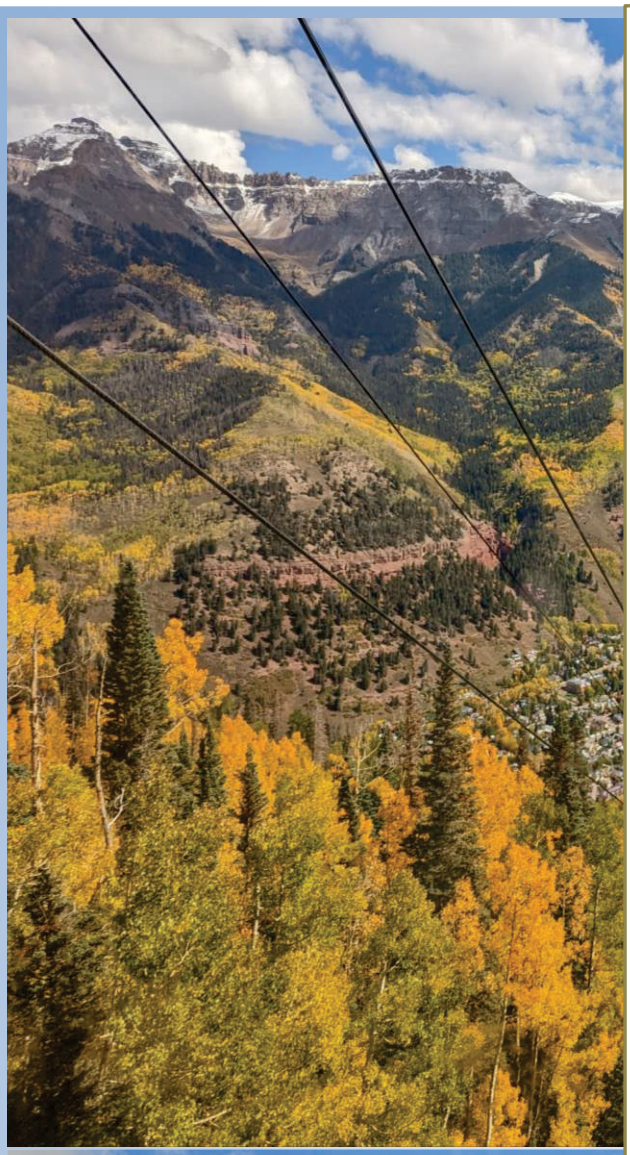
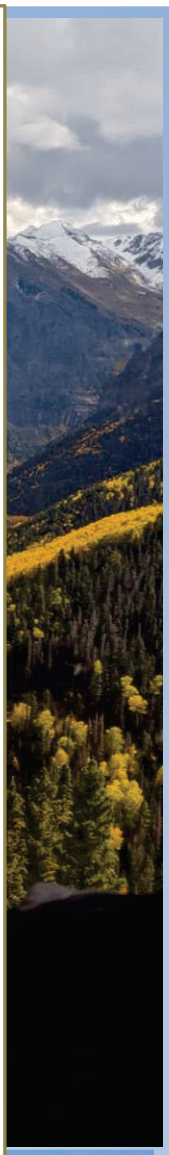




Telluride Fire Protection District Strategic and Master Plans

January 2023

Created by MISSION CIT Critical Immersive Training

Table of Contents

Cover Art by Jason Decremer, Ph.D., 2022

Section 1 - Background

Introduction

MissionCIT, LLC was contracted by the Telluride Fire Protection District (TFPD) to conduct a strategic planning process and to develop a master plan for the district. There had been prior plans, both strategic plans and master plans, developed for the district, but it is always best to regularly revisit them and renew them to continue with positive movement in an organization. In addition, the TFPD has undergone some significant changes over the last several years, particularly with the transition to a combination system.

MissionCIT, LLC is pleased to have been able to work with such great leaders and staff of the Telluride Fire Protection District to develop the strategic plan and master plan. We would like to particularly recognize the following individuals for their input and efforts in this process.

Board of Directors

President Jim Lucarelli

Vice President Clifford Hansen

Treas./Sec. Daniel Zemke

Chris Broady

Mike Kimball, Sr.

Fire Chief John Bennett

Fire Division Chief John Cheroske

EMS Division Chief Brad Blackwell

Lt. Steven Langion

All the men and women of TFPD

Heather Widlund – SMC GIS

All of the other outside participants in the strengths, weaknesses, opportunities and challenges sessions included other local government officials, law enforcement officials and the public.

The Telluride Fire Protection District remains in a state of transition and change. The leadership has worked to meet the challenges of a changing organization and is committed to the safety and welfare of the public and all of the members of the organization. This report reflects the state of the district as of October 2022 and the district is continuing to make changes and improvements as they transition to a mature combination system.

Fire District Demographics

The TFPD covers an area of approximately 350 square miles in eastern San Miguel County, Colorado. The resident population of the fire district is approximately 5,900. However, due to the significant number of festivals, events, and the ski season, the population of the district can easily reach 20,000 at any given time of the year. The district is in the process of inclusion of an

additional approximately 70 square miles in the Peninsula Area. (See Figure 1.2) The district is made up of several towns and unincorporated areas which include:

Town/Area	Approximate 2020 Population	Square Miles	Density
Telluride	2,608	2.2	1,172/sq. mile
Mountain Village	1,400	3.3	432/sq. mile
Placerville	700	.757	
Ophir	200	.2	
Sawpit	40	.03	

The Town of Telluride has grown approximately 15% since 2000. Its growth rate from 2010 to 2020 was .4% which was just slightly lower than the growth rate for San Miguel County. The median age for the Town of Telluride is 35.3 years old. According to the 2020 census, the Town of Telluride had a median household income of $68,878 and a median house value of $415,100.

