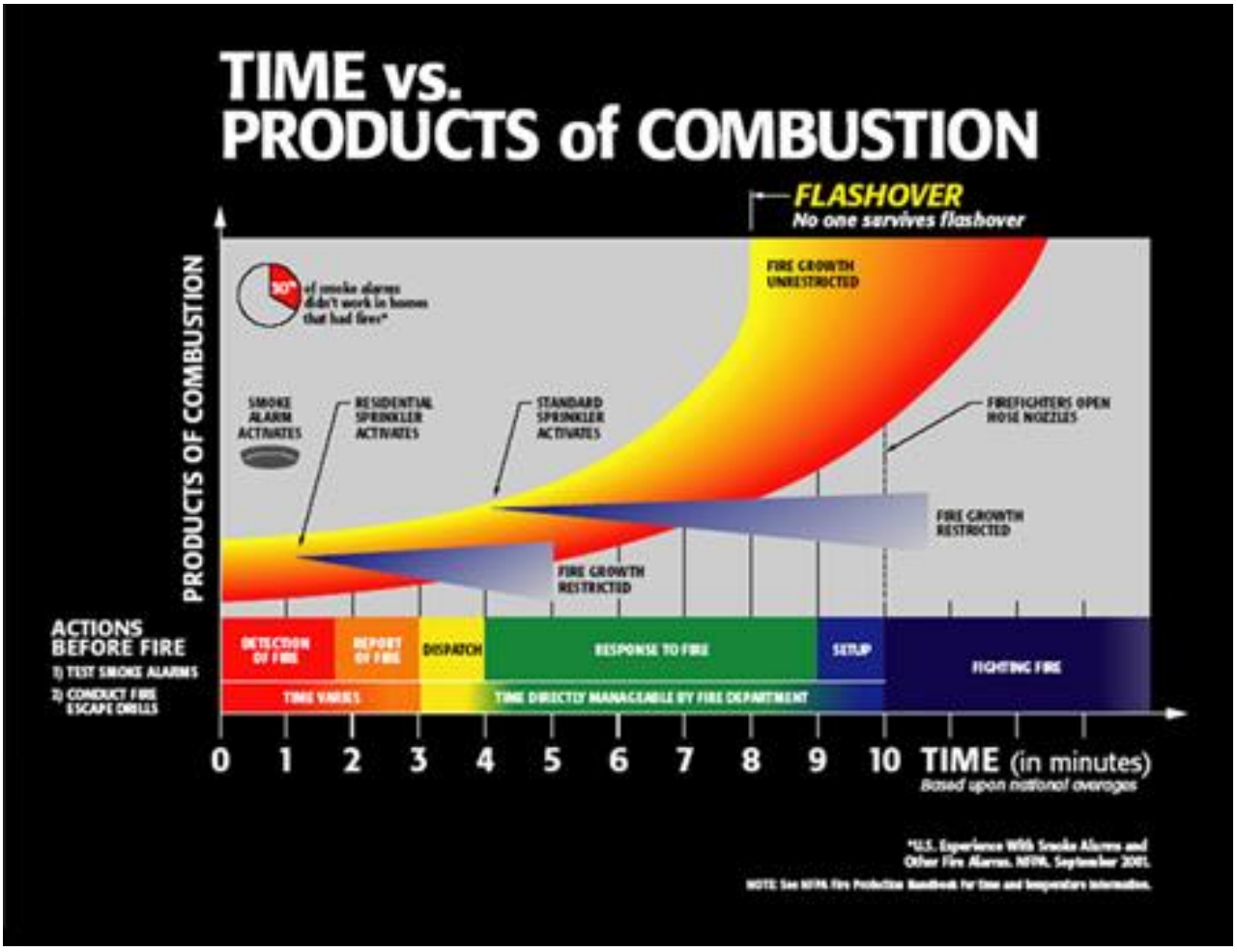
Outlying/Remote Area – the area south of Interstate-11 and the Eldorado Valley

- First unit total response time for all emergent calls of **22:50 minutes 90% of the time**
- An effective response force total response time of **26:50 minutes 90% of the time**

These response time standards are based around two critical events that fire departments respond to: flashover and cardiac arrest.

Flashover

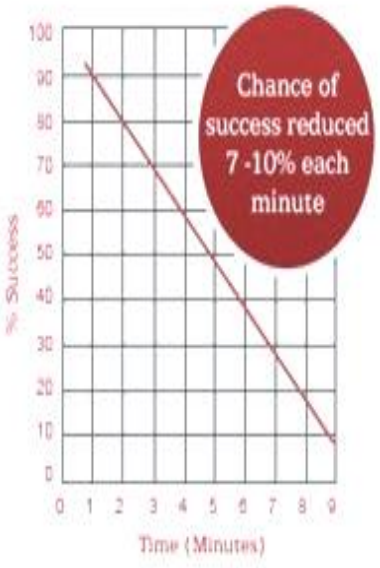
Flashover is a life-threatening condition in which "highly heated gases begin to build up at the ceiling level. If this heating is enough to bring other materials in the room to their ignition temperature, all fuel materials in the room will ignite into flaming combustion.[4]" Temperatures in a flashover often exceed 1,100 degrees F at the ceiling level. This is usually a fatal event for anyone in the structure. This tends to occur between four to ten minutes from ignition as is shown on the diagram above.



[4] **Fire Behavior and Combustion Processes by Raymond Shackelford**

Cardiac Arrest

Another time sensitive event occurs during a cardiac arrest. This is when a person's heart stops, such as with electrocution and massive heart attacks. When this occurs, the brain and other vital organs lose vital oxygen and begin to die. Irreversible brain damage begins within four to six minutes of onset. The American Heart Association states that there is a ten percent reduction in survival chances for each minute of delay from electrical shock from a defibrillator.



Survival from Sudden Cardiac Arrest.

[5]

Each of these life-threatening conditions require firefighters to be on scene within approximately six minutes to intervene for the best possible outcome. These two conditions serve as the foundation for the response time goals for the fire department.

Evaluation Processes

The first step in the evaluation process is the regular program appraisals that are conducted in June and November of each year. These appraisals look at the various aspects of the program to include training, equipment, training, budgetary needs, and response performance. The department is working to add standardized response outcomes for fire and EMS calls.

