CARBONDALE & RURAL FIRE PROTECTION DISTRICT

Standards of Response Coverage

January 2025

Standards of Response Coverage is a comprehensive report that highlights community demographics, risk, resource deployment, concentration of personnel, and response reliability. The report provides a valuable review of past performance and offers strategic recommendations for ensuring safe and effective emergency response.

Contents

Figures

Executive Summary

The following serves as the Carbondale & Rural Fire Protection District (CRFPD) Standards of Response Coverage document. The terms Standards of Response Coverage, Standard of Cover and SOC all mean this document. The Center for Public Safety Excellence (CPSE) defines the process, known as deployment analysis, as written procedures that determine the distribution and concentration of fixed and mobile resources of an organization. The purpose for completing such a document is to assist the organization in ensuring a safe and effective response force for structural and wildland fire suppression, emergency medical services, and specialized response situations.

Creating a Standard of Cover document requires that a number of areas be researched, studied, and evaluated. The following report will begin with an overview, the plan will discuss areas such as risk assessment, critical task analysis, agency service level objectives, and distribution and concentration measures. The report will provide documentation of reliability studies and historical performance through charts and graphs. The report will conclude with policy recommendations.

Carbondale & Rural Fire Protection District currently has 33 full-time positions. The positions are Fire Chief, Deputy Chief, Prevention Division Chief, Training Division Chief, Administration Deputy Chief, Human Resources Director, Maintenance Coordinator, EMS Assistant Chief, Prevention Assistant Chief, IT Director, Office Manager, two training division positions, a maintenance position, and 19 firefighter/EMT positions on three 24-hour shifts. Along with the paid staff, the district has 35 volunteer firefighters and EMTs who provide staffing for incident response at five fire stations in the district.

CRFPD provides structural and wildland fire suppression, emergency medical services, rescue, fire prevention and public education services, along with emergency preparedness services to the communities within Carbondale & Rural Fire Protection District. In 2017, the population served is approximately 16,000 people encompassing the communities of Carbondale, Redstone and Marble along with significant populations in the unincorporated "West End" and Missouri Heights areas of the district. CRFPD's current Insurance Services Office (ISO) rating is a Class 3.

The risk factors specific to the District that were analyzed include: topography, water supply, geographical area served and transportation systems. In addition, risk factors including life hazard, special hazards, wildland fire hazards, water supply and building construction and usage were examined to further evaluate community risk levels.

In conclusion, this Standard of Cover is a dynamic document that reflects the changing needs of the Carbondale & Rural Fire Protection District and serves as a mechanism for constantly seeking opportunities for improvement. It is a key element in our plan to reduce risk to our residents and visitors. We are committed to providing the most effective services in a fiscally responsible manner and to continually evaluate our performance in the constant pursuit of improvement.

Introduction

What is a Standard of Cover?

The purpose of the Standard of Cover is to assist Carbondale & Rural Fire Protection District in ensuring a safe and effective response force for fire suppression, Emergency Medical Services (EMS), and other responses. For this document Carbondale & Rural Fire Protection District may be referred to as "District", "Carbondale Fire District" or "CRFPD". Additionally, the terms Standards of Response Coverage, Standard of Cover and SOC all mean this document. The SOC is a baseline tool for defining emergency performance standards, provides a basis for continually measuring performance improvements over time, and is a guide to policy decisions dealing with resource procurement and allocation. Also it provides a basis to evaluate the risk assessment and ensure there are adequate resources to address those risks.

As the community changes, District leaders will have a valuable tool to assist with defining appropriate levels of service. There have been many attempts in the fire service to create a standard methodology for determining the exact number of firefighters, configuration of firefighters (career, combination or volunteer), fire stations, or fire inspectors for the community needs. However, the differences in fire service challenges in each community have made it clear that there is not a "one-size-fits-all" solution. The variety of risks and levels of hazards that exist in the CRFPD communities will determine the evaluation, design and development of an all hazards response system that identifies service levels that are safe, efficient and effective. The emergency response capabilities should be evaluated using National Fire Protection Association's Standard 1720 Standards for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operation to the Public by Volunteer Fire Department as a guideline.

Attempts to control an emergency before it has reached its maximum intensity requires geographic dispersion and clustering of resources near service delivery points for maximum effectiveness against the greatest number and types of risk.

Not all areas of exposures within the District are equal. Some types of emergencies, such as multiple car collisions, working structure fires, wildland fires, and serious medical/trauma events require a prompt arrival of adequate resources to control the scene, perform rescue operations, and provide high level medical care. High-risk occupancies require timely arrival of fire companies to rescue occupants or to control the emergency. More resources are required to rescue people trapped in a high-risk building with a high occupancy load than would be needed in a low-risk building with a low occupancy load. More resources are required to control fires in large, heavily loaded structures than are needed for fires in small buildings with limited contents. Remote areas of the District are outside the ability to provide adequate response

time, due to the locations of risks, but emergencies in these areas are a small percentage of the incidents. The SOC defines these risks and will assist the District in developing plans to mitigate them.

It is also understood that there is a cost to improving the deployment system. It is not financially feasible to put a fire station in every subdivision, but the SOC will determine the level of services that are within the present capability of the District.

Therefore, creating a SOC consists of an evaluation of the placement of resources (number, type and location) in relation to the potential demand placed on them by the type of risk and historical needs in the community. Furthermore, if the SOC is to be meaningful to the community, the outcome must demonstrate that lives are saved and properties are protected.

The SOC is a living document and will need to evolve over time. As the data becomes available, the changes should be tracked to ensure effectiveness.

Community and District Baseline

Mission Statement

To Forge a Legacy of Superb Service and Partnerships Rooted in Love and Excellence

Vision Statement

It is the vision of Carbondale & Rural Fire Protection District to create a leading all-hazards emergency service organization. By developing exceptional personnel and maintaining partnerships, we will deliver outstanding service to our communities while ensuring fiscal sustainability and continuing our People First culture

History of Carbondale & Rural Fire Protection District

Carbondale & Rural Fire Protection District was founded in 1953 as an all-volunteer fire department and remained as such until 1980 when the first paid fire chief was hired to lead the organization. The District began providing modern ambulance service with volunteer EMT-Basics in 1978. In the early 1980s, the Colorado EMT-Intermediate certification program was institutionalized and some Carbondale volunteers began the slow, methodical change to providing Advanced Life Support Services to the community. Dr. Michael Stahl was recruited as the District's Physician Advisor in the early 1980s and remained in that position until the end of 2024. The District operates four ambulances staffed and equipped to Advanced Life Support standards including at least one EMT-Paramedic (EMT-P) on every emergency call.

Over the years, the ever-increasing demand and expectations of the public for advanced level emergency medical services has driven the need for more career EMTs and Paramedics at CRFPD. The same demands for service have driven the need for additional career firefighter positions at CRFPD. All District operations are managed by a Deputy Chief in charge of operations. Additionally, there are Deputy and Division Chief positions for the administrative, maintenance, training and prevention divisions. Service demands on the District have driven the need for additional professional positions, including assistant chief positions in the Operations and Prevention divisions, and additional staffing in the training division. A full-time Human Resources director position was created in 2023 due to the demands placed on the administrative division. An IT Director position was established in late 2023. A professional Office Manager/Assistant Finance Director position was established due to the development of the HR department in early 2024.

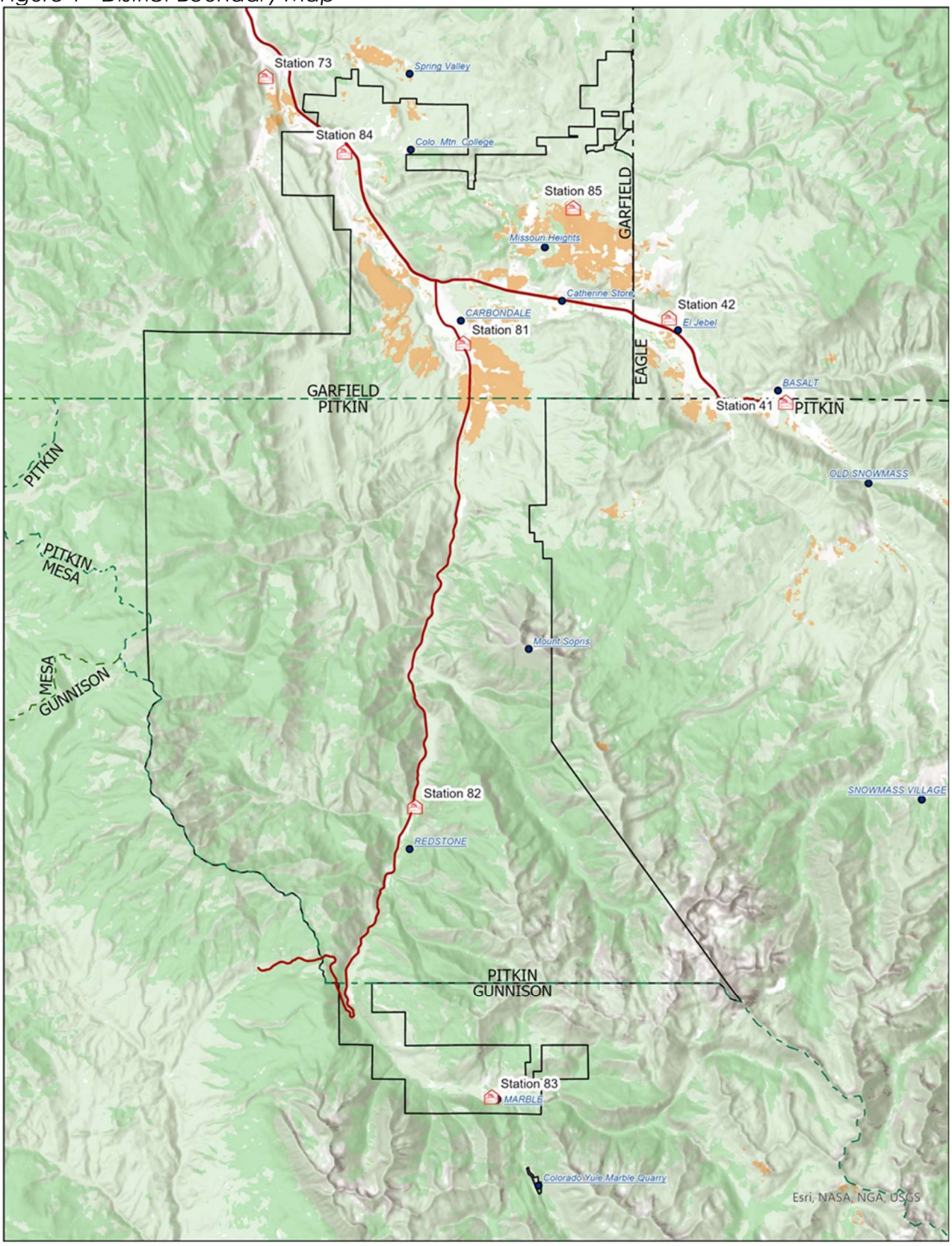
Currently the District supports 33 full time positions and 35 volunteer firefighters and EMTs. Throughout its history, CRFPD has maintained its culture of "The Volunteer Spirit" and depends heavily on the community volunteers to deliver a high level of fire protection and emergency medical services to the community.

Governance of the District

Carbondale & Rural Fire Protection District was established on January 10, 1955, as a quasi-municipal corporation and is a political subdivision of the State of Colorado. The District was created by court order to serve areas of Garfield, Gunnison, and Pitkin Counties. As a political subdivision, Carbondale & Rural Fire Protection District is afforded the governing authorities and responsibilities authorized under Title 32 Article 1, Colorado Revised Statutes. Because of its status as a political subdivision of the state, CRFPD is required to provide reports to other state agencies.

As a Special District, Carbondale & Rural Fire Protection District is not unique. According to the Special District Association of Colorado, currently there are more than 3,000 Special Districts in the state. Special Districts are believed to be an effective and efficient methodology by which to fund services without straining other types of infrastructure. A unique benefit of the Special District is the ability of the taxpayer to determine the specific levels of service provided by the District and fund those services accordingly.

Figure 1 - District Boundary Map



Community Overview and Risk Assessment

Response Types

Carbondale & Rural Fire Protection District responds to all emergency calls for assistance in the District. These responses include: emergency medical service (basic and advanced life support), structure fires, wildland fires, vehicle fires, rubbish fires, technical rescue (auto extrication, swift water rescue, high and low angle rescue, backcountry rescue, and structural collapse), and hazardous materials incidents.

The District also responds to a variety of non-emergent service calls such as utility calls, smoke reports, odor investigations, fire alarms and alarm resets, citizen assists, and assistance to law enforcement. In addition, the District performs a significant number of EMS standbys for special events throughout the year. The District is continuously looking to add response capabilities as new risks become known.

Incident Types

Response requests are categorized in three main Incident Types – Fire, EMS, and Other based on dispatch activity descriptions. As shown in Figure 2, the majority of calls are medical (EMS) in nature. Service demand is currently driven by distribution of population rather than the characteristics of fixed real property. Human beings are highly mobile, thus the demand for service in a particular area may change frequently depending upon the time of day, day of week, specific season or event, or as other significant and long-term demographic shifts occur.

Figure 2 - Incident Types

	2021	%	2022	%	2023	%
Building Fires	8	0.57%	7	0.44%	10	0.58%
Vehicle Fires	5	0.36%	3	0.19%	9	0.52%
Wildland Fires	6	0.43%	3	0.19%	6	0.35%
Other Fires	6	0.43%	11	0.69%	1	0.06%
Total Fires	**25**	1.79%	**24**	1.51%	**26**	1.50%
Rescue / EMS	687	49.25%	788	49.56%	883	51.04%
Total EMS / Rescue	**687**	49.25%	**788**	49.56%	**883**	51.04%
False Alarms	184	13.19%	190	11.95%	202	11.68%
Mutual aid Given	9	0.65%	12	0.75%		0.00%
Hazmat Responses	38	2.72%	30	1.89%	25	1.45%
Other Hazardous Responses	24	1.72%	28	1.76%	15	0.87%
All Other Responses	428	30.68%	518	32.58%	579	33.47%
	683	59.08%	**778**	67.30%	**821**	71.02%
Total All Incidents	**1395**	100.00%	**1590**	100.00%	**1730**	100.00%

Number of Stations & Mutual/Automatic Aid

Carbondale & Rural Fire Protection District currently has five stations located in the District. Carbondale Fire has six engines, two ladder or "truck" apparatus, four ambulances, one medical "squad" with ALS capability, one swift water/rope rescue vehicle, five water tenders, and three brush trucks. The District also has several utility/command vehicles and one communications trailer for larger incidents and special events.

Carbondale Fire operates and responds from five fire stations located around the District. CRFPD's varied geography, demographics, and community types present unique challenges to providing adequate response everywhere throughout the District.

Community makeup in CRFPD runs the gamut from urban/suburban to commercial, rural, agricultural and even backcountry areas. Each of these areas require differing levels of staffing, equipment and even location/density of fire stations to ensure appropriate levels of response to emergencies. As a result, response times can vary considerably depending on the type of incident, location and availability of responders at a particular time.

The geography of CRFPD plays a significant role in affecting response in the District. Approximately 60 square miles of the land in the fire district contain areas that are designated as high and even extreme risk of wildland fire. Approximately 900 homes are located in these high and extreme areas of the Wildland/Urban Interface (WUI). Historically, CRFPD has responded to a number of significant wildland fires in the District and surrounding area. A number of these fires have been extremely serious and devastating to the area and people involved.