The growth within the Town of Telluride, Mountain Village and the rest of the entire district involves primarily the construction of single-family dwellings. There is some multi-family housing that is being constructed, and several additional hotels are planned in Mountain Village. There is potentially one very high-density development that is being discussed for the Aldasoro area of the fire district. However, there are no active plans to mobilize on this project. As proposed, the development is projected to have 780 housing units on 35 acres of land.

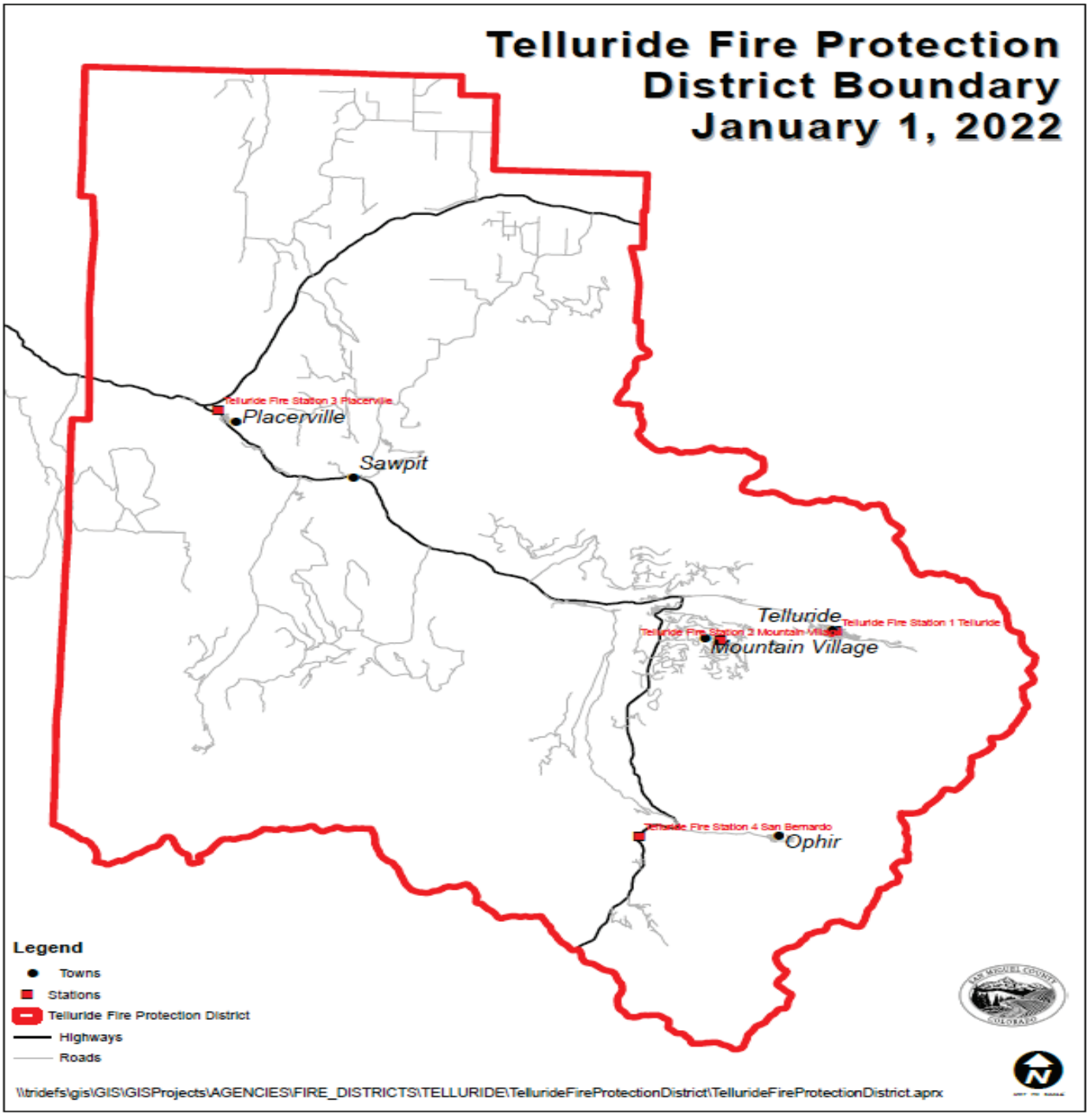
History

The TFPD was officially formed in 1966 as a special district within the State of Colorado. Fire and Emergency Medical Services were provided by volunteer personnel. As part of the original fire protection district, there also existed three independent organizations to include the Placerville Volunteer Fire Department, the Telluride EMT Association (TEMTA) and the Telluride Volunteer Fire Department that provided services under the umbrella of the TFPD by contracts. These organizations were all 501(c)3 organizations. In 2013, the TFPD abolished the individual contracts with the three organizations and assumed all the members from them as part of the TFPD. The members were placed under the authority of the District Fire Chief and under all the policies and procedures of the fire district. The three organizations have remained in place since then, but as fraternal, non-operational, organizations within the district. They still have elected officers for each organization. However, the day-to-day functions and control of the volunteer personnel remain under the Fire Protection District and the District Fire Chief. Due to the EMS workload, there were four career EMS advanced life support providers hired around 1999 or 2000 to respond on advanced life support EMS calls as well as assist in coverage with the TEMTA volunteer personnel.