The next step in the process is to ensure resiliency. The department defines resiliency as the ability to continue to deliver a consistent level of service, even when faced with large or multiple incidents. This has historically been a challenge for the department

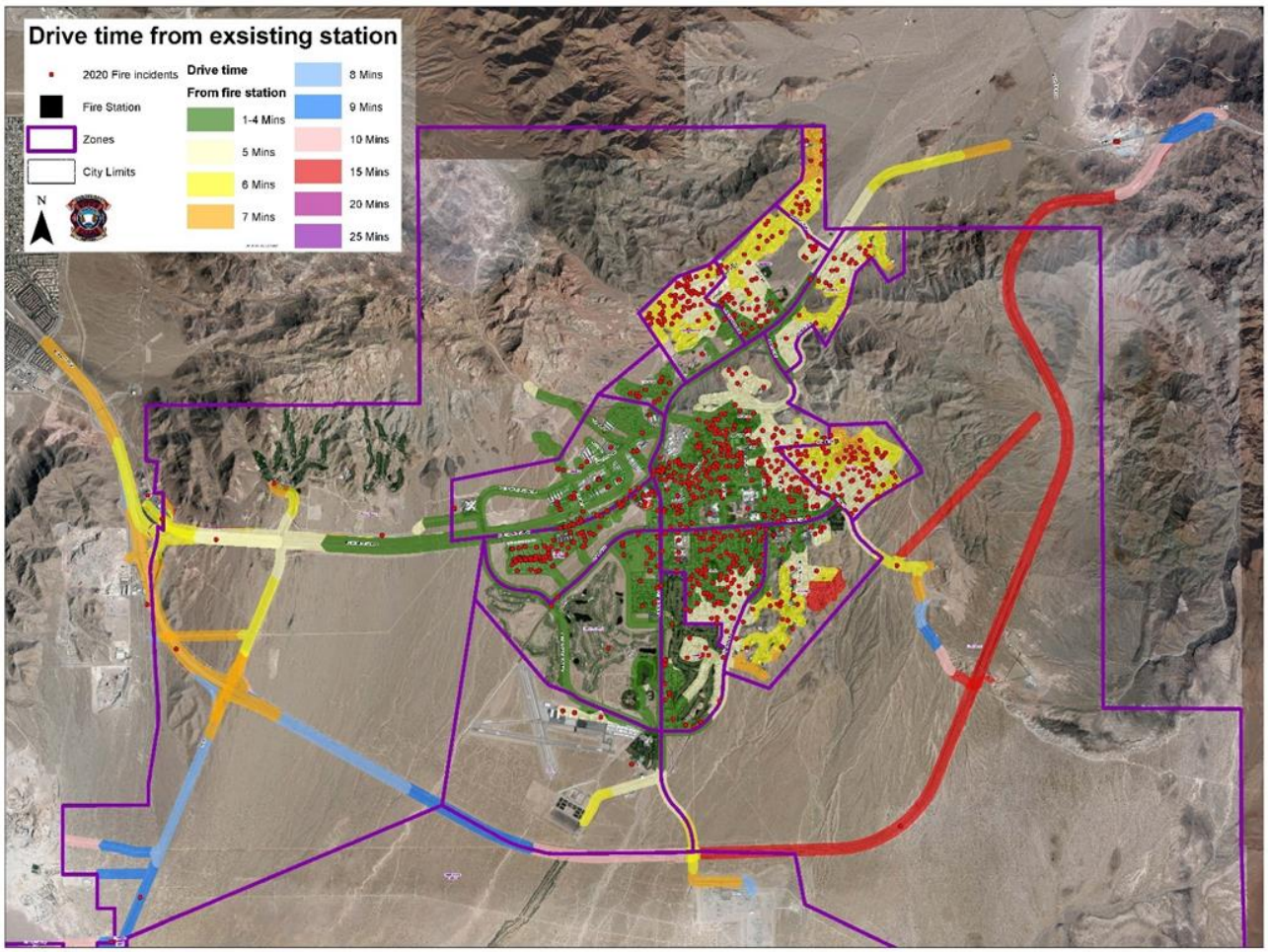
[5] American Heart Association

due to the very small number of personnel on duty daily. In 2021, the department had 498 concurrent calls for service which takes both ambulances out of service. When this occurs, emergency callback is initiated but has seen limited success. Henderson Fire Department and Community Ambulance will respond to the city to assist when a call for service occurs and assistance is needed, but this can take twenty minutes or longer.