Wildland fire response is a critical part of what CRFPD does. Carbondale Fire District's mission has always been to "try to keep small fires small", as even a fairly moderate wildland fire will quickly strip the resources of any fire department and require a broad and expensive response

that can take days or weeks to mitigate.

Carbondale & Rural Fire Protection District participates in the following mutual and automatic aid agreements:

- 11/5/1997 - Northwest Colorado Mutual Aid Operations Plan; includes jurisdictions from Eagle, Garfield, Grand, Pitkin, Lake, Rio Blanco, Routt and Summit Counties
- 8/13/2002 - Automatic Aid Agreement between Carbondale & Rural Fire Protection District and Basalt & Rural Fire Protection District (now known as Roaring Fork Fire Rescue Authority)
- 8/10/2011 - Intergovernmental Mutual Aid & Automatic Aid Assistance Agreement; includes the Aspen Fire Protection District, Aspen Ambulance District, Basalt & Rural Fire Protection District, Carbondale & Rural Fire Protection District, Snowmass-Wildcat Fire Protection District and Pitkin County Sheriff.
- 6/22/2021 - Colorado Senate Bill 166, created the Colorado Coordinated Regional Mutual Aid System (CCRMAS). Unless an emergency responder has opted out, the system automatically includes all emergency responders in Colorado.
- 7/13/2022 - Intergovernmental Agreement Regarding Automatic Aid for Emergency Service between Carbondale & Rural Fire Protection District, Glenwood Springs Rural Fire Protection District, City of Glenwood Springs.
- Annual - Garfield County & Pitkin County Wildland Fire Operating Plan; annual plans between the County Sheriffs, the Colorado Division of Fire Prevention and Control, the Bureau of Land Management and the United States Forest Service.

Automatic Aid with City of Glenwood Springs/Glenwood Rural Fire Protection District

Standard Operating Guidelines have been established for four dispatch area zones (Zones 5-8):

- Zone 5 (7384) has been established as Highway 82 between Buffalo Valley and MM5 (old County Road 154). Station 73 is 1st due; Station 84 is 2nd due.
- Zone 6 (8473) has been established as Highway 82 between MM5 (old County Road 154) and MM 7.5. This includes all properties in zone immediately accessible off Highway 82. Zone 6includes FedEx, Riverview School, Westbank, Westbank Mesa, Iron Bridge (to the 1700 block of County Road 109), and Pinyon Mesa. Station 84 is 1st due; Station 73 is 2nd due.
- Zone 7 (7381) has been established including Dry Park Rd (County Road 125) to the intersection with County Road 108. Station 73 is 1st due; Station 81 is 2nd due.
- Zone 8 (8473) has been established as Spring Valley under the assumption that Red Canyon Road is unpassable. This automatic aid zone encompasses all of Spring Valley and into the Cattle Creek (CR 113) area including the intersection of CR 113 and CR 112. Station 84 is 1st due; Station 73 is 2nd due.

Automatic Aid with Roaring Fork Fire Rescue

Roaring Fork Fire Rescue (RFFR) Station 42 is the 1st due station to areas that were originally identified as more than five miles from CRFPD Station 81. These areas along State Highway 82 that are east of Catherine Store, would otherwise have an Insurance Service Office (ISO) protection classification of ten (PC-10). As a result of the automatic aid agreement, these areas receive a protection classification of three (PC-3).

Provided that improved notification can be established for RFFR from the Garfield County 911 PSAP, the automatic aid areas with RFFR could be enlarged to improve response to the east end of Garfield County.

Wildland Fire Reciprocal (Mutual Aid) Fire Assistance

Mutual Aid Zone - Mutual aid is considered county-wide.

Mutual Aid Period - The mutual aid period is defined as the time of initial dispatch and ends at either midnight of the first operational period or midnight of the second operational period. All mutual aid periods will preferably end at midnight for ease of financial accounting and the development of cost share agreements. Agencies are responsible for their own costs during the mutual aid time period. It is understood that no agency will be required or expected to commit its forces through mutual aid to assist another agency to the extent of jeopardizing the security or responsibilities of its own jurisdiction.

Mutual Aid Resources - All ground and aviation resources are considered mutual aid resources.

Mountain Area Mutual Aid (MAMA) - The Mountain Area Mutual Aid Operating Plan establishes mutual aid between local Fire and EMS Agencies within Eagle, Garfield, Grand, Lake, Pitkin, Rio Blanco, Routt and Summit Counties in the Mountain Area Region. When Mountain Area Mutual Aid is implemented, an Agency Representative (AREP) may be assigned to the incident to facilitate the tracking and allocation of MAMA resources and coordinate with the agency(s) having jurisdiction. Resources who respond under MAMA may be assigned to the incident and placed on a resource order for extended attack if needed and available in Interagency Resource Ordering Capability (IROC).

Figure 3 - Station 81

Station 81

300 Meadowood Drive, Carbondale

- Battalion 8
- Ambulance 81
- Ambulance 82
- Ambulance 84
- Rescue 80
- Rescue 81
- Engine 81
- Ladder 81
- Tender 81
- Brush 81

Primary Response Area: 142.4 Sq. Miles

2020 Population: 9,956

2024 Assessed Value: $ 62,634,155

Calls in 2023	**1219**
EMS Rescue	703
Fire	19
Rupture/Explosion	0
Hazardous Conditio	35
Service Call	65
Good Intent Call	211
False Call	181
Other	5

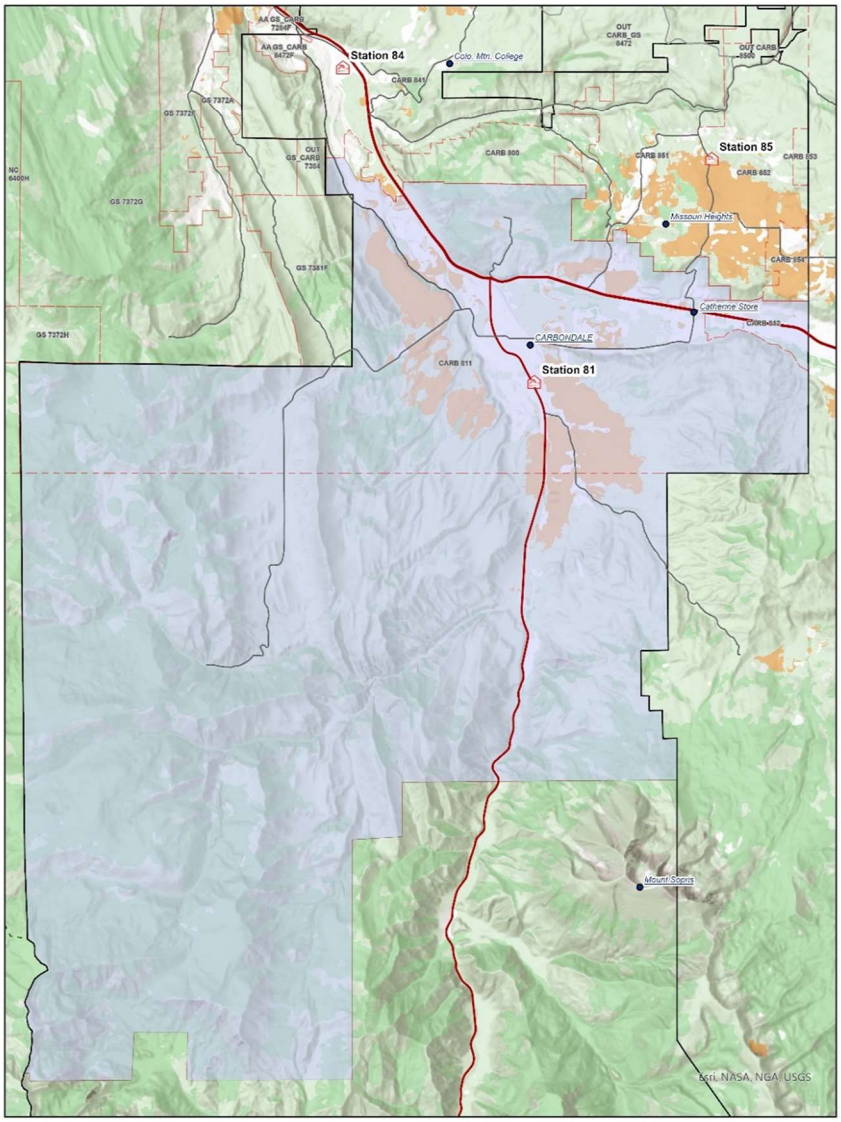


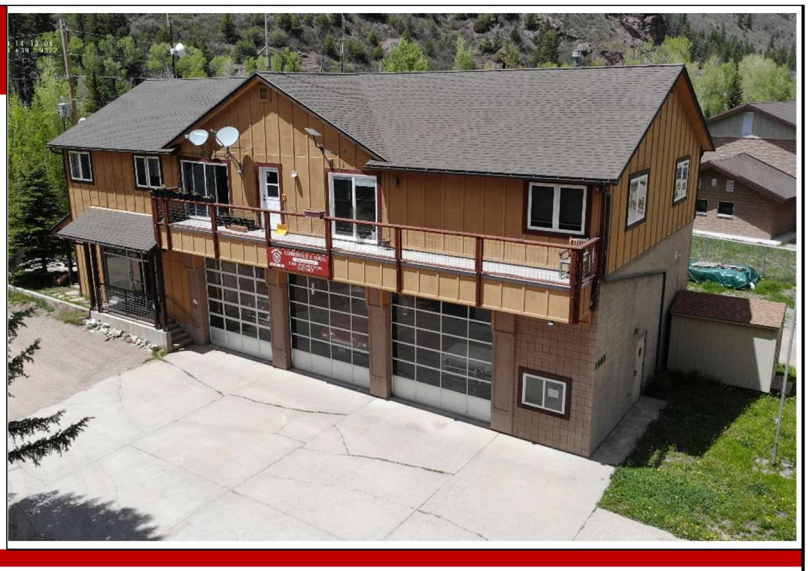
Table 3.2

Figure 4 - Station 82

Station 82

1085 Redstone Boulevard, Redstone

Ambulance 80
Engine 82
Tender 82



Primary Response Area: 106.4 Sq. Miles

2020 Population: 625

2024 Assessed Value: $ 41,733,650

Calls in 2023	**45**
EMS Rescue	28
Fire	1
Rupture/Explosion	-
Hazardous Condition	2
Service Call	2
Good Intent Call	7
False Call	3
Other	2

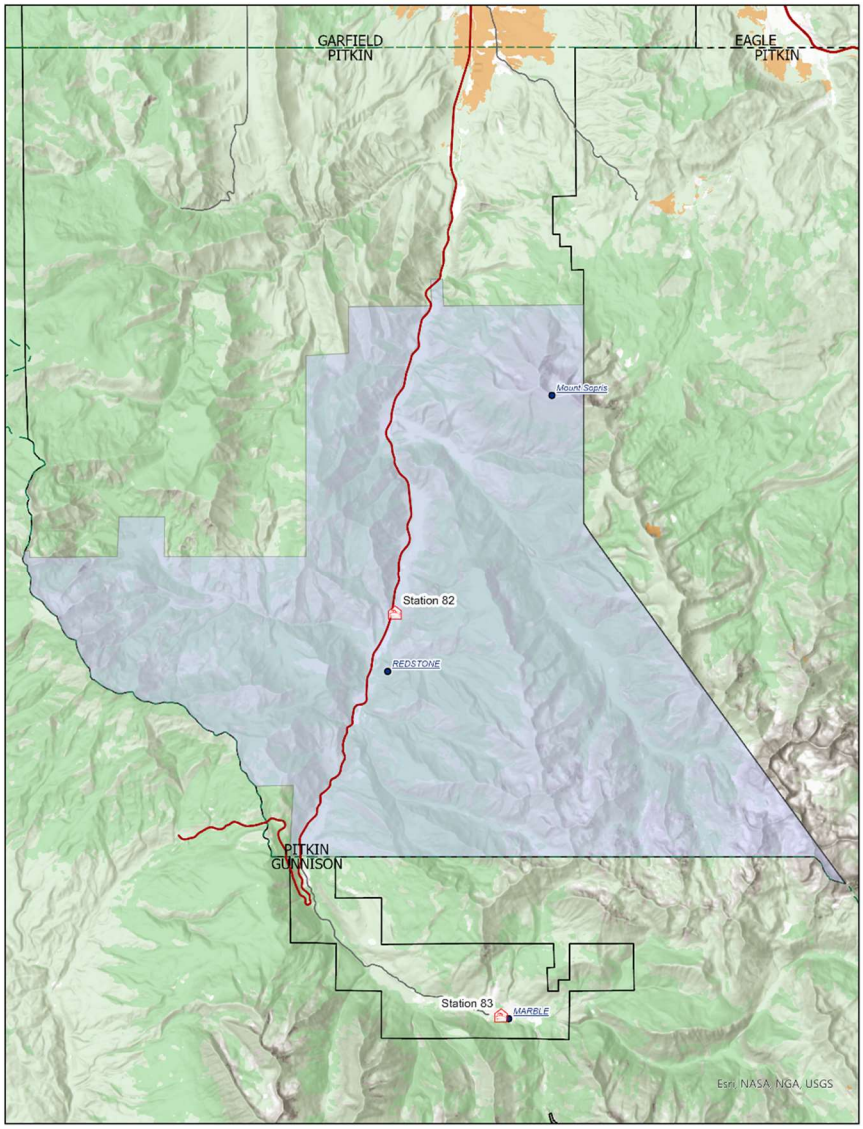


Table 3.3

Figure 5 - Station 83

Station 83

300 West Park, Marble

Rescue 83
Engine 83
Tender 83

Primary Response Area: 12.7 Sq. Miles

2020 Population: 214

2024 Assessed Value: $ 24,086,420

Calls in 2023	**32**
EMS Rescue	15
Fire	2
Rupture/Explosion	-
Hazardous Condition	-
Service Call	5
Good Intent Call	5
False Call	4
Other	1