In 2020, at the request of the volunteer fire personnel, the district moved to hire career personnel for two of its fire stations. Since then, a total of 18 career personnel has been hired. Three

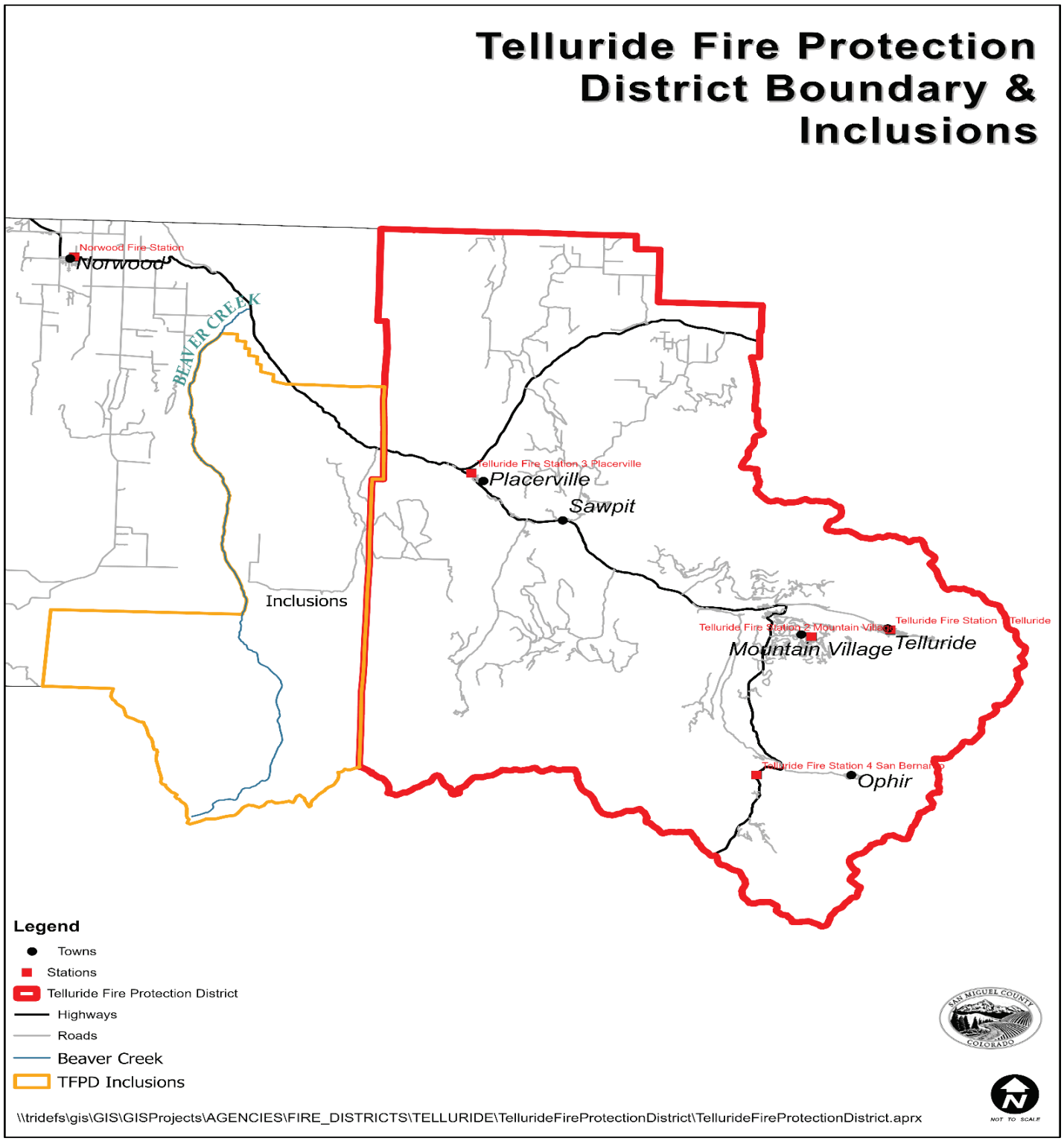
platoons of 6 career personnel each provide 24/7 fire and EMS service at Station 1 and 2. The district is also transitioning to a part-time seasonal staffing method for its EMS transport operations. As of November 30, 2022, the TFPD has eliminated the Telluride EMT Association (TEMTA) and all its volunteer EMS personnel. Additional details of this shift in personnel will be discussed later in the Staffing section of the report.

Figure 1.1 Telluride Fire Protection District Boundary 1/1/2022



The TFPD is in the process of assuming approximately 70 square miles of additional response area from a neighboring fire district. This will add between 50-60 additional residents into the district.

Figure 1.2 Telluride Fire Protection District Boundary & 2022 Inclusions



General Risk Assessment

The risk assessment revealed several types of risks within the district. The two primary risks involve the dense, older construction areas of downtown Telluride and the wildland fire risks for Mountain Village and other areas of developed land in the district. The vast majority of the remaining fire district area is rural to remote in nature with large separations between housing units. There are also some pockets of light commercial and industrial areas just outside the town. The Telluride Fire Protection District protects approximately $10 billion in real estate value.