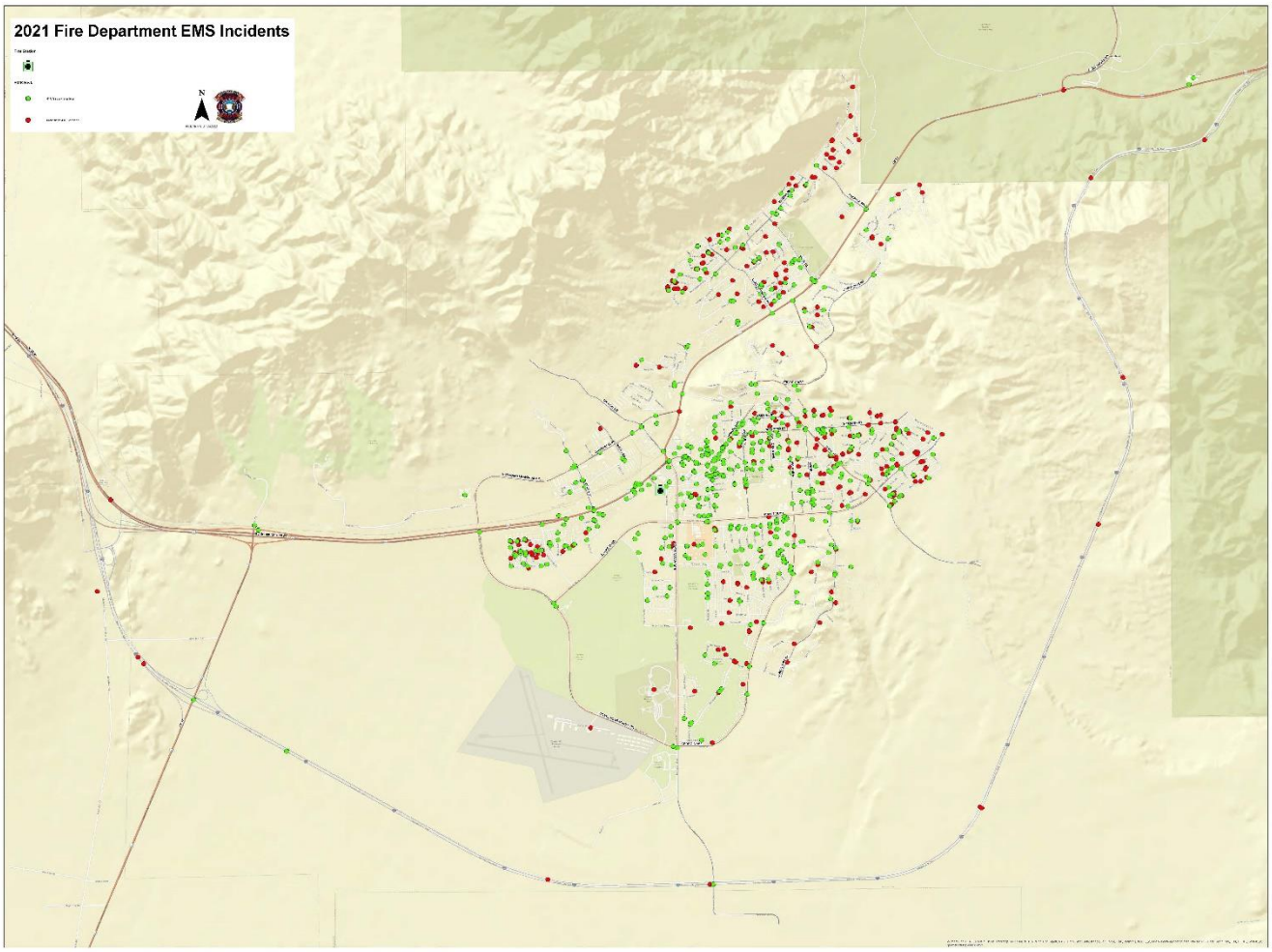
Typically, a response reliability study would be conducted to see how often a unit answers the calls within its first-due district, how often another unit answers the first units call within the response time goal, and how often the response time goal is not met to establish response reliability. This was not able to be done for Boulder City due to having all units responding from the same location at this time. Instead, the fire department conducted a response reliability study by neighborhood zone to see if there is reliable service delivery across the city. The results are in the chart below.

Neighborhood Zone	Incident Count	90th Percentile Time
Airport	5	8:40
Boulder Creek	64	9:44
Boulder Parkway	214	8:39
Muni	53	9:50
Industrial	205	8:50
Oasis	207	8:59
San Felipe	84	9:27
Old Town	529	8:59
Lake View	60	9:03
Del Prado	151	9:57
Lake Mountain	121	10:31
Hemenway	83	9:43
Temple Rock	31	9:35
Keys	25	10:37

The department has also used the GIS services of the city to plot the calls for service across the city by year to identify where the calls are occurring and to ensure there are not obvious gaps. The map below shows all calls for service with the four-minute travel time response coverage displayed.



Maps are created annually displaying fire, EMS, hazmat, and technical rescue incidents demonstrating when the response time performance goal was met (6:50 minutes) and when it was exceeded. Due to the limited number of fire, hazmat, and technical rescue incidents, they are not included in this document but are kept in the administration for review.



On an annual basis, the fire department evaluates response performance for each risk category and classification by shift and crew. This is intended to look for training issues, behavioral issues, or other things that are impacting the total response times such as route selection.

The department also identifies external influences, altering conditions, growth, and development, and changing risks annually during the accreditation and strategic planning staff retreat. The external influences and growth are limited in Boulder City due to the limited growth ordinance. This has allowed for growth to move much slower allowing for time to adjust. For example, when a new solar power generation plant is brought into the city, it is often at least eighteen months to two years to completion. The fire department is involved in this process from the early stages and through completion.

Baseline and Benchmark Performance Charts

The accreditation model uses two different measures for response performance: baseline (actual) and benchmarks (goal). All response time performance is measured at the 90th percentile. The baseline times are identified in the charts below and identify the department's actual performance over each of the previous three years and shows an aggregate of the last three years combined. The benchmark statement identifies the goal for the risk category and classification to help the reader see the response time goal, any change from year to year, and potential response gaps.

The Boulder City Fire Department has worked to improve data entry and analysis. Prior to October 2020, the department had a significant data issue caused by multiple record management systems that didn't properly interface with the police communication center CAD system. A data analyst was contracted to repair the data so that is could be accurately presented.

Each risk category and classification will have a benchmark statement followed by a chart with the baseline, or actual, performance.

***Baseline performance times are maintained by Fiscal Year (July 1 – June 30)**

EMS Basic Life Support (Low Risk) – For 90 percent of all BLS emergency medical incidents, the first-in unit shall arrive, with a minimum of two firefighters, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first arriving unit shall be capable of ensuring scene safety, stabilizing the patient, providing a minimum of basic life support level care, and transporting the patient to the appropriate medical facility, if needed. (Initial response – 1 Engine)

EMS Low Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	3:33	3:46
		Rural	mm:ss	mm:ss	--	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	2:51	3:30
		Rural	mm:ss	mm:ss	--	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	9:53	6:41
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	12:12	13:17
			n=XXX	n=XX	n=352	n=569
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0

EMS Advanced Life Support & Cardiac Arrest (Moderate Risk) – For 90 percent of all incidents, the first-in unit shall arrive, with a minimum of two firefighters, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first arriving unit shall be capable of ensuring the scene is safe, stabilizing the patient, providing a minimum of advanced life support level care, and transporting the patient to the appropriate medical facility. The effective response force for 90 percent for these incidents is a minimum of five firefighting personnel that shall arrive within 10:50 minutes for all urban areas and 14:50 minutes for rural areas. The ERF shall be capable of ensuring the scene is safe, stabilizing the patient, providing cardiopulmonary resuscitation (CPR), providing advanced life support level care, and transporting the patient to the appropriate medical facility. (EFR – 1 ALS Engine and 1 Rescue)