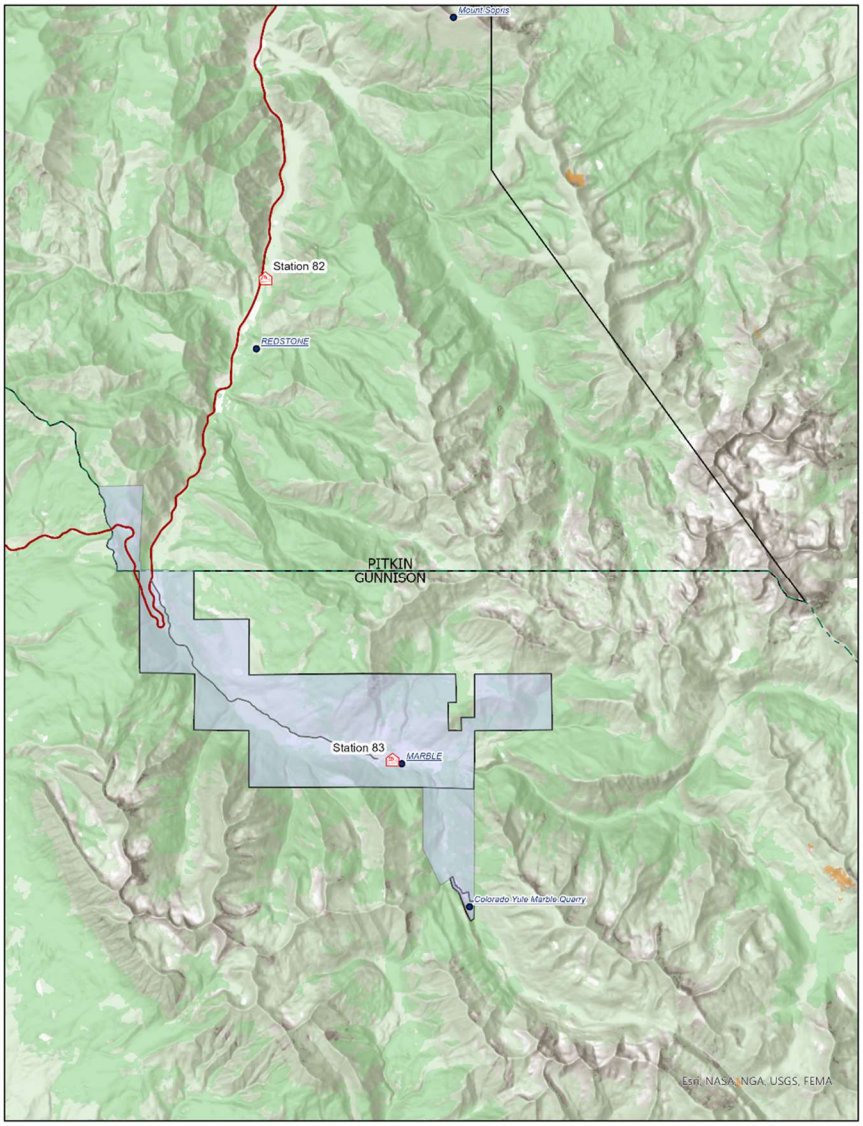


Table 3.4

Figure 6 - Station 84

Station 84

5449 County Rd 154, Glenwood Springs

Ambulance 84
Engine 84
Ladder 84
Brush 84
Tender 84

Primary Response Area: 16.4 Sq. Miles

2020 Population: 3,357

2024 Assessed Value: $ 106,254,458

Calls in 2023	**261**
EMS Rescue	124
Fire	7
Rupture/Explosion	-
Hazardous Condition	8
Service Call	9
Good Intent Call	44
False Call	28
Other - Mutual Aid GWS	41

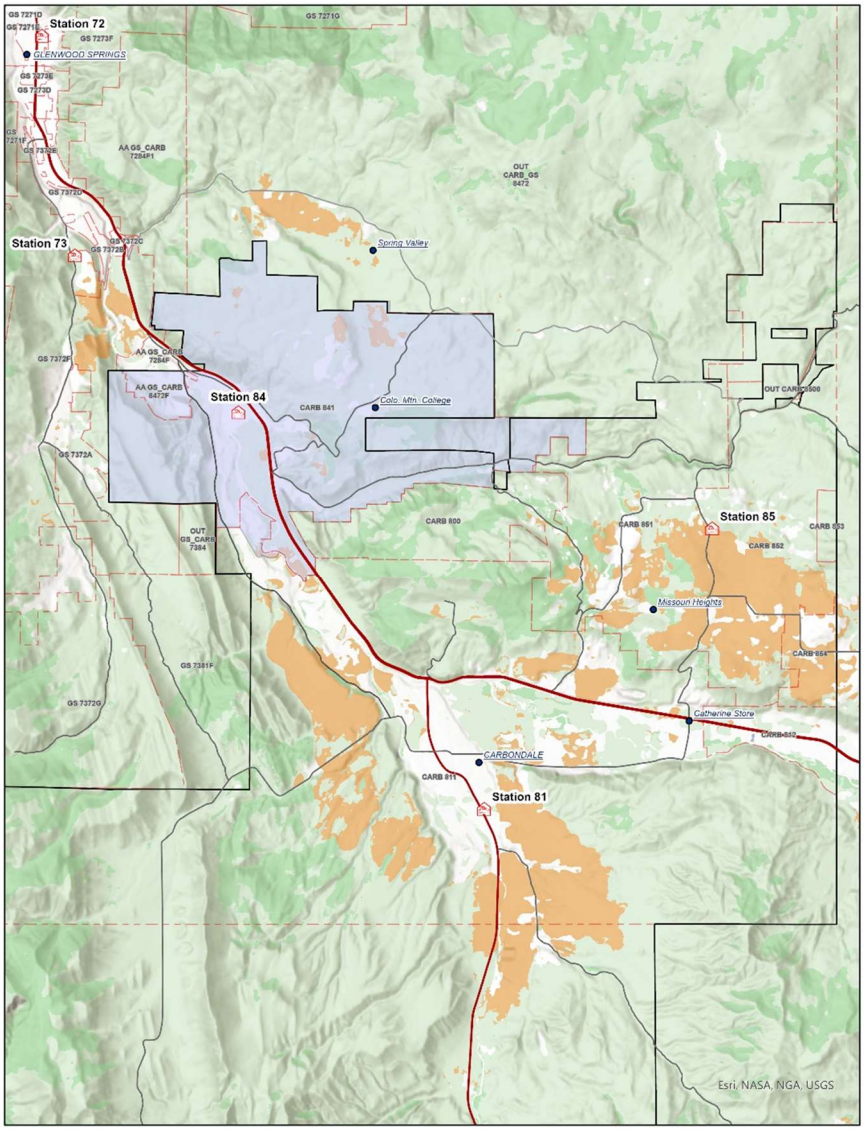


Table 3.5

Figure 7 - Station 84 with Automatic Aid

Station 84 with AutoAid

5449 County Rd 154, Glenwood Spring

Ambulance 84
Engine 84
Ladder 84
Brush 84
Tender 84

Primary Response Area: 80.52 Sq. Miles

2020 Population: 3,357

2024 Assessed Value: $ 134,944,859

Calls in 2023	**245**
EMS Rescue	137
Fire	7
Rupture/Explosion	-
Hazardous Conditio	9
Service Call	13
Good Intent Call	49
False Call	30

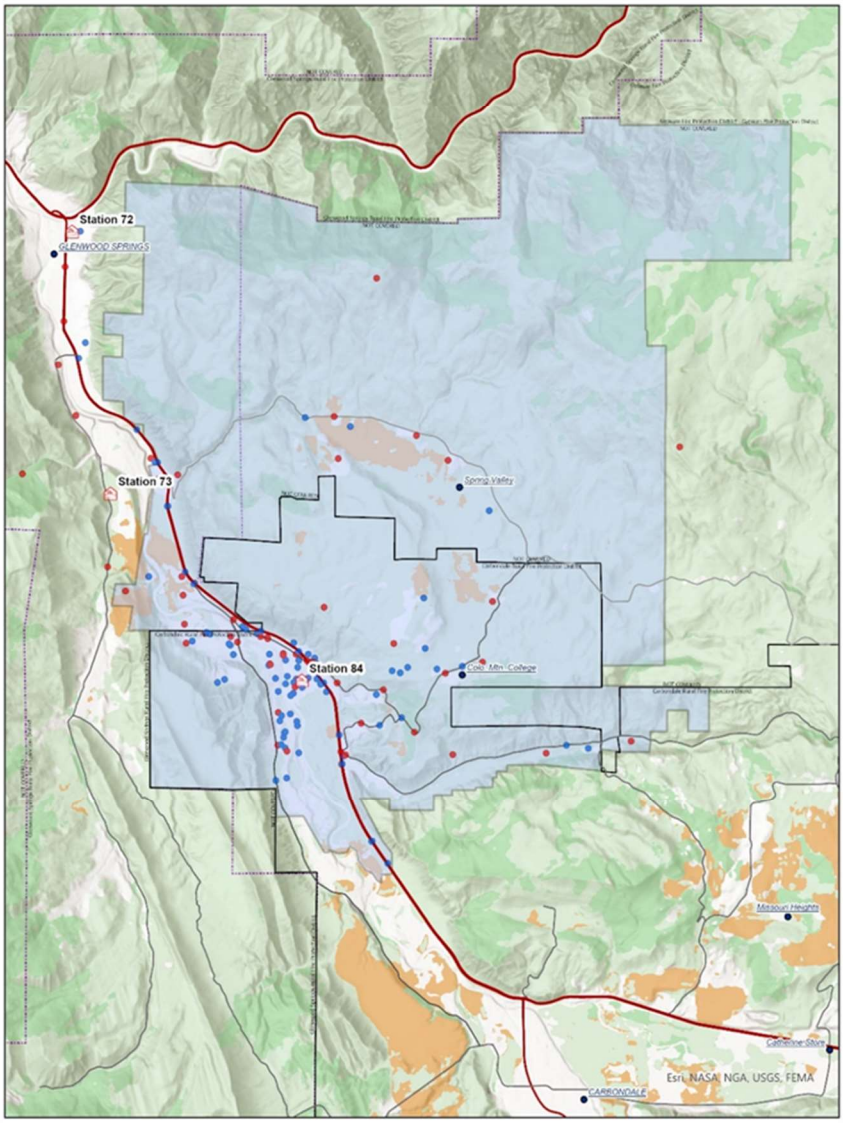


Table 3.6

Figure 8 - Station 85

Station 85

6986 County Road 100, Carbondale

Engine 85

Tender 85

Primary Response Area: 22.1 Sq. Miles

2020 Population: 1,542

2024 Assessed Value: $ 58,768,776

Calls in 2023	**80**
EMS Rescue	35
Fire	2
Rupture/Explosion	-
Hazardous Conditio	1
Service Call	-
Good Intent Call	37
False Call	6
Other	-

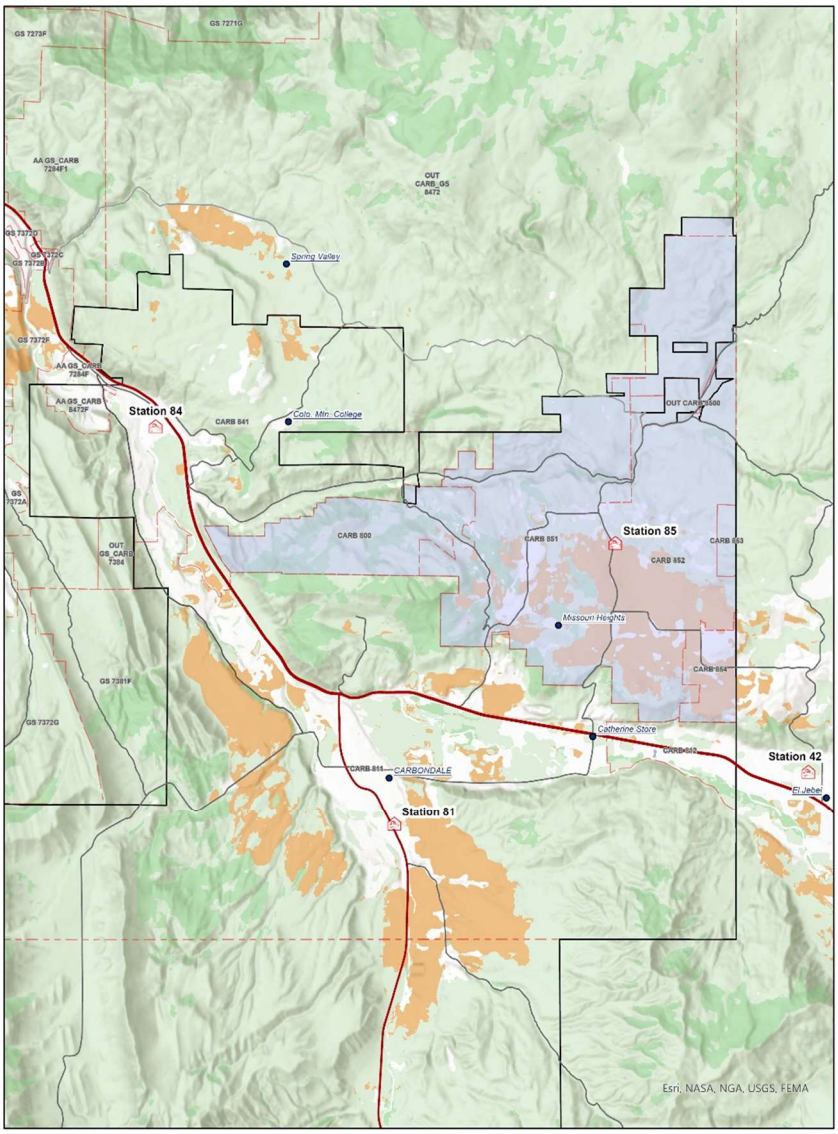


Table 3.7

Figure 9 - Proposed RFFR 42 1st Due

Proposed RFFR 42 1st Due

1089 JW Drive, Carbondale

Ambulance 42
Engine 42
Engine 242
Tender 42
Brush 42

Primary Response Area: 9.1 Sq. Miles

2020 Population: 1,357

2024 Assessed Value: $ 43,922,970

Calls in 2023	**80**
EMS Rescue	57
Fire	5
Rupture/Explosion	-
Hazardous Condition	2
Service Call	6
Good Intent Call	5
False Call	14
Other	1

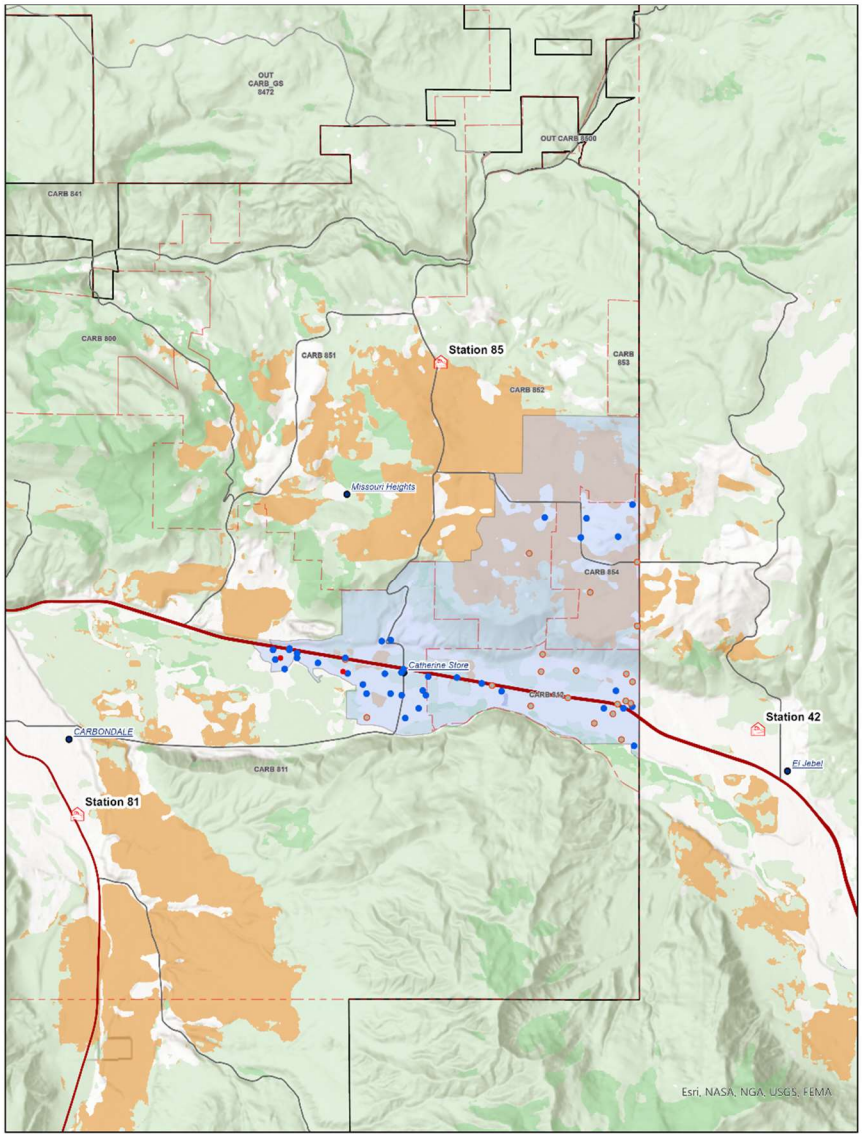


Table 3.8

Staffing

Carbondale & Rural Fire Protection District is a "combination" fire department. This means that the District utilizes a combination of career or paid staff and a dedicated volunteer force.