The downtown area of Telluride is a very dense mix of commercial and residential properties. There is a significant amount of construction dating from the 1880's to the early 1900's in the town. Due to space limitations, there is little to no separation distances between structures, and most structures are three stories or less. Some of the commercial properties in the town are protected by automatic sprinkler systems. While the Fire Chief estimates that approximately 80% of the commercial properties in the downtown area do not have fire sprinkler systems, residential construction greater than 3,600 square feet is required to include a residential sprinkler system.

The other significant risk area within the district, Mountain Village, is primarily a residential development. Most homes are of significant size, but primarily protected by automatic suppression systems. The town does have a significant multi-family area consisting of condominiums and some hotels for the ski tourist season. There is also a small commercial area of restaurants and shops within the village core area. Several structures in the commercial and multi-family areas of Mountain Village reach 5 or more stories in height.

Despite these risk factors, TFPD has an aggressive wildland mitigation strategy. Utilizing various techniques such as thinning, requiring non-combustible construction, and establishing safe zones, the TFPD actively works to reduce risk areas in the district. These strategies are leveraged to the fullest extent of what is allowed and/or funded by federal, state, or local resources.

Organizational Structure

The TFPD is a combination staffed organization. At the head of the organization, the District Fire Chief reports to the district's Board of Directors. The Board of Directors is composed of five elected members who are responsible for overall policy and financial management of the district. The district fire chief has multiple direct reports, these include the following:

- Fire Division Chief
- EMS Division Chief
- Fire Marshal
- Office Manager
- Training Officer (Position to be filled as of December 17, 2022)
- Mechanic

The career staffing is divided up across three shifts operating on a 48/96-hour work schedule. Each shift consists of 2 Captains, 2 Lieutenant/Paramedics and 2 Firefighter/EMT's for staffing at Stations

1 and 2. Volunteer Fire Personnel are currently organized into staffing shifts to match the 48/96 work schedule of the career staffing. Each volunteer shift (also known as a battalion) is assigned and reports to the career Captain for that shift at their assigned station. As part of each volunteer shift, at Stations 1 and 2, there is an appointed (by the Fire Division Chief) Volunteer Battalion Chief and Volunteer Lieutenant to provide oversight to the volunteer personnel at Stations 1 and 2. At Station 3 (Placerville), the Fire Division Chief also appoints the volunteer officers, to include the Volunteer Battalion Chiefs, and Volunteer Captains and Lieutenants. This station is under the authority of the Fire Division Chief, but traditionally has had little interaction with the career side of the organization.

The current organizational chain of command has the career Captains reporting directly to the Fire Division Chief and the Lieutenant/Paramedics reporting directly to the career Captains. The wildland fire crew also report to the Fire Division Chief. The new part time seasonal EMS providers who will soon be hired were scheduled to report to the EMS Division Chief. However, after beginning work on the final report, that position was vacated, and the Fire Chief has modified the organizational structure so that the seasonal EMS providers will now report to the Station Captains. Also, with the departure of the EMS Division Chief, the Lieutenant/Paramedics were placed under the supervision of the shift Captains.

Services Provided

The TFPD currently provides a wide range of services to include fire suppression, advanced life support transport emergency medical services, vehicle extrication, low-angle technical rescue, hazardous materials, fire inspection, fire investigation, and wildland mitigation and response.

Stations

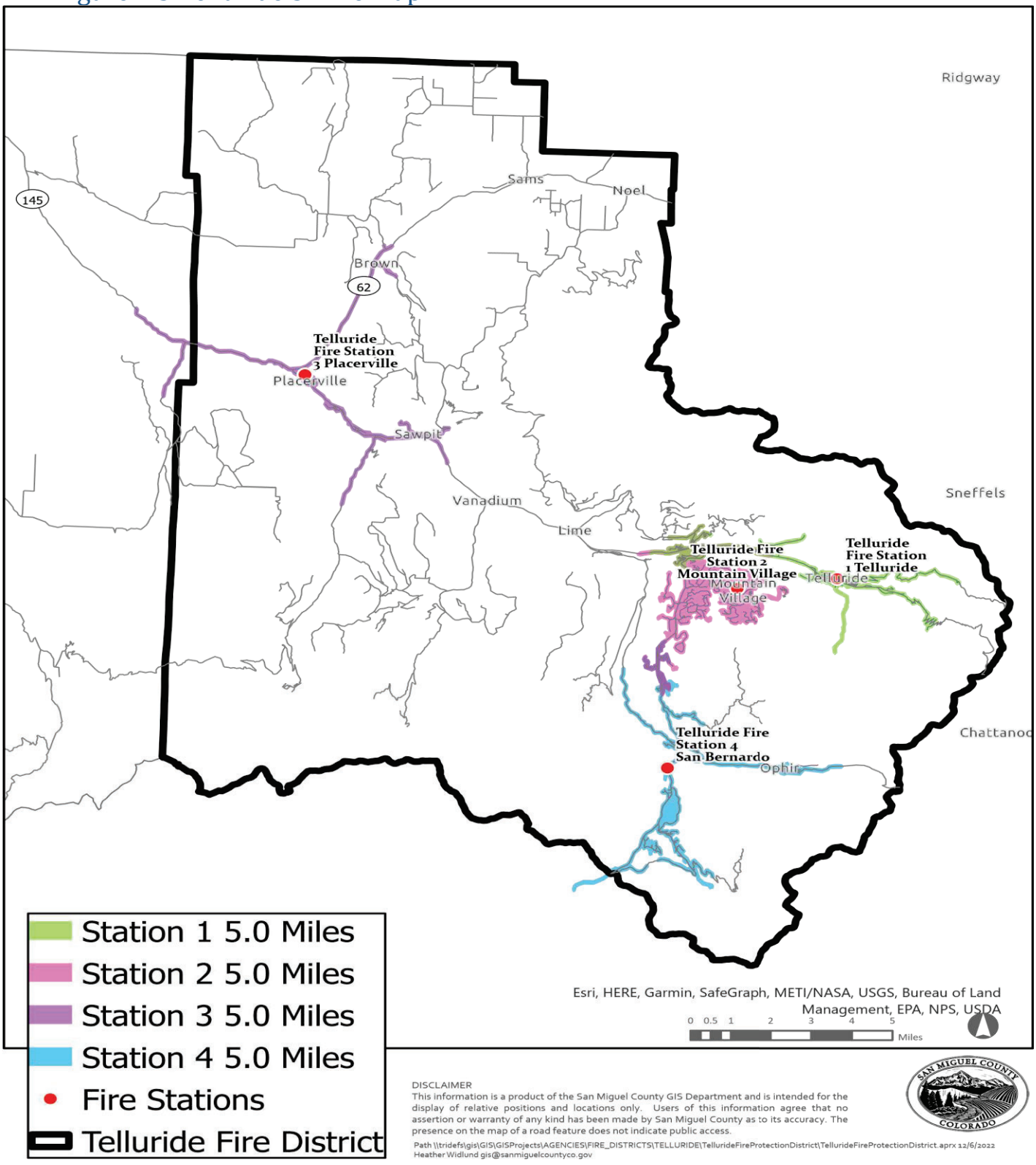
The TFPD currently provides services from four locations. These include the following:

- Station 1 – Located within the Town of Telluride
- Station 2 – Located in Mountain Village
- Station 3 – Located in the Town of Placerville
- Station 4 – Located in the San Bernardo area of the district

All existing fire stations were constructed during the time that the district was an all-volunteer fire operation. As such, they were not constructed to accommodate 24/7 staffing. The TFPD has made some improvements to Station 1 and 2 to accommodate the career staffing that have been hired. Four bunkroom areas were constructed at Station 1 from part of the meeting/community room area. At Station 2, three apartment style facilities have been constructed underneath the existing bay area. There includes one 3-bedroom, one 2-bedroom and one 1-bedroom area for the career crews. This area can also be used for volunteer personnel or extenuating circumstances for career personnel to stay over. At Station 3, there has been modification of two storage areas with egress windows per code to be used as bunkroom space. Station 4 does not have any additional amenities other than apparatus bay storage.

Below is the current 5-mile drive time map for the stations within the district.

Figure 1.3 Telluride 5-Mile Map



DISCLAIMER
This information is a product of the San Miguel County GIS Department and is intended for the display of relative positions and locations only. Users of this information agree that no assertion or warranty of any kind has been made by San Miguel County as to its accuracy. The presence on the map of a road feature does not indicate public access.

Path \\tridefs\gis\GIS\GISProjects\AGENCIES\FIRE_DISTRICTS\TELLURIDE\TellurideFireProtectionDistrict\TellurideFireProtectionDistrict.aprx 12/6/2022
Heather Widlund gis@sanmiguelcountyco.gov

Apparatus

The district operates with approximately 30 pieces of response apparatus, most of which are 4-wheel drive. The fire and EMS apparatus within the district includes a mix of custom and commercial fire apparatus. The custom vehicles include the fire apparatus and two ladder trucks and are well-maintained. While the EMS transport units are also 4-wheel drive and in good condition, the district is seeking to standardize this fleet to appear and function more uniformly. The district has a full-time mechanic who provides the routine maintenance of all the vehicles in the district's fleet. It is only when a vehicle requires specialized repairs that it is sent to nearby facilities in Montrose and Grand Junction.

The district operates the following fleet:

- 5 Engines
- 2 Aerials
- 6 Ambulances
- 3 Tenders
- 4 Brush Units
- 2 Squads
- 6 Support/Staff Vehicles

To ensure that the fleet is current, the district utilizes a replacement plan which includes the following replacement schedule for apparatus. The district has been actively working to maintain this process and retain an up-to-date, ready fleet. Their replacement process has recently been interrupted by supply chain issues with apparatus vendors. Several units that are currently on order have been delayed a year or more for delivery. Currently, the district has the following apparatus on order; 2 ambulances, 1 Type-1 engine, 1 Type-3 engine, and 1 Type-4 engine.

Replacement Schedule		Current Average Age
Engine	20 years	10.5 years
Truck	25 years	11 years
Ambulance	10 years or 100k miles	8.3 years/47.8k mileage
Tender	20 years	18.6 years
Rescue	20 years	
Brush Units	20 years	
Service Vehicles	10 years (Based on mileage and preventative maintenance)	
Command Vehicles	10 years (Based on mileage and preventative maintenance)	

Staffing

Staffing for field operations of the district includes both paid and volunteer personnel. Both Station 1 (Town of Telluride) and Station 2 (Mountain Village) are each staffed daily with 3 career personnel on a 24/7 basis. Each station is staffed with a Captain/EMT, Lieutenant/Paramedic and a Firefighter/EMT. Each career Captain/EMT and Firefighter/EMT reports to the Fire Division Chief of the district. Each Lieutenant/Paramedic now has been assigned to report to the career Captain of their shift with the departure of the EMS Division Chief.