EMS Moderate Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	3:19	3:55
		Rural	mm:ss	mm:ss	3:59	3:10
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	2:34	2:58
		Rural	mm:ss	mm:ss	2:58	4:45
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	7:29	5:43
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	7:51	12:22
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	6:29	6:21
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	13:14	10:18
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	11:18	10:20
			n=XXX	n=XX	n=1358	n=1288
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	15:56	14:13
			n=XXX	n=XX	n=24	n=41
	Total Response Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	10:13	12:56
			n=XXX	n=XXX	n=437	n=457
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XXX		
		Rural	mm:ss	mm:ss	14:36	13:27
			n=XXX	n=XXX	n=10	n=26

EMS – High Risk (Mass Casualty Incident) For 90 percent of all incidents, the first-in unit shall arrive, with a minimum of two firefighters, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first arriving unit shall be capable of ensuring the scene is safe, stabilizing the patient, providing a minimum of advanced life support level care, and transporting the patient to the appropriate medical facility. The effective response force for 90 percent for these incidents is a minimum of fifteen firefighting personnel that shall arrive within 14:50 minutes for urban and 16:50 minutes for rural areas. The ERF shall be capable of ensuring the scene is safe, establishing triage, stabilizing the patients, providing cardiopulmonary resuscitation (CPR), providing advanced life support level care, and transporting the patients to the appropriate medical facility. (Dispatched for the EFR – 2 ALS Engines, 4 Rescues, 2 Private Ambulances, 1 Incident Safety Officer, and 1 Chief Officer)

EMS High Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
	Total Response Time ERF **Concentration**	Urban #1	-	-	-	-
			n=XXX	n=XXX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	-	-	-	-
			n=XXX	n=XXX	n=0	n=0

Fire – Low Risk – For 90 percent of all incidents, the first-in unit shall arrive, with a minimum of two firefighters and one officer, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first arriving unit shall be capable of ensuring scene safety, establishing command, conducting size up, establishing water supply of at least 500 gallons and providing a pumping capacity of at least 1,250gpm, initiating fire attack and/or rescue, extinguish the fire, and utilizing safe operational procedures. (Initial response – 1 Engine)

Fire Low Risk - 90th Percentile Times - Baseline Performance			FY20-21	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	2:34	2:53
		Rural	mm:ss	mm:ss	2:05	4:41
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	2:07	3:16
		Rural	mm:ss	mm:ss	2:15	3:36
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	7:26	5:52
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	12:45	14:17
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	9:50	12:05
			n=XXX	n=XX	n=22	n=18
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	15:50	17:05
			n=XXX	n=XX	n=3	n=5
	Total Response Time ERF **Concentration**	Urban #1	-	-	-	-
			n=XXX	n=XXX	n=0	n=0
		Urban #2	-	-		
			n=XXX	n=XXX		
		Rural	-	-	-	-
			n=XXX	n=XXX	n=0	n=0

Fire – Moderate Risk – Residential Structures and Commercial Structures with Risk Scores below 35– For 90 percent of all incidents, the first-in unit shall arrive, with a minimum of two firefighters and one officer, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first arriving unit shall be capable of ensuring scene safety, establishing command, conducting size up, establishing water supply of at least 500 gallons and providing a pumping capacity of at least 1,250gpm, initiating fire attack and/or rescue, extinguish the fire, and utilizing safe operational procedures. An Effective Response Force of a minimum of fifteen firefighting personnel shall arrive within 14:50 minutes for urban and 16:50 minutes for rural areas. The response shall be capable of establishing command; providing an uninterrupted water supply of at least 1,250gpm; advancing an appropriate attack line and a backup line for fire control; complying with the OSHA requirements of two in-two out by establishing a RIC; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; exposure protection; controlling utilities; and performing salvage and overhaul. (Dispatched for the ERF – 3 ALS Engines, 1 Aerial, 3 Rescues, 1 Incident Safety Officer, and 1 Chief Officer).

Fire Moderate Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	0:56	3:16
		Rural	mm:ss	mm:ss	--	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	0:59	3:48
		Rural	mm:ss	mm:ss	--	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	7:04	7:19
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	8:59	11.15
			n=XXX	n=XX	n=4	n=9
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
	Total Response Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	-	-
			n=XXX	n=XXX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XXX		
		Rural	mm:ss	mm:ss	-	-
			n=XXX	n=XXX	n=0	n=0

Fire – High Risk – Residential Structures and Commercial Structures with Risk Scores of 35 or above – For 90 percent of all incidents, the first-in unit shall arrive, with a minimum of two firefighters and one officer, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first arriving unit shall be capable of ensuring scene safety, establishing command, conducting size up, establishing water supply of at least 500 gallons and providing a pumping capacity of at least 1,250gpm, initiating fire attack and/or rescue, extinguish the fire, and utilizing safe operational procedures. An Effective Response Force of a minimum of 20 firefighting personnel shall arrive within 14:50 minutes for urban and 16:50 minutes for rural areas. The response shall be capable of establishing command; providing an uninterrupted water supply of at least 2500gpm; advancing an appropriate attack line and a backup line for fire control; complying with the OSHA requirements of two in-two out by establishing a RIC; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; exposure protection; controlling utilities; and performing salvage and overhaul. (Dispatched to the ERF – 4 ALS Engines, 1 Aerial, 4 Rescues, 1 Incident Safety Officer, and 1 Chief Officer).

Fire High Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
	Total Response Time ERF **Concentration**	Urban #1	-	-	-	-
			n=XXX	n=XXX	n=0	n=0
		Urban #2	-	-		
			n=XXX	n=XXX		
		Rural	-	-	-	-
			n=XXX	n=XXX	n=0	n=0

Technical Rescue – Low Risk – For 90 percent of all incidents, the first-in apparatus shall arrive with a minimum of two firefighters within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first-in unit shall be capable of ensuring the scene is safe, establishing command, size up to determine if a technical rescue response is required, request additional resources as needed, control the hazards, and provide advanced life support to any victim without endangering personnel.