The District utilizes a three-platoon system to provide coverage for 24 hours per day. This three-platoon system is organized into shifts identified as A, B, and C and each shift member is assigned to one of the three shifts. A shift member will be on-duty for a 48 hour period and then off-duty for 96 hour period. CRFPD utilizes an On-Call Chief system with the Chief Officers to ensure a Chief Officer is available for response and in communication with the Battalion Chief of the day. In total, there are 9 administration personnel who are certified responders and they provide backup to the 48/96 shift personnel during weekdays

2023 was the first time CRFPD was able to staff multiple stations with career responders on a 24/7 basis. The District moved to a "Battalion" model that is common in the fire service as a result of the need to staff multiple stations. The current level of responder staffing has 4 career responders at Station 81 (Carbondale) and 2 career responders at Station 84 (Westend station near the CMC turnoff at County Road 114).

This level of staffing (6 career responders per shift) was first identified as a critical need in CRFPD's Master Plan process in 2014. Due to the effects of the Great Recession and corresponding drop in revenue (42%) in 2011, this response level was unable to be implemented. The slow process of property valuations increasing revenue did not allow the District to reach the 2014 staffing level need until 2023. CRFPD's emergency call volume increased by 81% over that time period. The revenue needed to increase staffing did not grow proportionally to the increase in call volume, making staffing an extremely difficult problem to solve. CRFPD career responders are augmented by an outstanding group of volunteers who help make up some of the deficit in staffing levels. Additionally, most of the District's career chiefs officers and staff are certified responders who respond to emergencies as well.

Improving responder staffing levels over the next 5 years is a central part of the 2025 Strategic Plan. Another significant challenge over the next five years for the District is workforce housing. Employee/volunteer housing is needed so CRFPD can recruit and retain excellent staff and volunteers.

The need for appropriate staffing for emergency response cannot be overstated. NFPA standards define the levels of adequate staffing based on the histories of responder injuries and deaths due to staffing below the minimum standards. Moreover, the standards are also developed from investigation of the quality of care and response that suffers from being understaffed. The concept of "Normalization of Deviance" comes from operating and responding over and over with too few personnel to perform necessary functions safely. When this occurs often and nothing "bad" happens, deviating from the standard becomes "normal" until something tragic occurs. Having CRFPD staffing levels and needs examined and stated publicly is vital to the District's ability to eventually overcome this important issue that negatively effects the safety of our outstanding responders.

Figure 10 - District Personnel by Response Area

District Personnel by Response Area		
Response Area	**Off Duty Paid**	**Volunteer**
Station 81	16	10
Station 82	3	4
Station 83	2	7
Station 84	1	3
Station 85	3	1
Out of District	9	4
Totals	**34**	**29**

The above graphic depicts the general staffing or availability of paid and volunteer members around each station area.

Figure 11 – Weekday Staffing Pattern

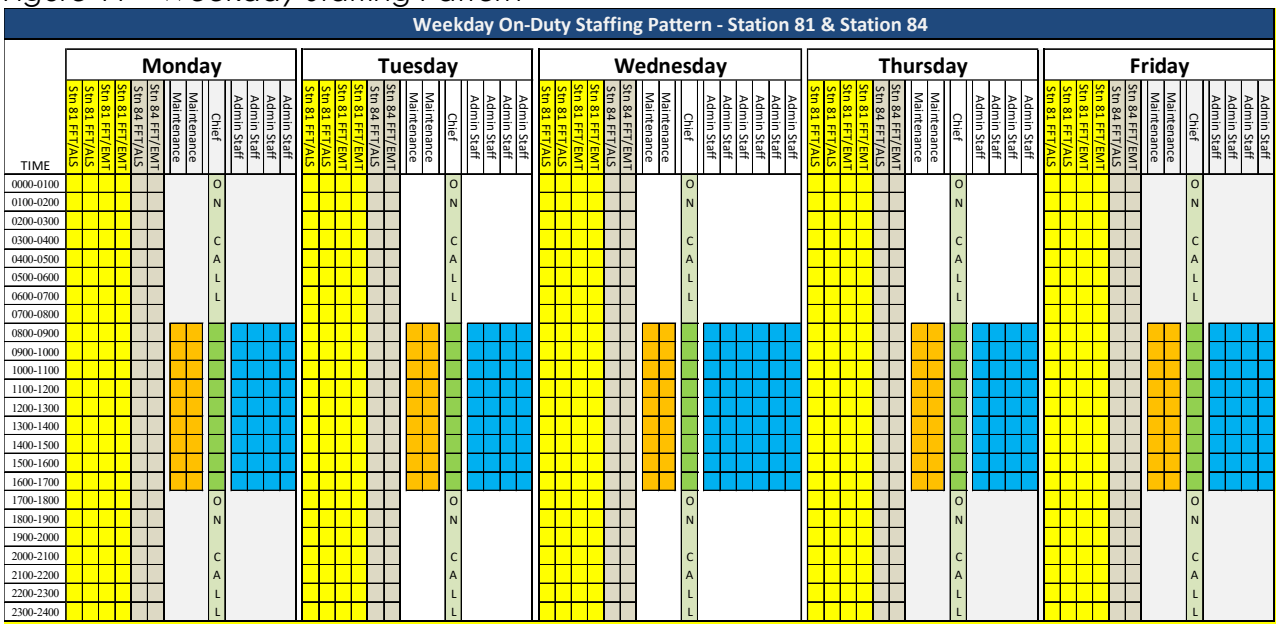


Figure 12 - Weekend Staffing Pattern

Weekend On-Duty Staffing Pattern
Station 81 & Station 84

TIME	Saturday										Sunday									
	Stn 81 FFT/ALS	Stn 81 FFT/EMT	Stn 81 FFT/EMT	Stn 84 FFT/ALS	Stn 84 FFT/EMT	Maintenance	Maintenance	Chief	Admin Staff	Admin Staff	Stn 81 FFT/ALS	Stn 81 FFT/EMT	Stn 81 FFT/EMT	Stn 84 FFT/ALS	Stn 84 FFT/EMT	Maintenance	Maintenance	Chief	Admin Staff	Admin Staff
0000-0100								ON CALL										ON CALL		
0100-0200																				
0200-0300																				
0300-0400																				
0400-0500																				
0500-0600																				
0600-0700																				
0700-0800																				
0800-0900																				
0900-1000																				
1000-1100																				
1100-1200																				
1200-1300																				
1300-1400																				
1400-1500																				
1500-1600																				
1600-1700																				
1700-1800																				
1800-1900																				
1900-2000																				
2000-2100																				
2100-2200																				
2200-2300																				
2300-2400																				

Figure 13 - Volunteer Shift Hours

Volunteer Shift Hours by Month 2019-2023

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
2019	451	524	574	508	577	469	472	439	415	585	447	493	5,953
2020	442	433	290	363	567	280	354	442	381	473	427	341	4,790
2021	454	535	616	405	343	427	335	290	184	397	352	243	4,578
2022	559	712	569	449	301	212	189	237	174	99	180	145	3,825
2023	305	580	547	307	114	166	65	51	220	453	403	108	3,318
2019-2023 AVG	476	551	512	431	447	347	338	352	288	388	351	305	4,787
2023 % of AVG	**64%**	**105%**	**107%**	**71%**	**25%**	**48%**	**19%**	**15%**	**76%**	**117%**	**115%**	**35%**	**69%**

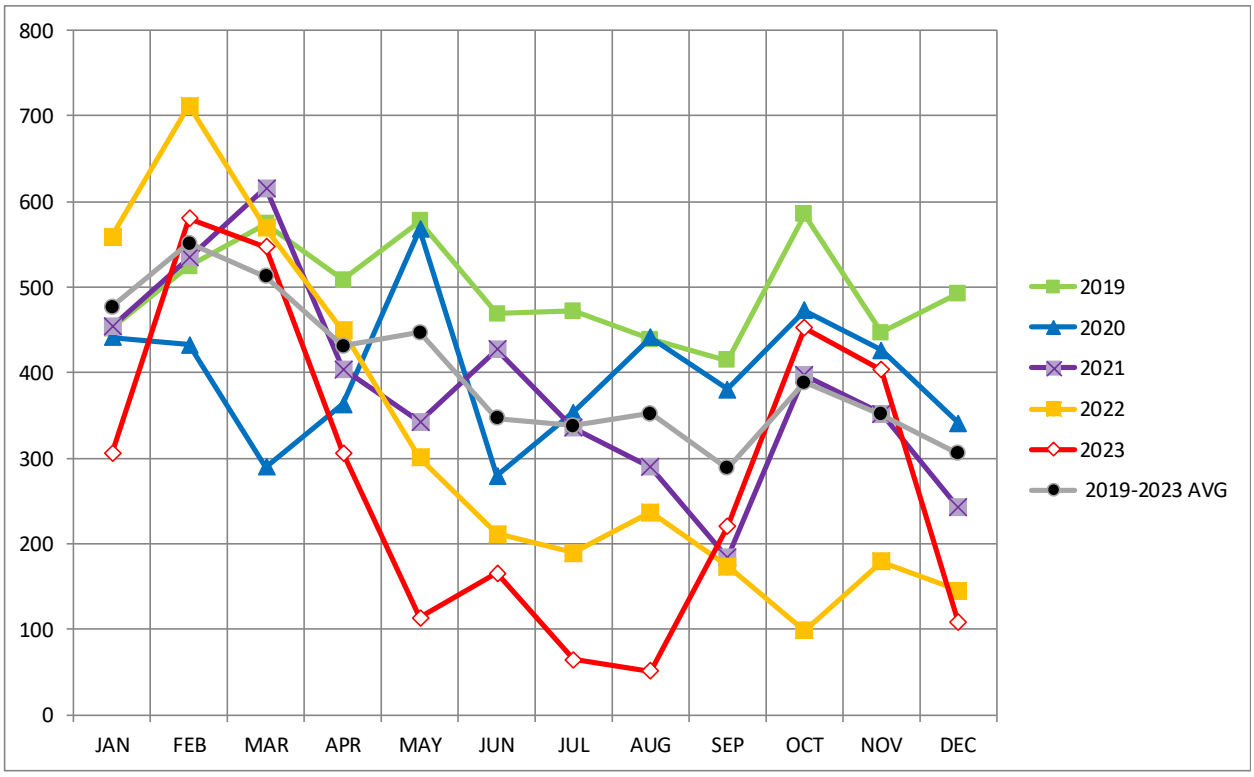


Figure 14 - NFPA 1720 Response Objectives

RESPONSE AREA	NFPA 1720				POPULATION	AREA (sq mi)	ASSESSED VALUE
	Demand Zone [a]	Minimum Staff [b]	Response Time [c]	Meets Objective			
Station 81	Urban	15	9	90%	9,956	142.4	417,136,066
Station 82	Rural	6	14	80%	625	106.4	41,733,650
Station 83	Rural	6	14	80%	214	12.7	24,086,420
Station 84	Suburban	10	10	80%	3,357	16.4	106,254,458
Station 85	Rural	6	14	80%	1,542	22.1	58,768,776
				TOTALS	**15,694**	**300**	**647,979,370**

NFPA 1720
Staffing and response time objectives for structural firefighting, based on a low-hazard occupancy such as a 200 ft^2 (186 m^2), two-story, single family home without a basement and exposures and the percentage accomplishment of those objectives for reporting.

a. A jurisdiction can have more than one demand zone
b. Minimum staffing includes members responding from the AHJs department and automatic aid
c. Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table

Figure 15 - Station and Apparatus

Station /Apparatus		Year	Make	Model	NWCG Type
STATION 81	**Battalion 8**	2018	Ford	F-150	Pickup Truck
300 Meadowood Drive	**Ambulance 81**	2019	Ford/Braun Northwest	F-450	II
Carbondale, CO	**Ambulance 82**	2009	Ford/McCoy Miller	F-350	II
	Rescue 81	2007	Spartan/Rosenbauer	Engine	I
	Rescue 80	2013	International	Crew Buggy	Truck
	Engine 81	2007	International/Rosenbauer	SF647	I
	Ladder 81	2008	Spartan/Rosenbauer	Quint	Ladder
	Tender 81	2021	International/Rosenbauer	HV507	ENG - IV
	Engine/Brush 81	2019	Ford/BFX	F-550	VI
	ATV 81	2018	Polaris - Ranger	Side by Side	ATV
	Trailer 81	2018	Haulmark	Enclosed	Trailer
	Command Trailer	2015	Keystone	RV Trailer	RV Trailer
	Utility 80	2023	Ford	Ranger	Pickup Truck
	Utility 81 - Ops Chief	2019	Ford	Expedition	SUV
	Utility 82 - Fire Marshall	2019	Ford	F-150	Pickup Truck
	Uitility 83	2019	Ford	Explorer	SUV
	Utility 84 - Chief Officer	2019	Ford	F-150	Pickup Truck
	Utility 85	2017	Ford	F-250	Pickup Truck
	Utility 86	2008	GMC Sierra	First Responder	Pickup Truck
	Utility 87 - Maint. Chief	2019	Ford - Mechanics Truck	F-250	Pickup Truck
	Utility 88 - Mechanic	2019	Ford - Mechanics Truck	F-350	Pickup Truck
	Utility 89 - Fire Chief	2022	Ford	Expedition	SUV
STATION 82	**Ambulance 84**	2006	Ford/McCoy Miller	F-350	II
1085 Redstone Blvd.	**Engine 82**	2020	International/Rosenbauer	Timberwolf	I/II/III
Redstone, CO	**Tender 82**	1994	International/Front Range	4800	TAC - II
STATION 83	**Rescue/Squad 83**	2005	Ford	Excursion	Truck
300 West Park	**Engine 83**	2020	International/Rosenbauer	Timberwolf	I/II/III
Marble, CO	**Tender 83**	2021	International/Rosenbauer	HV507	Tac - II
	Engine/Brush 83	2005	Ford	F-550	VI
	ATV 83	1999	Arctic Cat	4-wheeler	ATV
	ATV 283	2000	Polaris	6-wheeler	ATV
STATION 84	**Engine 84**	2020	International/Rosenbauer	Timberwolf	I/II/III
5449 County Road 154	**Ladder 84**	1994	Spartan/General Safety	Quint	Ladder
Glenwood Springs, CO	**Tender 84**	2012	Freightliner/Rosenbauer	HV507	SUP - III
	Engine/Brush 84	2021	Ford/BFX	F-550	VI
	Ambulance 80	2019	Ford/Braun Northwest	F-450	II
STATION 85	**Engine 85**	1993	International/General Safety	4800	I/II/III
6986 County Road 100	**Tender 85**	1994	International/Front Range	DT-466	TAC - II
Carbondale, CO					

Risk Assessment

Overall community risk management consists of risk assessment and risk control. In analyzing community risk, it is important to review the components of risk; identify unique factors affecting level of risk; and identify the magnitude and scope of the risk of fire, life safety, rescue, and medical emergencies, or other hazards that threaten life, safety, property, or the environment within the service area. The analysis discussion includes a review of actual and potential loss.

Community Risk Assessment Components

Developing a comprehensive risk assessment involves six key components: fire flow, probability, consequence, occupancy risk, demand zones, and community profile. These apply to all fire, life safety, rescue, first response EMS, and miscellaneous calls for services.

Fire Flow - the flow rate of a water supply, measured at 20 pounds per square inch (psi) residual pressure that is available for firefighting.