Volunteer fire personnel are presently assigned to one of the stations with shifts that coincide with the 48/96 work schedule of the career personnel. They report to and take direction from the career Captain of that shift. Volunteer EMS personnel (BLS and ALS) were originally utilized to provide staffing for EMS transport units to facilitate inter-facility transport of patients from the Telluride Regional Medical Center (TRMC). They were required to sign up for pre-scheduled shifts and provide staffing on a regular basis to the system. As of November 30, 2022, the Fire District has made the decision to eliminate the Volunteer EMS personnel and move to a part-time, seasonal staffing approach to the inter-facility transports. As of the visit by the consulting team, the district was in the process of hiring these part-time staff to fill the vacancies needed to provide the unit staffing.

Staffing at Fire Stations 3 (Placerville) and 4 (San Bernardo) is provided by volunteer response from volunteers in the area. Station 4 currently has only two volunteers living in the immediate area. With so few volunteers able to respond to calls in this area, the primary responders are the career crew from either Station 2 or Station 1. The volunteers at Station 3 are structured as a typical volunteer organization. That is, the volunteer chief and volunteer officers are appointed to provide guidance and oversight to the volunteer members, through the Fire Division Chief. The volunteers at Station 4 report to the respective shift Captains at Station 2. Currently, the district has approximately 35 volunteer fire personnel in its rolls, with about 20 of them being active in response.

The Fire District also utilizes three personnel for a wildland fire crew. These personnel are assigned to provide mitigation activities in the district. The crew is also available to be assigned to other locations or states to provide wildland fire suppression assistance. The district is planning on assigning the current crew of three to each of the career shifts to work 48/96. They will work under the supervision of the Captain at Station 2. This will provide a driver for the inter-facility EMS transports when needed. The district is also planning to hire three additional wildland personnel to not only increase its capabilities within the district, but also to increase its outside assignment capabilities.

As mentioned earlier in the report, the district also employs a full-time fire marshal, full-time apparatus mechanic and a full-time office manager for HR and financial purposes.

Funding

The TFPD operates on an annual budget of approximately $4.96 million for 2022. Approximately 79% of its operating budget comes from property taxes levied within the district. The current millage rate within the fire district is 4.315 mills. Another 8.6% of its budget revenue comes from EMS transport fees and 8.2% of its budget comes from grants. The district has approximately $6.5 million in cash reserves.

The personnel costs within the budget through salaries, wages and benefits account for 58% of its total expenditures for 2022. This percentage is somewhat lower than what is normally seen in fire departments with career staffing. Normally, personnel costs can account for between 75-85% of a department's operating budget.

Operations

The TFPD operates on an extremely dynamic and flexible deployment model for Fire and Emergency Medical Services. The career crews at Stations 1 and 2 respond using any number of configurations of apparatus depending on the call type. If responding to a fire call, the three-person crew will either respond with the engine assigned to the station, or they may respond with the engine and a fire command vehicle or EMS Squad. The latter is staffed by the Lieutenant/Paramedic so that they can break away and cover a concurrent medical call if necessary. If dispatched to an EMS call, depending on the call type, two people of the crew will respond with the ambulance, and the remaining one person will respond with either the engine, EMS Squad or the fire command vehicle. Additional apparatus at the station, (e.g., the ladder trucks or fire suppression apparatus) are available for response and are staffed by the volunteer personnel based on their response to the station. Volunteer fire personnel are strongly encouraged not to respond directly to the incident scene. Incident command is provided by the shift Captains unless relieved by either of the Division Chiefs or District Fire Chief.

The operation of TFPD is also significantly impacted by the need for inter-facility transport for EMS patients. These inter-facility transports are not the typical transports that some Fire/EMS organizations engage in, but they are extensions of the original transport provided by the FPD. The TRMC currently does not have overnight/long-term rooms/beds for patients who are brought there by the TFPD or who arrive on their own. If determined that the patient needs further long-term definitive medical care, the TFPD is requested to transport that patient to another facility outside of the area such as Montrose or Grand Junction. The EMS turnaround times for the transport of patients to these facilities may range from 2-8 hours.

The district indicates that it averages approximately 200 inter-facility transports in a year, primarily during the ski season. Prior to November 30, 2022, these transports were primarily provided by the stand-by EMS Volunteer crews of the district. However, in more recent times, the volunteer crews were only providing about 30% coverage to the needs of these transports. Transports that have required coverage exceeding the level provided by the EMS volunteers or having concurrent transport in process require having to rely on on-duty career fire crews for additional coverage.

Currently, this may again involve a mix of the career shift Lieutenant/Paramedic and either a volunteer driver, wildland fire crew driver or an administrative staff member serving as a driver.

During the time of the visit by the consultant team, the district experienced three concurrent inter-facility transports during the night. The parallel need for inter-facility transports from the medical center increases significantly during the ski season, (December to April), due to the influx of tourists and skiers. It is possible that depending on the time of day, and/or day of the week, as many as four of the six on-duty career fire personnel could be pulled out of the fire district for up to five hours handling such transports. This causes great risk for the overall operations at TFPD.