Technical Rescue Low Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	3:19	2:38
		Rural	mm:ss	mm:ss	4:50	5:00
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	1:48	4:18
		Rural	mm:ss	mm:ss	3:09	2:18
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	7:00	3:47
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	12:41	7:12
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	9:22	8:00
			n=XXX	n=XX	N=19	n=21
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	15:48	11:50
			n=XXX	n=XX	n=6	n=3

Technical Rescue – Moderate Risk – For 90 percent of all incidents the first-in unit shall arrive, with a minimum of two firefighters, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first-in unit shall be capable of ensuring scene safety, establishing command, size up to determine if a technical rescue response is required, request additional resources, control the hazards, and provide advanced life support to any victim without endangering personnel. The ERF of five firefighting personnel shall arrive within 10:50 minutes total response time for urban and 14:50 minutes for rural areas. The response force shall be capable of establishing patient contact, staging and apparatus set up, providing technical expertise, knowledge, skills, and abilities during technical rescue incidents, and providing advanced life support level care and transporting the patient to a medical facility if needed. (ERF – 1 ALS Engine with Extrication Capabilities and 1 Rescue).

Technical Rescue Moderate Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	2:07	3:24
		Rural	mm:ss	mm:ss	3:55	1:55
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	1:23	3:15
		Rural	mm:ss	mm:ss	3:41	2:10
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	5:02	4:43
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	10:54	9:36
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	5:22	4:52
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	13:27	10:41
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	7:11	9:25
			n=XXX	n=XX	n=17	n=18
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	12:50	13:25
			n=XXX	n=XX	n=15	n=8
	Total Response Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	7:17	9:31
			n=XXX	n=XXX	n=17	n=18
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XXX		
		Rural	mm:ss	mm:ss	17:26	13:35
			n=XXX	n=XXX	n=15	n=8

Technical Rescue – High Risk – For 90 percent of all incidents the first-in unit shall arrive, with a minimum of two firefighters, within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first-in unit shall be capable of ensuring scene safety, establishing command, size up to determine if a technical rescue response is required, request additional resources, control the hazards, and provide advanced life support to any victim without endangering personnel. The ERF of eight firefighting personnel shall arrive within 10:50 minutes total response time for urban and 14:50 minutes for rural areas. The response force shall be capable of establishing patient contact, staging and apparatus set up, providing technical expertise, knowledge, skills, and abilities during technical rescue incidents, and providing advanced life support level care and transporting the patient to a medical facility if needed. (ERF – 1 Engine, 2 Rescues, 1 Safety Officer, and 1 Chief Officer).

Technical Rescue High Risk - 90th Percentile Times - Baseline Performance			FY20-22	F22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
	Total Response Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	-	-
			n=XXX	n=XXX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XXX		
		Rural	mm:ss	mm:ss	-	-
			n=XXX	n=XXX	n=0	n=0

Hazmat Incident – Low Risk – For 90 percent of all incidents, the first-in apparatus shall arrive with a minimum of two firefighters within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas total response time. The first-in unit shall be capable of ensuring scene safety, establishing command, size up, assessing the situation to determine the need for a potential higher-level response; control small leaks; and stabilize the scene. (Initial response – 1 Engine.)

Hazardous Materials Low Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	3:08	3:11
		Rural	mm:ss	mm:ss	2:00	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	2:50	4:05
		Rural	mm:ss	mm:ss	2:41	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	7:00	5:27
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	13:40	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	11:12	12:08
			n=XXX	n=XX	n=5	n=22
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	16:22	--
			n=XXX	n=XX	n=1	n=0

Hazmat Incident – Moderate Risk – For 90 percent of all incidents, the first-in apparatus shall arrive with a minimum of two firefighters within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas for total response time. The first-in unit shall be capable of ensuring scene safety, establishing command, size up, assessing the situation to determine the need for a potential higher-level response; control small leaks; and stabilize the scene. For 90 percent of all incidents, the ERF of nine firefighting personnel shall arrive within 10:50 minutes for urban and 14:50 minutes for rural areas. The ERF shall be capable of providing the equipment, technical expertise, knowledge, skills, and abilities to begin to mitigate a hazardous materials incident. (ERF – 1 Engine, Hazmat Trailer, 2 Rescues, 1 Hazmat Incident Safety Officer, and 1 Chief Officer).

Hazardous Materials Moderate Risk - 90th Percentile Times - Baseline Performance			FY20-22	FY22	FY21	FY20
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	--	1:19
		Rural	mm:ss	mm:ss	--	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	--	1:31
		Rural	mm:ss	mm:ss	--	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	--	4:10
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	--	7:00
			n=XXX	n=XX	n=0	n=1
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
	Total Response Time ERF **Concentration**	Urban #1	--	--	--	--
			n=XXX	n=XXX	n=0	n=0
		Urban #2	--	--		
			n=XXX	n=XXX		
		Rural	--	--	--	--
			n=XXX	n=XXX	n=0	n=0

Hazmat Incident – High Risk – For 90 percent of all incidents, the first-in apparatus shall arrive with a minimum of two firefighters within 6:50 minutes total response time for urban density #1, 10:50 minutes for urban density #2, and 10:50 minutes for rural areas. The first-in unit shall be capable of ensuring scene safety, establishing command, size up, assessing the situation to determine the need for a potential higher-level response; control small leaks; and stabilize the scene. For 90 percent of all incidents, the ERF of nine firefighting personnel shall arrive within 10:50 minutes for urban and 14:50 minutes for rural areas. The ERF shall be capable of providing the equipment, technical expertise, knowledge, skills, and abilities to begin to mitigate a hazardous materials incident. (ERF – 1 Engine, Hazmat Trailer, 2 Rescues, 1 Hazmat Incident Safety Officer, and 1 Chief Officer).