Probability - the likelihood that a particular event will occur within a given period of time. An event that occurs daily is highly probable. An event that occurs only once in a century is very unlikely. Probability is an estimate of how often an event will occur, based on available local historical data.

Consequence - has two primary components:

1. Life Safety (risks to the lives of occupants and responders from life-threatening situations that include fire, rescue, hazardous substance, and emergency medical events); and
2. Economic Impact (the loss of property, income, or irreplaceable community assets)

Occupancy Risk - an assessment of the relative risk to life and property resulting from a fire inherent in a specific occupancy or in generic occupancy classes.

Response Areas - geographic areas utilized to more definitively analyze risk situations. Areas are based on current fire station locations and correspond to the first-due response area for each of these stations. Fire station placement and resource assignments are determined by desired response time performance, transportation network, population, topography, construction and occupancy character, density, and the relative risk level of a particular neighborhood or area.

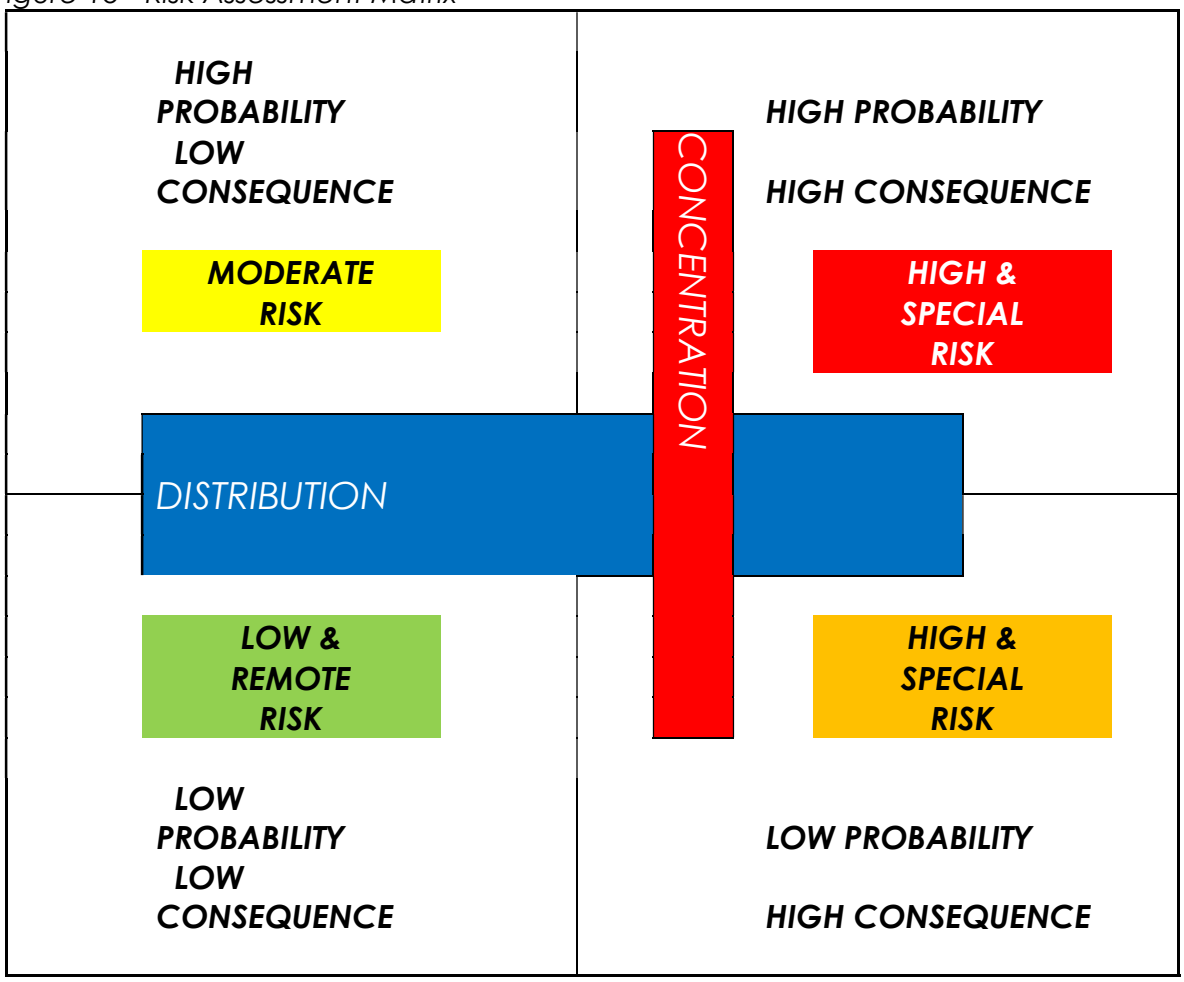
Community Profile - an analysis of the attributes of a specific community based on its unique mixture of demographics, socioeconomic factors, occupancy risks, demand zones, historical trends, and level of service currently being provided.

Through a methodical analysis of the risk dynamics present in a community, a risk assessment evaluation makes it possible to develop logical resource deployment strategies to meet the identified needs. The goal of the risk assessment process is to determine the probability of an event occurring, as well as the potential consequences of that event.

Risk Assessment Matrix

The following matrix shows elements to consider when assessing risk. Each quadrant shows a combination of probability of an event occurring and the consequences should that event occur. Each category of risk represents different emergency resource commitment requirements.

Figure 16 - Risk Assessment Matrix



The community risk assessment includes defining inherent differences between a single-family dwelling, multiple-family dwelling, large industrial occupancy or commercial campus, and a high-rise residential or commercial structure; then assigning each occupancy type to a different quadrant of the risk assessment matrix. Fire stations and emergency apparatus are distributed uniformly throughout the community to provide prompt initial response to all types of incidents, or resources may be concentrated in high-consequence areas to enable a faster large-scale response to an unlikely but highly consequential event. Even when resources are distributed relatively evenly throughout the community, deployment differs based on type of risk and needs of each particular incident type, or in considering seasonal changes, special situations or other events.

Service Area Factors Unique to the System

Ambulance Transport Times

Carbondale & Rural Fire Protection District is unique in that there are no hospitals located within the District. The closest hospital is Valley View Hospital (VVH) in Glenwood Springs. VVH is approximately 15 miles from Carbondale.

This is significant in that the shortest ambulance transport typically takes a minimum of 1½ hours to complete. Additionally, many of CRFPD's ambulance calls are located outside of the Carbondale area and take much longer to complete. Ambulance calls to the south end of the district, in Redstone or Marble, will easily require 2 ½ hours before the ambulance and crew are back in service.

A typical ambulance call requires three personnel to safely execute. With staffing levels of 5 - 6 responders on per shift, these typical ambulance calls can leave CRFPD with a minimal level of responders for 2+ hours.

"Concurrent Calls" (incidents happening at the same time) occur over 200 times per year or between 3 and 4 times per week. Concurrent calls place another strain on CRFPD's limited staffing, requiring chief officers and other staff to commit to being available and responding while not on duty, adding to overtime costs.

Impacts From Growth Since 2019

Communities in the District have experienced a boom of new construction, both commercial and residential, and a corresponding increase in population and traffic from new businesses, apartments, condominiums and single-family homes since 2019.

Calls for service have steadily increased at a rate of approximately 40.5% from 2020 through 2023. Bu the end of 2024 at the current pace, CRFPD is expected to have a 68.3% increase in calls for service since 2020. This growth aligns with the known building and population increases experienced in the District. Record growth is expected to continue into the foreseeable future.

The Highway 82 corridor from Glenwood Springs to Aspen runs through the heart of the District. Highway 82 sees between 25,000 and 30,000 vehicles per day that travel between Glenwood Springs and Aspen. Motor vehicle accidents and emergencies are increasing each year at a similar rate as previously described. In addition to the accidents and emergencies in the District, CRFPD crews are regularly called upon to provide mutual or automatic aid to our neighboring fire districts for these types of incidents along Highway 82.

The ever-increasing volume of traffic and the corresponding accidents and emergencies on the major roadways in the District also means that Hazardous Materials (HAZMAT) incidents are increasing along CRFPD's main roadways, Highway 82 and Highway 133. HAZMAT incidents are unique in and of themselves in that they require specialized training, techniques, and equipment to respond to and mitigate their impacts. None of the counties in the immediate area currently employ a hazardous materials team. This is critical problem for both counties and local fire districts, as HAZMAT response requires a high level of training and certification along with

significant capital expenditure for equipment. A concerted team effort between every jurisdiction and the taxpayers of the region is necessary in order to create an effective and long-lasting HAZMAT response program.

Wildland Fire Risk and Seasonal Staffing

Wildland fires are one of the greatest risks and threats to the people and properties in the District. The Roaring Fork and Grand Valleys have a long history of large and devastating wildfires. Along with other fire agencies in the region, CRFPD has participated in fighting and suppressing some of the most difficult fires in our state's history.

The northern end of the Carbondale Fire District, including Missouri Heights, Cattle Creek, and Spring Valley areas, are classified as either Very High or Extreme wildfire risk areas. The Missouri Heights area in particular has experienced several large and damaging wildfires.

For over 20 years, CRFPD has implemented a Seasonal Staffing operation to try to mitigate the potential for wildfires. This staffing program includes adding additional temporary personnel that patrol and respond to wildland fire incidents, along with other incident types. The program is known as CRFPD's Initial Attack (IA) program. Along with incident response, one of the main duties for the IA team is to follow-up on lightning strikes that have occurred in the last 24-48 hours to ensure that no "holdover" fires occur. The IA teams are very involved with public education and engage property owners and visitors throughout the District, delivering information on fire and life safety.

CRFPD's Prevention Division, along with the IA team, offers free wildland fire mitigation consultations to individual property owners and homeowners associations in the District. This service is very well received with dozens of consults conducted each year and growing. Property owners are provided with a comprehensive report of current conditions and actions that will have the greatest impact on making their property as safe as possible from a wildland fire.

During the spring/summer/fall season, CRFPD experiences a marked increase in all types of incident response as large numbers of people visit and stay in the area to participate in the many different recreational opportunities available during these seasons.

Swiftwater Rescue

Carbondale Fire District has two very popular rivers that run through it. The Crystal and Roaring Fork Rivers see high levels of recreational rafting, kayaking and fishing. CRFPD is called upon to respond to numerous rescues, searches, and reports of overturned rafts and kayaks. Swiftwater Rescue incidents are difficult and dangerous incidents to manage. In addition, these incidents are manpower intensive and can take hours or multiple days to complete. Training certified swiftwater rescue technicians also takes a commitment of time and resources to ensure that responders can perform safely and at a high level.

Hiking and Biking

Carbondale Fire District is home to a large number of bike paths and mountain bike trails are ubiquitous in the area. This area is a prime spot for hikers and climbers that access trails as close as the Mushroom Rock area and as far away as Lead King Basin above Marble. CRFPD is experiencing an increasing demand for services in these areas. As more people access these areas, the more CRFPD is called upon to respond to trauma and medical incidents that happen in these out of the way places. Again, this type of incident requires specific training and equipment in addition to being manpower intensive, long duration incidents.

Geographic Size of the District

Carbondale Fire District is approximately 300 square miles in size. Much of the land is public and CRFPD works with the local Interagency staff and county sheriffs to respond to incidents in these areas.

Long travel times affect response and staffing levels in the District. The five district fire stations are located in or near the most populous communities. To drive from one end of the District to the other takes just under an hour; the stations are located as far as 40 miles apart.

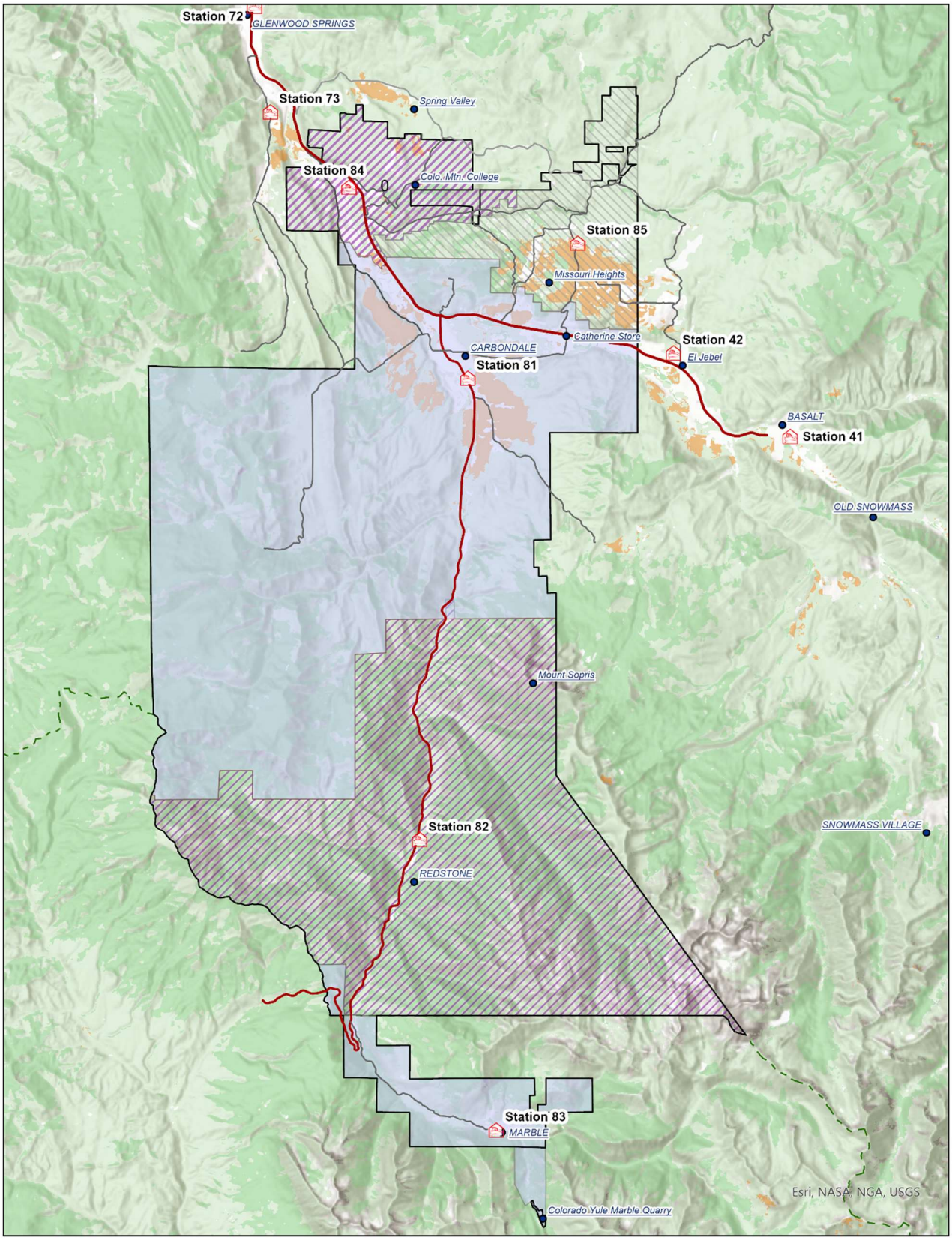
Topography

The topography of the Carbondale & Rural Fire Protection District is varied and diverse. From north to south, the District covers the Crystal River Valley. The lower elevations of the Crystal River Valley are comprised mainly of pinion/juniper, sage brush, Gambel Oak and grasses. The terrain of the valley is narrow and steep with many drainages that empty into the Crystal River. The higher elevations of the valley contain sub alpine forests with multiple species of evergreens and large stands of aspens. The drainages that flow into the upper Crystal Valley are steep and long, with a number of them ending up above tree line.