The current plan of the fire district is to hire multiple part-time EMS staff. These personnel are intended to be scheduled to provide a rotation of one person working daily, 12-hour shifts from December 1 to April 2 each year to provide ALS coverage for the inter-facility transports. The intent is that this person is teamed with a wildland crew member to cover the first incoming inter-facility request. Subsequent inter-facility requests would then be handled by the on-duty career personnel, up to the now agreed upon maximum of two transports in process at any one time.

Incidents that require significant numbers of personnel by the fire district, beyond the first alarm assignment, are handled either by the response of fire volunteers, mutual aid from significant distances, or by call-back of career personnel. Due to the high cost and low availability of housing in the fire district, a significant number of career personnel live outside of the immediate response area of the district.

There is also a general aviation airport in Telluride, in which air traffic is regular. There is one major airline that has a minimum of two flights daily into the airport in addition to a significant amount of private air traffic into the airport. Air traffic increases particularly during the height of ski season. The airport has its own fire protection with airport employees staffing ARFF apparatus during the general operating hours of the airport. The TFPD provides additional support and response to aircraft or hangar incidents.

ISO Rating

The Insurance Services Office (ISO) is a for-profit company that rates the ability of fire departments across the country to respond to and be able to handle the fire risks within their community. The Insurance Services Office rating of a fire department is based on four main areas. These include Emergency Communications, Water Supply, the Fire Department and Community Risk Reduction. Each component is graded on a point system after an evaluation. After the points are totaled, a divergence is used to end up with the final score to determine the class that the fire department is awarded. Classes range between a Class 1, which represents the best scoring classification and Class 10, which indicates that no fire department is available.

Currently, the TFPD is rated as a Class 3/3Y as of 2017. This rating applies to any property located within 5 road miles of a recognized fire station. The 3Y rating applies to those properties located beyond 1,000 feet of a fire hydrant but within the 5 road miles of a fire station. Those areas of the

district located outside of a 5-road mile area of a fire station are rated as a Class 10. (Source: ISO Public Protection Classification Document)

The TFPD's point total from 2017 was 78.01, which was only 1.99 points from being rated as a Class 2 department. The areas from the 2017 rating that indicated the most opportunity for improvement include the following:

- Deployment Analysis – Includes the number and proximity of stations to the risks
- Company Personnel – Includes the number of personnel responding to incidents
- Training – Includes the availability of a training facility and the frequency and amount of training for personnel
- Inspection and Flow Testing of the Water Supply

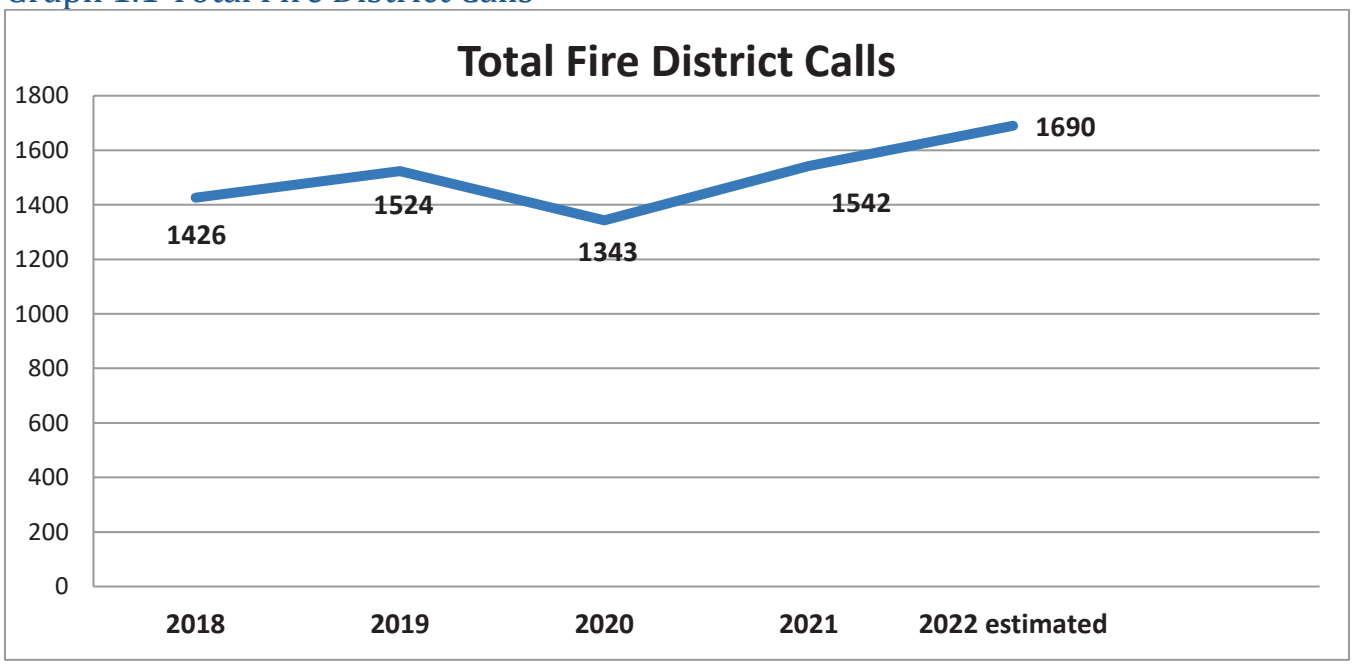
There is additional opportunity for improvement in the Emergency Communications area, but currently, this function is not under the direct control or oversight of the TFPD.