Hazardous Materials High Risk - 90th Percentile Times - Baseline Performance			2019-2021	2021	2020	2019
Alarm Handling	Pick-up to Dispatch	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Turnout Time	Turnout Time 1st Unit	Urban	mm:ss	mm:ss	--	--
		Rural	mm:ss	mm:ss	--	--
Travel Time	Travel Time 1st Unit **Distribution**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
	Travel Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	--	--
		Urban #2	mm:ss	mm:ss		
		Rural	mm:ss	mm:ss	--	--
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban #1	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XX		
		Rural	mm:ss	mm:ss	--	--
			n=XXX	n=XX	n=0	n=0
	Total Response Time ERF **Concentration**	Urban #1	mm:ss	mm:ss	-	-
			n=XXX	n=XXX	n=0	n=0
		Urban #2	mm:ss	mm:ss		
			n=XXX	n=XXX		
		Rural	mm:ss	mm:ss	-	-
			n=XXX	n=XXX	n=0	n=0

Chapter 7 – Plan for Maintaining and Improving Response Capabilities

The Boulder City Fire Department places great importance on identifying any gaps in response coverage. This is critical to firefighter safety and that of the people within the community. Response gaps and program gaps were identified during the development of the 2021 Community Risk Assessment.

Response Gaps

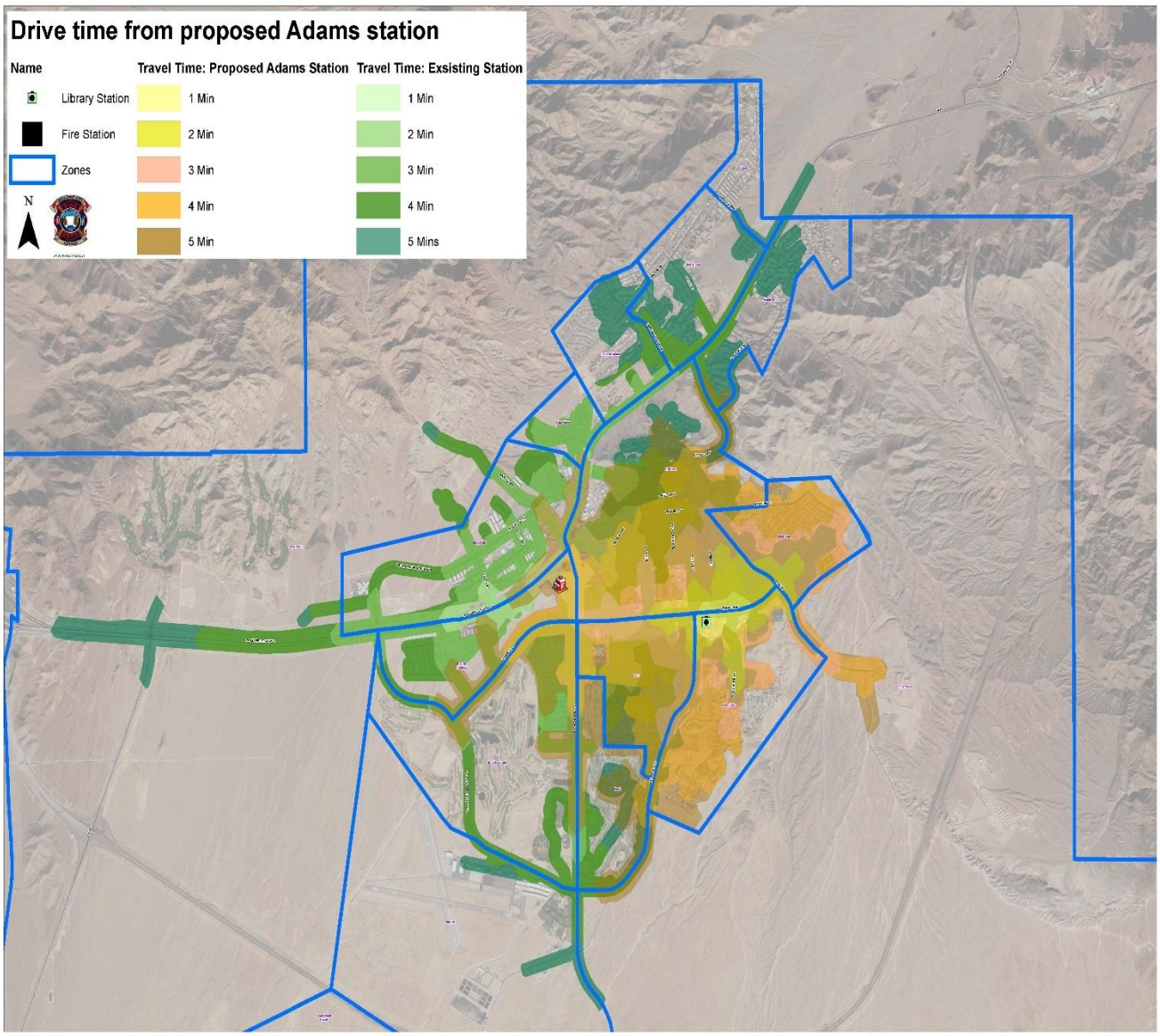
There were two significant response gaps in response that the department worked to address due to having the greatest impact on the outcomes of incidents. The first was the total response time. This involved all three elements of the response time: call handling, turnout, and travel time. The call handling is currently provided by the Boulder City Police Department Communications Center. This relationship is being developed through monthly meetings with the deputy fire chief, the police commander, and the communication center manager. New fire department dispatching policies have been developed and monthly compliance reports are being shared with suggestions for improvement. The fire department also worked with the communication center to start using pre-alerting for all fire department calls for service, which has resulted in a significant reduction in the overall call handling. There is still work to be done to be in line with *National Fire Protection Association (NFPA) 1221: Standard of the Installation, Maintenance, and Use of Emergency Services Communications Systems*. This standard is new to the police department communication center and will take time to fully implement due to staffing and training needs.