The east-west length of the District is dominated by the lower Roaring Fork Valley. Much of the valley floor is comprised of relatively flat homesteaded ranch lands. Much of that land has been developed into residential subdivisions of varying sizes. Further to the west end of the district, the lower valley lands consist of more commercial and mixed-use developments.

As the elevations increase on the north and south sides of the Roaring Fork River, the topography has more hills with pinion/juniper, sage brush, Gambel Oak and grasses. The north and west ends of the District (Missouri Heights and Spring Valley areas) have very dense pinion/juniper and oak forest areas that contain hundreds of residential properties consisting of subdivisions to individual ranches. These areas with the vegetation and topography combine to present a significant wildland/urban interface risk for the homes and properties there.

Figure 17 - Fire Suppression Service Area



Water Systems and Supplies

Figure 18 – Map of CRFPD Water Systems

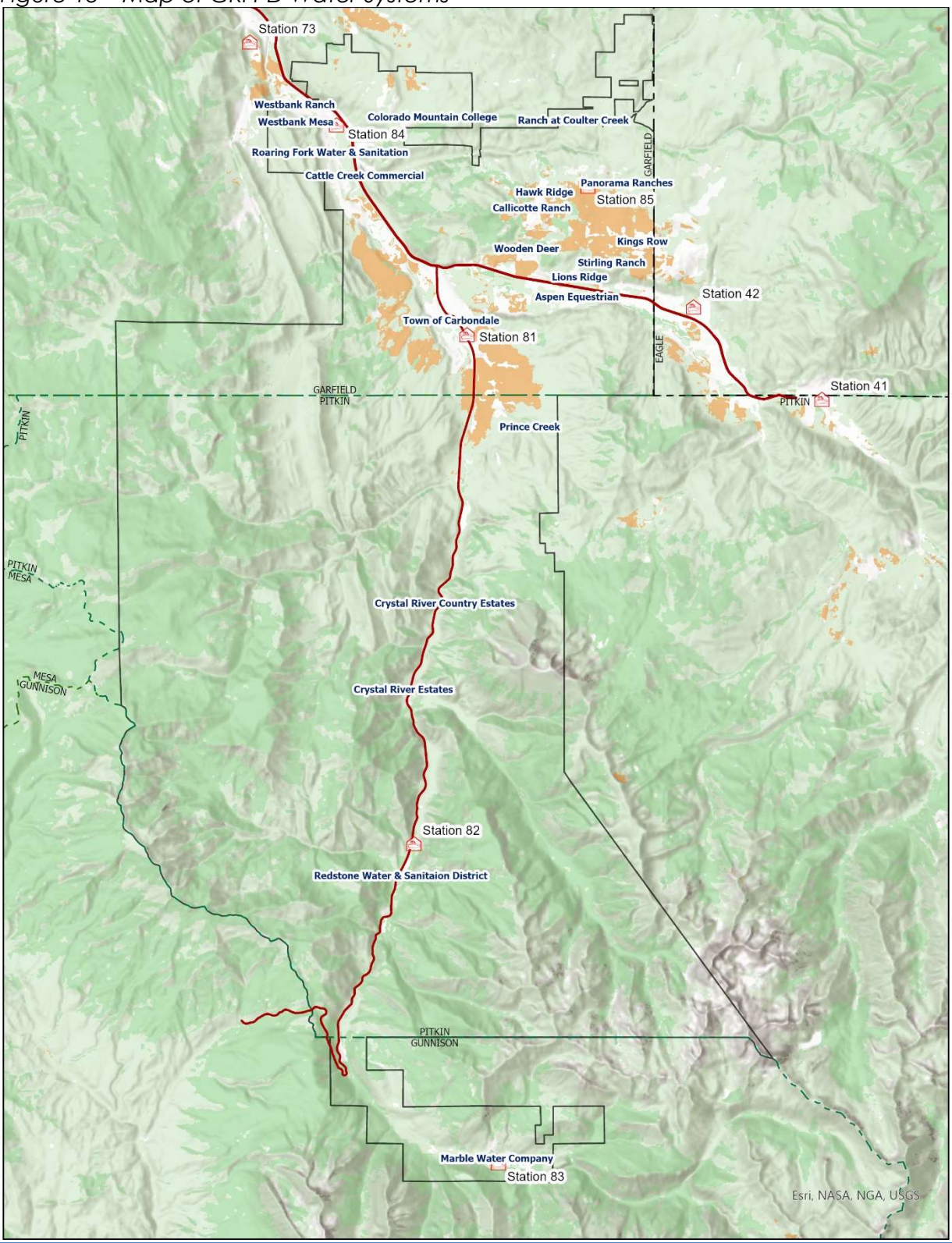


Figure 19 - CRFPD Water System Flow/Capacity

WATER SYSTEM	ISO	Available Flow (gpm)	Tank Capacity
Aspen Equestrian Estates	✓	>1,500	200,000
Callicotte Ranch	✓	1,000 - 1,500	200,000
Town of Carbondale	✓	>1,500	2,350,000
Carbondale Mini Storage		500 - 1,000	10,000
Cattle Creek Commercial Center	✓	1,000 - 1,500	100,000
Mid Valley Metro District	✓	>1,500	2,000,000
Colorado Mountain College	✓	>1,500	1,000,000
Crystal River Country Estates	✓	500 - 1,000	37,000
Crystal River Estates	✓	500 - 1,000	37,000
Elk Springs	✓	1,000 - 1,500	620,000
Hawk Ridge		< 500	30,000
Kings Row	✓	500 - 1,000	50,000
Lions Ridge		500 - 1,000	
Marble		1,000 - 1,500	130,000
Panorama Ranches	✓	1,000 - 1,500	100,000
Prince Creek Subdivision		< 500	
Ranch at Coulter Creek	✓	500 - 1,000	120,000
Ranch at Roaring Fork	✓	500 - 1,000	100,000
Redstone Water & Sanitation District	✓	>1,500	390,000
Roaring Fork Water & Sanitation	✓	>1,500	1,518,000
Seven Oaks (BRB)		< 500	10,000
Sterling Ranch		500 - 1,000	10,000
Swiss Village		500 - 1,000	21,000
Van Rand	✓	1,000 - 1,500	50,000
Westbank Mesa Subdivision	✓	>1,500	250,000
Westbank Subdivision	✓	>1,500	150,000
Whitecloud Subdivision	✓	>1,500	200,000
Wooden Deer Subdivision	✓	1,000 - 1,500	50,000

Building Risk Analysis

Figure 20 - Building Risk Analysis

Building Risk Analysis by Response Area					
Residential	**St-81**	**St-82**	**St-83**	**St- 84**	**St-85**
Single Family Residential	3,979	352	324	1,065	537
Multifamily dwelling	30			4	
Residential board and care	1				
Dormitory-type residence, other	7			2	
Boarding/rooming house, resident	1				
Hotel/motel, commercial	2	2			
24-hour care Nursing homes, 4 or	4				
Residential, other	1			1	
TOTALS	**4,025**	**354**	**324**	**1,072**	**537**
Vacant Residential Lots					
Assembly					
Assembly, other	1				
Athletic/health club	1			1	
Auditorium, concert hall, theater	2				
Bar or nightclub	2				
Clubhouse	1			1	
Fixed-use recreation places	1				
Museum	1				
Religious/Charitable	5	1	1		
Restaurant or cafeteria	13	1	1	1	
Stadium, arena	1				1
Swimming facility: indoor or out	1				
TOTALS	29	2	2	3	1
Educational Facilities					
Adult education center, college	1			7	
Educational, other	5				
Elementary school, including kin	4	1	1		
High school/junior high school/m	3				
TOTALS	13	1	1	7	-
Health Care, Detection & Correction	5				
Governmental	4			2	1
Industrial, Utility, Agricultural, Mining					
Utility or Distribution system,	1			1	
Flammable liquid distribution	3			2	
Sanitation utility	1			2	
TOTALS	4			4	
Manufacturing, processing	7			1	
Mercantile, Business	82	1		22	
Storage					
Residential or self-storage unit	3			4	
Storage, other	5				
Vehicle storage, other	1				
Warehouse	36			39	
TOTALS	45	-	-	43	-

Non-Residential Buildings/Facilities by Risk Factor

Figure 21 - Non-Residential Buildings/Facilities by Risk Factor

	St-81	St-82	St-83	St- 84	St-85
Buildings/Facilities - Non Residential, Risk - Low	87	1	1	12	2
Buildings/Facilities - Non Residential, Risk - Moderate	121	1	1	29	
Buildings/Facilities - Non Residential, Risk - High	10	1		37	
Buildings/Facilities - Non Residential, Risk - Very High	1	1		2	
TOTALS	219	4	2	80	2

Urban Interface - Wildland Fire Risk

Potential Operational Delineations (PODs)

The Rocky Mountain Research Station Wildfire Risk Management Science (WRMS) Team co-developed Potential Operational Delineations (PODs) to pre-plan for fire using a risk management approach and to give land managers a formal process for developing landscape-scale wildfire response options before fires start. PODs are spatial units or containers defined by potential control features, such as roads and ridge tops, within which relevant information on forest conditions, ecology, and fire potential can be summarized. PODs combine local fire knowledge with advanced spatial analytics to help managers develop a common understanding of risks, management opportunities, and desired outcomes to determine fire management objectives. The PODs pre-planning framework has been applied on over 40 national forests and counting, often including adjacent landowners and jurisdictions for cross-boundary planning.

- PODs are fire management and planning units.
- PODs have boundaries defined by potential control features that can be leveraged for fire containment during a wildfire or prescribed fire. Typical POD boundaries are a combination of roads, rivers, major ridges, barren areas, waterbodies, major fuel changes, or other locations that facilitate control.
- The process of developing PODs is done collaboratively by local wildland fire managers, stakeholders, and scientists. Collaborators identify a network of best available control features, often using analytical tools to assess the feature's quality and suitability.
- When paired with a wildfire risk assessment, PODs can be used to quantify and summarize risk into strategic response zones that provide the starting point for strategic planning of incident response.

Figure 22 - Urban Interface - Wildland Risk Map

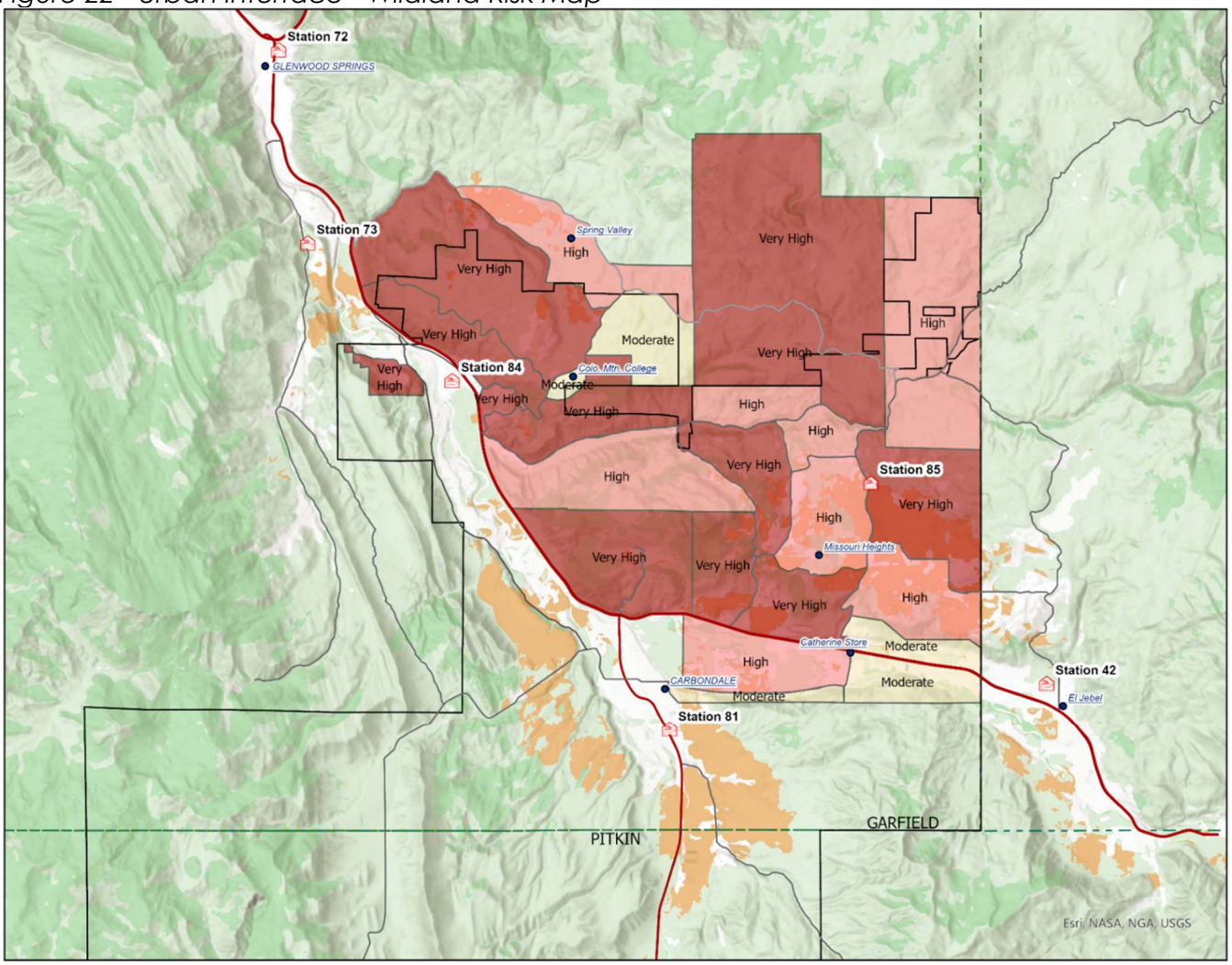


Figure 23 - Subdivisions & Risks 1

Area	Subdivisions	Powerlines	Substations	Gas Utilities	Comm Facilites	Structures	Businesses	Public Buildings	Watersheds	Recreation Areas	Risk
A	High Aspen Ranch, Homestead Estates, Ranch at Coulter Creek, Spring Valley Ranch	(1) 69 KV, (3) 115 KV,	Yes	N/A	N/A	67	N/A	N/A	N/A	N/A	Very High
B	Spring Valley Ranch, Lake Springs Ranch	N/A	N/A	N/A	N/A	94	N/A	N/A	N/A	N/A	High
C	Elk Springs, Lake Springs Ranch, Crysteleit, Crysteleit Views	(1) 230 KV	N/A	N/A	N/A	156	N/A		N/A	N/A	Very High
D	Elk Springs	(1) 230 KV	N/A	N/A	N/A	85	N/A	N/A	Roaring Fork River	N/A	Very High
E	Lake Springs Ranch	(1) 230 KV	N/A	N/A	N/A	4	Rivendell Sod Farm, Black Hills Compressor	N/A	N/A	N/A	Moderate
F	Ranch at Coulter Creek	(1) 69 KV, (3) 115 KV, (2) 230KV	Xcel Energy	N/A	N/A	37	N/A	N/A	N/A	N/A	Very High
G	N/A	(1) 230 KV	N/A	N/A	N/A	66	N/A	N/A	N/A	N/A	High
H	Baby Beans	(2) 215 KV	N/A	N/A	N/A	17	N/A	N/A	Cattle Creek	N/A	High
I	Pinion Pines Apartments	(1) 115 KV, (1) 230KV	N/A	N/A	N/A	64	1	Sanitation Plant	Cattle Creek	N/A	Very High
J	Colorado Mountain College	(1) 230 KV	N/A	N/A	N/A	13	N/A	CMC		N/A	Moderate
K	Pinyon Mesa	N/A	N/A	N/A	N/A	62	9+	N/A	Roaring Fork River	N/A	Very High
L	West Bank Mesa	N/A	N/A	Source Gas	N/A	59	N/A	N/A	Roaring Fork River	N/A	Very High