The second gap identified during the development of the community risk assessment is the fact that nearly 8,000 residents live outside of the NFPA 1710 defined first-due response area for Station 121 and all apparatus. This finding led to the department presenting an overall community risk assessment, the gaps in coverage, and proposed solutions to the city leadership in a city council workshop on November 17, 2021. The department proposed adding an additional fire station and a three-person engine company to the daily staffing. Two separate locations were identified for the future fire station. The first was in the vicinity of 701 Adams near the library on the southeast side of the city. The second was at the intersection of Quartzite and Nevada Way on the northeast side of the city. Consideration was given for the demographics of the residents in both areas for the purpose of making the largest positive impact with the

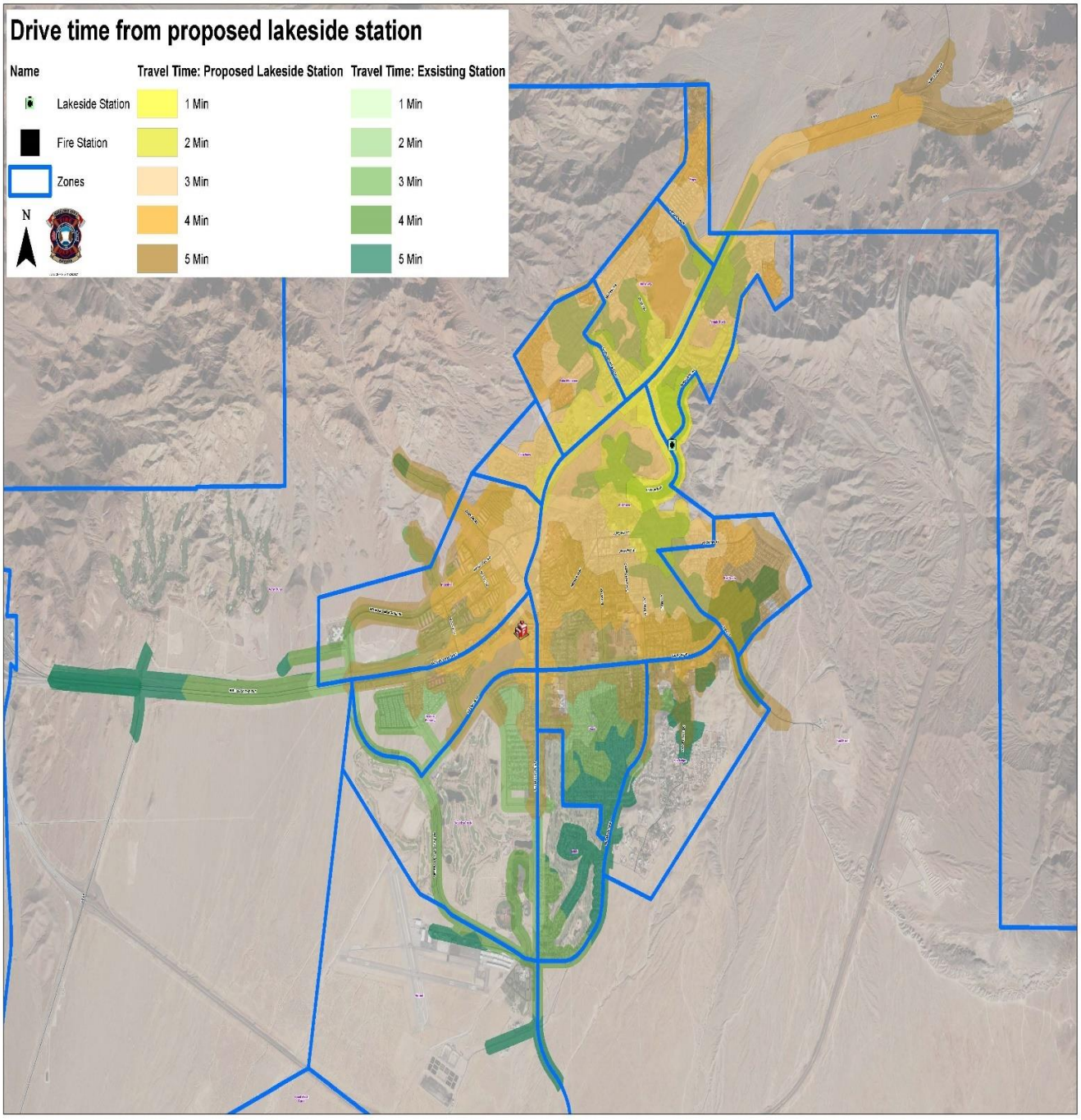
placement of the fire station. Estimates were made of the population that would be brought into the standard first-due response with both options presented to the city council and the community.

Following the workshop, the fire department obtained the costs to build a satellite fire station, furnish and equip it. This was added to the city's capital improvement plan. Staffing costs were also calculated for consideration in the upcoming budget cycle. The department was also given approval to pursue the FEMA Safer Grant in January 2022 to cover the additional personnel costs.

Below are the two maps of the proposed fire station locations with overlapping five-minute response distances.



The first proposed future fire station location would bring in an estimated 1,470 homes and 3,521 residents to the NFPA 1710 travel time standard. These numbers are estimates based on the neighborhood zones that would be covered, the total number of homes within them, and an estimate of 2.53 people per household based on national estimates.



The second proposed future fire station location would bring in an estimated 1,978 homes and 4,474 residents to the NFPA 1710 travel time standard. These numbers are estimates based on the neighborhood zones that would be covered, the total number of

homes within them, and an estimate of 2.53 people per household based on national estimates.

The fire station project has been placed into the city's five-year Capital Improvement Plan with an anticipated funding of FY2024, which starts in July 2023.
The fire department is also looking to increase the community risk reduction efforts to have better prepared residents and businesses within the community. Regular community CPR and Stop the Bleed classes have been added to the CRR program starting in 2022.

Risk Specific Response Gaps

The department also identified two risk classifications that personnel were not adequately trained or equipped to respond to mitigate the risks that currently exist with the city.

Hazardous Materials Response Gap

The fire department identified a gap in response capabilities compared to the hazmat risk identified with the city commercial, industrial, and solar power generation facilities. This prompted the fire department to begin developing a hazmat technician level of service that will be capable of initial response to all hazmat events within the city. The personnel will be capable of conducting a rescue, establishing a decontamination process, and begin mitigating the hazard. This has included sending personnel to the national FEMA funded hazardous materials technician course in Pueblo, Colorado. It has also meant purchasing a hazmat trailer and associated equipment. Operating guidelines are being developed and training implemented to move the level of service (operations level) to the technician level by December 31, 2023.