Area	Subdivisions	Powerlines	Substations	Gas Utilities	Comm Facilites	Structures	Businesses	Public Buildings	Watersheds	Recreation Areas	Risk
M	Cattle Creek Center	(1) 115 KV	N/A	N/A	N/A	126	10 +	N/A	Cattle Creek	N/A	High
N	Cottonwod Hollow, Cattle Creek Ranch, Hardy Hills, Pinion Peaks, Cedar Ridge Farm,	(1) 115 KV	N/A	N/A	N/A	151	N/A	N/A	Cattle Creek	N/A	Very High
O	Cedar Ridge Farm	(1) 115 KV	N/A	N/A	N/A	36	N/A	N/A	Cattle Creek	Cattle Creek	High
P	Panorama Ranches, King Row	(1) 115 KV	N/A	N/A	N/A	211	Strang Ranch	Cdale-Fire Station 85	N/A	N/A	Very High
Q	Hawk Ridge	N/A	N/A	N/A	N/A	131	N/A	N/A	Crystal Springs	N/A	High
R	Aspen Glen	(1) 115 KV	N/A	N/A	N/A	62	Planted Earth	N/A	Roaring Fork River	Red Hill Recreation	Very High
S	N/A	N/A	N/A	N/A	N/A	47	Powers Art Center, LaFarge	N/A	Crystal Springs, Roaring Fork River	N/A	Very High
T	Wooden Deer, TO Ranch	N/A	N/A	N/A	N/A	128	Western Slope Materials	N/A	Crystal Springs, Roaring Fork River	N/A	Very High
U	Stirling Ranch, White Cloud	N/A	N/A	N/A	N/A	138	N/A	Missouri Hgts School House	N/A	N/A	High
V	Lions Ridge, Cerise Ranch, Dakota, Dakota Meadows	N/A	N/A	N/A	N/A	177	N/A	N/A	N/A	N/A	Moderate
W	Goose Creek, Mayfly Bend, Roaring Fork Preserve, Ranch at Roaring Fork, Aspen Equestrian Estates	N/A	N/A	N/A	N/A	382	Aspen Polo Club	N/A	N/A	N/A	High
X	Blue Creek Ranch	(1) 115 KV	N/A	N/A	N/A	151	Waldorf School	N/A	Roaring Fork River	N/A	Moderate
Y	The Loadout, Carbondale Mini Storage	(1) 115 KV	N/A	N/A	N/A	50	Multiple	N/A	N/A	N/A	Moderate

Figure 24 - Subdivisions & Risks 2

Standards, Goals, & Objectives

Response Types

CRFPD responds to virtually all emergencies in the District. When someone places a 9-1-1 call for an emergency other than a law enforcement issue, CRFPD is paged to respond. In addition, CRFPD is often called to assist or provide care at the scene of a law enforcement incident.

The reality of responding to a wide variety of different incident types means that CRFPD personnel must be cross-trained in as many emergency response disciplines as possible. Obtaining certification, recertifying certifications, continuing education training, equipping and staffing for the many different types of response in the district is a time consuming, difficult, and expensive process. A single responder has a limited ability to specialize in other disciplines than firefighting and EMS. This means that it takes more responders certified in different specialties to ensure that CRFPD is able to deliver a high level of service and a high standard of care to the citizens in the district.

Response types in the Carbondale & Rural Fire Protection District include:

- Residential Structural Fire Response
- Commercial Structural Fire Response
- Motor Vehicle Accident (MVA) Fire and EMS Response
- Emergency Medical Response and Transport for Medical and Trauma incidents
- Wildland Fire Response (different training and equipment requirements than structural firefighting)
- Hazardous Materials Incident Response (HAZMAT)
- Swiftwater Rescue Response
- High Angle Rescue Response
- Backcountry Incident Response (particularly in the south end of the district)
- Avalanche Response
- Mudslide Incident Response

Response Standards

Nationally recognized standards for response to emergencies are established by the National Fire Protection Association (NFPA). The NFPA develops these standards over time, along with being reviewed and rewritten every five years to ensure that they are still relevant to the ever evolving environments of emergency response.

The basis for every standard that comes from the NFPA is to provide for the safety of the emergency responders who are exposed to the dangers of structure fires, wildland fires, EMS incidents, MVAs, swiftwater rescues, HAZMAT incidents, high angle rescues, and the like. The NFPA has developed recognized standards for all of the above incident types. The NFPA standards require that all responders be certified in each discipline and that the District carries NFPA compliant equipment and vehicles for each incident type.

Many of the core pieces of equipment, staffing, apparatus and protective gear standards have been developed through the investigation and research of incidents involving emergency responder deaths and injuries. Anytime a responder is injured or killed during a training or incident response, one of the first items that is looked at very closely is whether or not the fire department involved in the incident is staffed, equipped, trained and responding according to the NFPA standards. NFPA safety standards are the legal benchmark by which organizations are judged before, during and after an incident.

Critical Task Capability

Effective Response Force (ERF)

A fire in an occupied residential single or multi-family structure requires tasks to be simultaneously conducted in order to stop the loss of civilian lives, stop further property loss, and minimize risks to the firefighter. The number and type of tasks needing simultaneous action will dictate the minimum number of firefighters needed at different types of fires at each different type of fire incident. The following tables describe these tasks, which usually are performed simultaneously in the majority of fire responses to single and multi-family dwellings. These tasks usually occur in the first 12 to 15 minutes of a fire ground operation. In order to accomplish these tasks, the first full alarm is two (2) engine companies, one (1) ladder or truck company, one (1) ambulance company and a battalion officer. An effective response force will be determined to have been achieved when fifteen (15) suppression personnel have arrived on scene. Additional units and/or mutual aid may be dispatched by the request of the incident commander. Incidents involving rural structure fires with no fire hydrants or larger fire suppression incidents will require twenty-two (22) suppression personnel to establish an effective response force.

Figure 25 - Single Family Residential Structure Fire - Non-Target Hazard

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Single Family Residential Structure Fire – Non-Target Hazard		
Battalion	Establish command, size up, incident safety officer	1
1st Engine	Division / Group Supervisor / Operations Section Chief	1
	Engineer/Pump operator	1
	Attack hoseline	2
2nd Engine	Back-up hoseline	2
	Interim Rapid Intervention Crew (IRIC)	2
Truck	Forcible entry, ventilation	2
	Primary search	2
	Engineer/Pump operator	1
1st Ambulance	Utility Control, FF Treatment/Rehab	1
	TOTAL	**15**

Figure 26 - Single Family Residential Structure Fire - No Hydrants

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Single Family Residential Structure Fire – No Hydrants		
Battalion	Establish command, size up, incident safety officer	1
1st Engine	Division / Group Supervisor / Operations Section Chief	1
	Pump operator	1
	Attack hoseline	2
2nd Engine	Back-up hoseline	2
	Interim Rapid Intervention Crew (IRIC)	2
1st Truck	Forcible entry, ventilation	2
	Primary search	2
	Engineer/Pump operator	1
3rd Engine	Establish Fill site, Fill site officer	1
	Pump operator	1
	Connect/disconntect tenders	1
1st Water Tender	Drop port-a tank, water supply officer	1
	Tender operator	1
2nd Water Tender	Tender operator	1
3rd Water Tender	Tender operator	1
1st Ambulance	Utility Control, FF Treatment/Rehab	1
	TOTAL	**22**

Figure 27- Single Family Residential Structure Fire - Life/Conflagration Target Hazard

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Structure Fire – Life/Conflagration Target Hazard		
Battalion	Establish command, size up, incident safety officer	1
1st Engine	Division / Group Supervisor / Operations Section Chief	1
	Pump operator	1
	Attack hoseline	2
2nd Engine	Back-up hoseline	2
	Interim Rapid Intervention Crew (IRIC)	4
3rd Engine	Support first two engines	2
1st Truck	Forcible entry, ventilation	2
	Primary search	2
	Engineer/Pump operator	1
2nd Truck	Forcible entry, ventilation	2
	Life rescue	2
Chief Officer	Assist command	1
	TOTAL	**22**

Figure 28 - Industrial Target Hazard

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Structure Fire – Industrial Target Hazard		
Battalion	Establish command, size up, incident safety officer	1
1st Engine	Division / Group Supervisor / Operations Section Chief	1
	Fire Attack Group 1; recon, hoseline, standpipe operations	3
2nd Engine	Fire panel	1
	Water supply FDC	2
	Fire Attack Group 1; recon, hoseline, standpipe operations	2
3rd Engine	Fire Attack Group 1; recon, hoseline, standpipe operations	3
	Fire Attack Group 2 Supervisor	1
1st Truck	Fire Attack Group 1; recon, search & rescue	2
	Fire Attack Group 1; forcible entry & ventilation	2
2nd Truck	Fire Attack Group 2; recon, search & rescue	2
	Fire Attack Group 2; forcible entry & ventilation	2
Chief Officer	Assist command	1
	TOTAL	**22**

Figure 29 - HAZMAT Incident - Small Scale

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Hazmat Incident – Small Scale		
Battalion	Establish command, size up, incident safety officer	1
1st Engine	Division / Group Supervisor / Operations Section Chief	1
	Hazard mitigation	2
	Emergency decon/safety	1
2nd Engine	Operations	1
	Research	1
	Hazard mitigation	2
	TOTAL	**8**

Figure 30 - HAZMAT Incident - Large Scale

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Hazmat Incident – Large Scale		
Battalion	Establish command, size up, incident safety officer	1
1st Engine	Division / Group Supervisor / Operations Section Chief	1
	Hazard mitigation/rescue	2
	Emergency decon/safety	1
2nd Engine	Interim Rapid Intervention Crew (IRIC) team	4
3rd Engine	Evacuate, deny entry	2
4th Engine	Evacuate, deny entry	2
Chief Officer	Assist command	1
	TOTAL	**13**

Wildland Fire Incidents

Wildland fire suppression requires an effective response force that is capable of:

- Quickly responding to and suppressing small fires in any Wildland Urban Interface (WUI) area of the district.
- Enhanced level of response to wildfire incidents that are expanding and require multiple resources to suppress. This includes using district resources along with mutual aid from neighboring districts and interagency resources
- Responding to large scale fire incidents that require a draw-down of resources from CRFPD, neighboring districts, and federal agencies. Typically multi-day incidents are low frequency/high impact incidents.

Currently CRFPD employs two person engine crews to quickly respond to small fires. While this response is typically rapid, two person crews have a limited capability to perform actual suppression operations. The advantage of this type of response is rapid initial size-up and resource ordering along with the ability to identify immediate evacuation priorities in the WUI areas. When these crews order resources, a tiered response method is used. Resources are ordered from CRFPD first, and then mutual aid from other agencies.

The effective response force for wildland fires is shown below. Wildland firefighting is a manpower intensive operation and staffing levels greatly affect the ability to respond and keep small fires small, which is the best and only way to mitigate the potential for larger scale destructive fires.

Figure 31- Wildland Fire Incident - Low Fire Danger

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Wildland Fire Incident – LOW fire danger		
1st Engine	Establish command, size up, identify anchor point, safety zone, escape route	1
	Pump operator	1
	Attack hoseline or hand tools	3
	TOTAL	**5**

Figure 32- Wildland Fire Incident - Extreme Fire Danger/WUI

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Wildland Fire Incident – EXTREME fire danger, Wildland Urban Interface		
Battalion	Establish command, size up; identify anchor point, LCES	2
1st Engine	Division / Group Supervisor / Operations Section Chief	1
	Pump operator, establish water supply	1
	Attack hot flank	2
2nd Engine	Pump operator, establish water supply	1
	Attack cold flank, identify LCES	3
1st Water Tender	Identify structure protection or fire attack, identify LCES	2
2nd Water Tender	Assist structure protection or fire attack, identify LCES	2
3rd Engine	Division Supervisor or Task Force Leader	1
	Assist with fire attack or structure protection, identify LCES	3
4th Engine	Division Supervisor or Task Force Leader	1
	Assist with fire attack or structure protection, identify LCES	3
Chief Officer	Assist command	1
	TOTAL	**21**

Emergency Medical Services

Emergency medical responses account for the majority of calls annually within the Carbondale Fire District. These incidents range from basic calls such as minor injuries or illnesses to incidents requiring advanced skills such as cardiac arrests, major trauma or multiple patient incidents. All CRFPD response staff are certified to at least the EMT-Basic level. Each shift is also staffed with at least two Paramedics 24/7 to provide advanced life support service to the community.

The initial effective response force for routine medical calls is one ambulance staffed with 3 personnel and a Battalion Officer responding in addition to the ambulance. If CPR, significant trauma, or bariatric lifting is needed, or if there are multiple patients additional resources will be dispatched or mutual aid will be called for.

Motor vehicle accidents require a combination response of fire and EMS resources. The initial effective response force for motor vehicle accidents is one battalion officer, one ambulance with two personnel and one engine with four personnel to perform fire suppression, vehicle stabilization, extrication and possibly traffic control. If a motor vehicle accident is more complex than a single vehicle and occupant, additional EMS and fire resources will be called for.

Figure 33 - Medical Response

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Medical Incident		
Battalion	Establish command, perform size-up	1
1st Ambulance	ALS patient care: IV, Meds, Airway Management, Cardiac Monitoring	2
	TOTAL	**3**
	* CPR Needed	+3
	* Bariatric/Lifting	+2

Figure 34 - MVA with Injuries

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Motor Vehicle Accident with Injuries		
Battalion	Establish command, perform size-up	1
1st Ambulance	ALS patient care: IV, Meds, Airway Management, Cardiac Monitoring	3
1st Engine	Engineer/Pump operator	1
	Stabilize Vehicle, extrication, hazard control, traffic control	4
	TOTAL	**9**

Rescue Incidents

Carbondale & Rural Fire Protection District responds to numerous types of rescue incidents. All calls of these types require an effective response force that is not only well-trained for the incident but also an adequate number of responders in the correct positions to effectively and safely perform the necessary tasks

Figure 35 - Swiftwater Rescue Incident

Company	Basic/Minimum Tasks	Minimum # of Personnel Required
Swift Water Rescue Incident		
Battalion	Establish command, perform size-up	1
1st Rescue Unit	Establish safety zone	1
	Rescue operations	4
2nd Rescue Unit	Rescue operations - Downstream protection, etc.	4
	Establish Rapid Intervention Crew (RIC)	2
	TOTAL	**12**

Figure 36 - High Angle Rescue Incident

High Angle Rescue Incident		
Battalion	Establish command, perform size-up	1
1st Rescue Unit	Victim/patient rescue	6
	TOTAL	**7**

Figure 37- Avalanche/Mudslide Incident

Avalanche/Mudslide Incident		
Battalion	Establish command, perform size-up	1
1st Rescue Unit	Establish perimeter	2
	Victim/patient rescue	6
	TOTAL	**9**

Setting Service Level Objectives

Current Baselines

Figure 38 - Incidents by Day of the Week

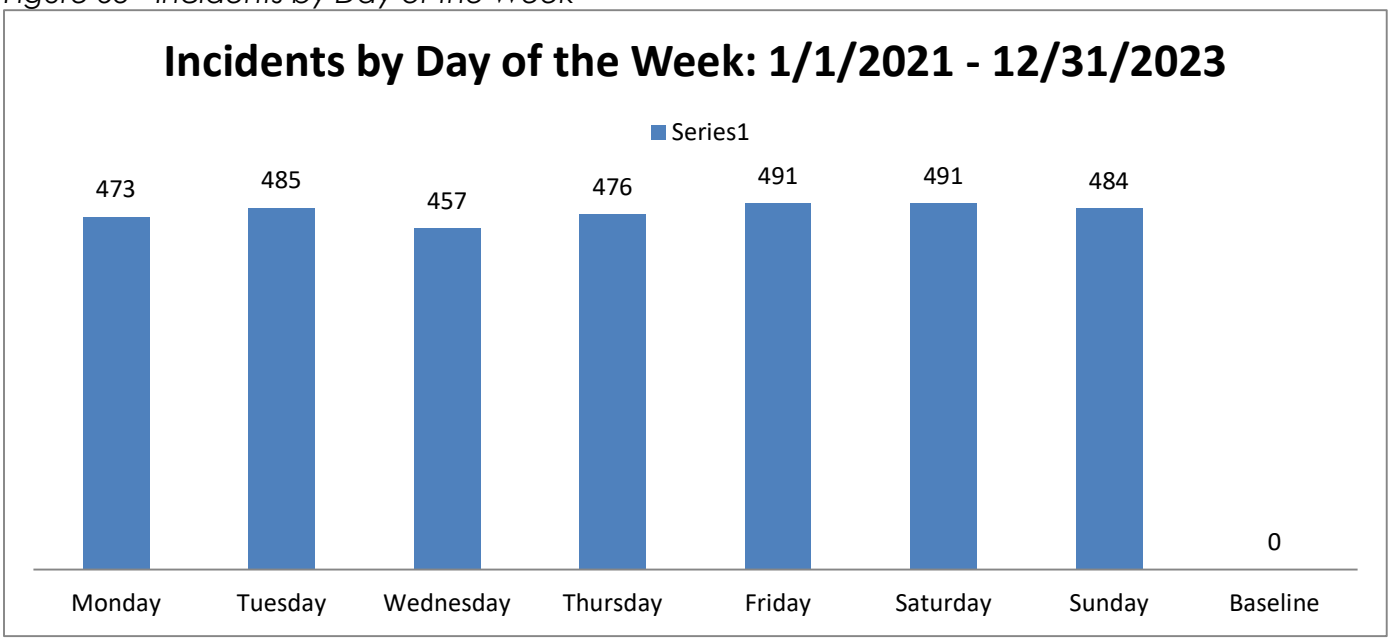


Figure 39 - Incidents by Time of Day

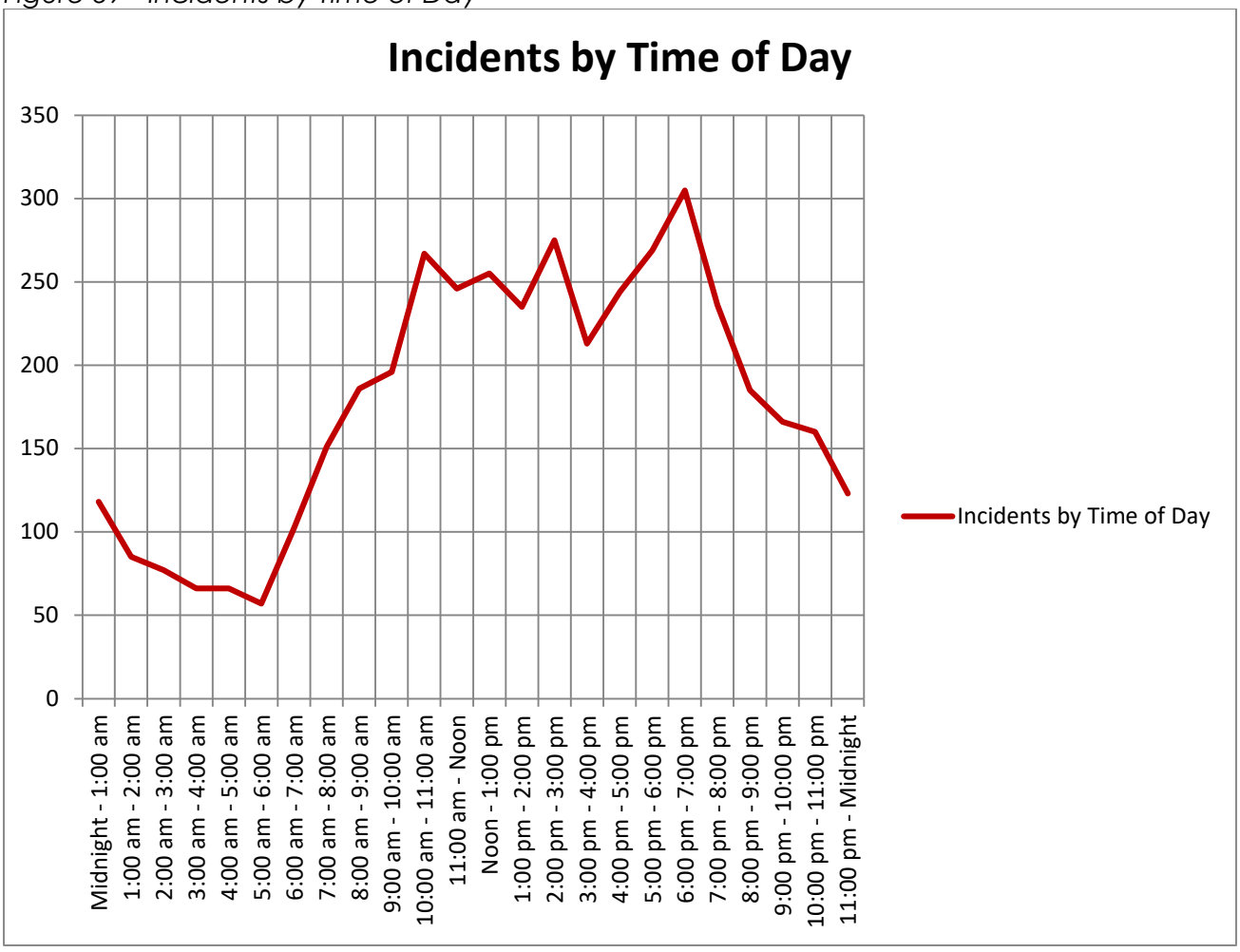
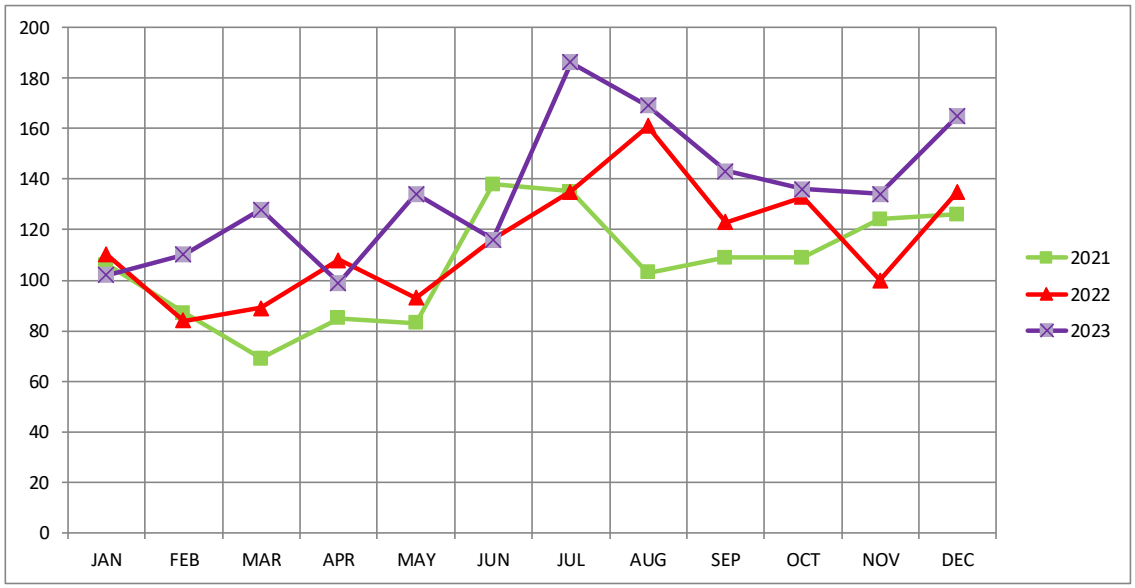


Figure 40 - Incidents by Month

Incidents by Month 2021-2023

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	OTAL
2021	106	87	69	85	83	138	135	103	109	109	124	126	1274
2022	110	84	89	108	93	116	135	161	123	133	100	135	1387
2023	102	110	128	99	134	116	186	169	143	136	134	165	1622
AVG	106	94	95	97	103	123	152	144	125	126	119	142	1428
Monthly AVG	119	119	119	119	119	119	119	119	119	119	119	119	-



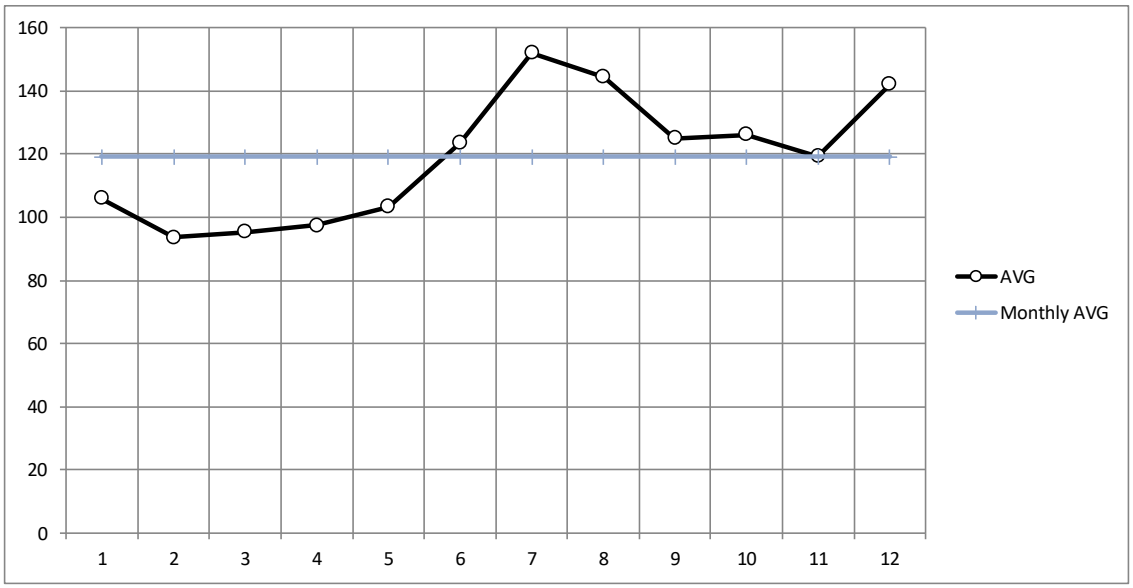


Figure 41 - Station 81 Response Times by Year

Station 81 - Response Times 2021-2023 by Year

2021					
Station 81		Processing	Turnout	Travel	Response
			747		747
CARB 811	Median		3:40		8:09
CARB 811	80th Percentile		5:40		12:32
			19		19
CARB 812	Median		3:21		16:29
CARB 812	80th Percentile		6:09		18:30

2022					
Station 81		Processing	Turnout	Travel	Response
			831		831
CARB 811	Median		2:52		7:21
CARB 811	80th Percentile		4:26		10:46
			19		19
CARB 812	Median		3:59		15:07
CARB 812	80th Percentile		5:10		22:10

2023					
Station 81		Processing	Turnout	Travel	Response
		845	845		845
CARB 811	Median	1:25	2:42		7:19
CARB 811	80th Percentile	2:21	3:50		9:45
		36	36		36
CARB 812	Median	1:20	3:07		14:08
CARB 812	80th Percentile	2:00	4:09		16:56

Figure 42 - Station 84 Response Times by Year

Station 84 - Response Times 2021-2023 by Year

2021					
Station 84		Processing	Turnout	Travel	Response
			16		16
CARB 841	Median		4:57		17:13
CARB 841	80th Percentile		6:47		22:02
			1		1
AA 7284F	Median		-		-
AA 7284F	80th Percentile		14:02		19:49
			16		16
AA 8472F	Median		4:39		21.0
AA 8472F	80th Percentile		5:45		24.0

2022					
Station 84		Processing	Turnout	Travel	Response
			119		119
CARB 841	Median		3:19		16:36
CARB 841	80th Percentile		5:20		25:20
			2		2
AA 7284F	Median		-		
AA 7284F	80th Percentile		6:16		19:11
			8		8
AA 8472F	Median		3:53		16:22
AA 8472F	80th Percentile		6:28		23:28

2023					
Station 84		Processing	Turnout	Travel	Response
		119	119		119
CARB 841	Median	1:20	3:19		11:05
CARB 841	80th Percentile	2:39	5:20		16:47
		4	4		4
AA 7284F	Median	2:51	4:01		9:36
AA 7284F	80th Percentile	3:01	4:30		10:18
		12	12		12
AA 8472F	Median	1:07	2:53		9:54
AA 8472F	80th Percentile	1:38	4:32		15:34

Evaluation

The objective of this Standard of Coverage is to identify and maintain a balance among distribution, concentration and reliability that will keep the community risk at reasonable levels while yielding the maximum protection of life and property.

Ultimately it is the community through its elected officials that dictates the Standard of Coverage that will be adopted by the fire district. By its economic decisions with respect to taxation, the community buys a level of fire and life safety service that is consistent with its perceived needs and its available resources. While these decisions can be influenced by many factors, the level of protection available in any community is a local decision that should be made after understanding the local needs, resources and performance.

Each community must decide the appropriate response and travel times for their community. This decision should be based on a variety of factors, including:

- Types of services provided (fire, EMS, specialty response)
- Reasonable travel time for fire department fire apparatus and ambulances to meet emergency response needs of a community
- Size of area served and amount of resources available
- Level of risk a community is willing to accept by establishing or tolerating longer response times.

Policy Recommendations

Objective 1

Effectively address economic and demographic trends to ensure that an adequate level of emergency response capacity is maintained and augmented and to ensure that the district can meet expected response time standards for the community. In addition, maintain and improve the district's ability to adequately staff and respond to concurrent calls for service.

Recommendations: Utilize the Strategic Plan and Standard of Cover documents to identify necessary staffing levels for the next 5+ years, along with identifying adequate revenue options to present to voters of the fire district for approval.

Objective 2

Ensure that all staff are adequately trained for the positions and disciplines that they will be required to perform.

Recommendations: Continue to engage with Colorado Mountain College, Roaring Fork School District along with our regional emergency response organizations and with the Colorado Division of Fire Prevention and Control to expand and enhance our ability to provide regular, up-to-date training and education for current and future responders. This includes all disciplines identified in our response model and includes leadership and management education for every level of leadership.

Objective 3

Ensure Funding for Fleet, Equipment and Facilities identified through the planning process, including Strategic Plan and Standard of Cover.

Recommendations: Identification of appropriate and adequate funding mechanisms and levels to provide for continual capital replacement of apparatus and equipment. Additionally, provide funding and planning for needed facilities including fire stations and workforce housing in all areas of the fire district.

CRFPD's Commitment

Carbondale & Rural Fire Protection District commits to continually seeking solutions, partnerships and funding opportunities to accomplish the stated goals in this Standards of Response Coverage document. Additionally, CRFPD commits to ensuring implementation of best practices and policies to ensure the safety of every member of the Carbondale & Rural Fire Protection District.