Technical Rescue Response Gap

The department also identified a gap in response to the various technical rescue risks within the city. This was particularly true for rope rescue and search and rescue incidents. Due to the large volume of mountains on all sides of the city, many visitors and residents have been involved in recreation accidents that have required other agencies to come into the city to mitigate. The current administration found this unacceptable and began the process of bringing all line

personnel up to the rope rescue operations level and at least two personnel on each shift up to the rope rescue technician level. Additional equipment will be purchased as the training levels are brought in line with the current risks. The department has secured a national rope rescue technician instructor as a volunteer and class instructor to help with this process. He will also be serving as a safety officer for large scale rope rescue trainings and emergency responses. The goal is to have this program to operations level in the first half of 2022. The rope rescue technicians will be trained by the end of 2023.

Continuous Improvement Plan for Gaps and Variations

The department has an established methodology for developing a continuous improvement plan to address existing gaps and variations. The gaps and variations are identified throughout the year during program appraisals, demands for service, and response time performance. If a gap is identified that can be resolved quickly, such as adjusting a first-due response area, the command staff will work to get it addressed as soon as possible.

If the issue is larger, such as the increase in demand for service and decreased response reliability, the command staff will discuss it during the regular command staff/captain's meetings. This is where the initial ideas are developed. One or more of the command staff members will take the lead on identifying a plan to correct the deficiency. For example, a new risk may occur in the city due to a change in occupancy use within the city. When this occurs, the following steps should be followed:

1. The problem should be identified.
2. Suggested solutions should be documented.
3. One or members of the command staff, or a designee, should be assigned as the project lead.
4. The project lead should determine the amount of help that they need to complete the analysis and to develop a proposal for changes. The proposal should include approximate times for each phase of the project.
5. The proposal will then be presented to the fire chief and the command staff for further discussion based on the report.
6. Once the solution is determined, the implementation phase will begin. Due to the variety of solutions, the next steps will vary based on cost, resources needed, and approval from the city manager, if needed.

7. Changes that require significant financial support typically require the fire chief to work closely with the city manager and the city council for approval.
8. Smaller changes can be implemented within the department but may include company meetings with a member of the command staff to get internal input. This is also beneficial to help members keep apprised of impending changes.
9. Short and long-term goals will be added to the goals and objectives tracker to ensure that progress is being made and the fire chief is aware it.
10. The fire chief will keep the city manager and city council informed of all relevant information regarding the changes during their regular briefings.

Chapter 8 – Correlation of CRA-SOC Documents and CFAI Accreditation Model

PI/CC	PI/CC Text	CRA-SOC Location Page/Section/Area
CC 1A.1	The agency is legally established	Pages 9-10
2A.1	Service area boundaries for the agency are identified, documented, and legally adopted by the authority having jurisdiction.	Page 7
CC 2A.3	The agency has a documented and adopted methodology for organizing the response area(s) into geographical planning zones.	Page 17
CC 2A.4	The agency assesses the community by planning zone and considers the population density within planning zones and population areas, as applicable, for the purpose of developing total response time standards.	Pages 8, 12-13
2A.6	The agency utilizes its adopted planning zone methodology to identify response area characteristics such as population, transportation systems, area land use, topography, geography, geology, physiography, climate, hazards, risks, and service provision capability demands.	Pages 10-15
CC 2B.1	The agency has a documented and adopted methodology for identifying, assessing, categorizing, and classifying all risks (fire and non-fire) throughout the community or area of responsibility.	Pages 24-28
2B.2	The historical emergency and nonemergency service demands frequency for a minimum of three immediately previous years and the	Pages 49-53

	future probability of emergency and non-emergency service demands, by service type, have been identified and documented by planning zone.	
CC 2B.4	The agency's risk identification, analysis, categorization, and classification methodology has been utilized to determine and document categories and classes of risks within each planning zone,	CRA Pages 26-44 SOC Pages 28-30
CC 2C.1	Given the levels of risks, area of responsibility, demographics, and socio-economic factors, the agency has determined, documented, and adopted a methodology for the consistent provision of service levels in all service program areas through response coverage strategies.	Page 56
CC 2C.4	A critical task analysis of each risk category and risk class has been conducted to determine the first due and effective response force capabilities, and a process is in place to validate and document the results.	Pages 43-48
CC 2C.5	The agency has identified the total response time components for delivery of services in each service program area and found those services consistent and reliable within the entire response area.	Pages 54-57
CC 2C.8	The agency has identified efforts to maintain and improve its performance in the delivery of its emergency services for the past three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.	Pages 72-77
CC 2D.1	The agency has a documented and adopted methodology for assessing performance adequacies, consistency, reliability, resiliency, and opportunities for improvement for the total response area.	Pages 57-59

CC 2D.3	The performance monitoring methodology identifies, at least annually, future external influences, altering conditions, growth, and development trends, and new or evolving risks, for purposes of analyzing the balance of service capabilities with new conditions or demands.	Page 59
CC 2D.6	Performance gaps for the total response area, such as inadequacies, inconsistencies, and negative trends, are determined at least annually.	Pages 57-59 & 72-76
CC 2D.7	The agency has systematically developed a continuous improvement plan that details actions to be taken within an identified timeframe to address existing gaps and variations.	Pages 76-77
CC 3B.1	The agency publishes current, general organizational goals and S.M.A.R.T. objectives, which use measurable elements of time, quantity, and quality. These goals and objectives directly correlate to the agency's mission, vision and values and are stated in the strategic plan.	Pages 36-40
CC 5E.1	Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), pumping capacity, apparatus and equipment deployment objectives for each type and magnitude of fire suppression incident(s).	Pages 63-64
CC 5F.1	Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus, and equipment deployment objectives for each type and magnitude of emergency medical incident(s).	Pages 60-61

CC 5G.1	Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus, and equipment deployment objectives for each type and level of risk of a technical rescue incident(s).	Pages 66-67
CC 5H.1	Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus and equipment deployment objectives for each type and magnitude of hazardous materials incident(s).	Pages 69-70
CC 6C.1	Apparatus and vehicle types are appropriate for the functions served (e.g., operations, staff support services, specialized services, and administration).	Page 42
CC 10A.1	The agency develops and maintains external relationships that support its mission, operations, and/or cost-effectiveness.	CRA Page 16