Workload

In 2021, the TFPD responded to 1,542 calls for service. Approximately 54% of the call totals were for Rescue and Emergency Medical Services incidents. This total represented a 14.8% increase in calls from 2020, and an increase of 1.2% from 2019. As of October 12, 2022, the district had responded to 1,365 calls for service, with a projected end of year total of approximately 1,690 calls for 2022. This would represent an increase of approximately 9.6% over 2021 totals or an increase of approximately 24% over the last two years.

The call load within the district is trending upward, but at a slightly slower pace than previous studies projected.

Graph 1.1 Total Fire District Calls

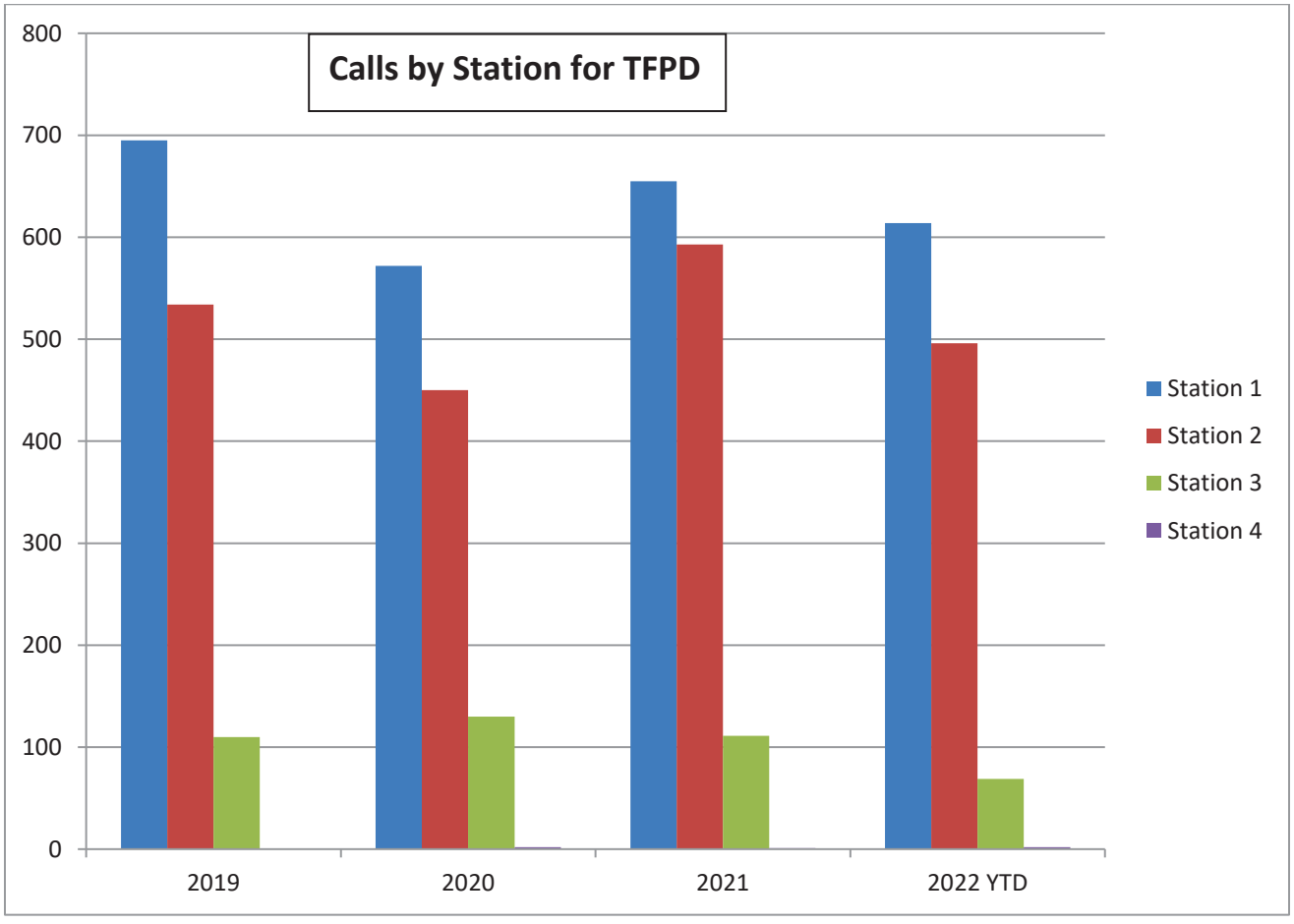


If an average workload trend of 5% increase per year continued over the next five years, the fire district would be responding to approximately 2,100 calls for service in 2027. If a more aggressive annual increase of 9% was seen yearly, the fire district would be responding to almost 2,400 calls for service in 2027.

A review of the response data from 2021 and 2022 (year to date) indicates approximately a 9-10% call concurrency rate. That means that 9-10% of the time, an additional call is dispatched within 30 minutes of the prior call. Currently, due to the low volume of responses of the fire district, this number is less than 150 times a year. The rate does not indicate severity of the first or second call, or how long the call lasts. It can be a measure of resources not being available in their primary response area to respond to an additional call, and that resources may have to be dispatched from other, outlying stations. **The call concurrency rate should be monitored by the fire district to see if it increases. If this rate continues to increase, along with the overall call volume, that might be an indication of the need for additional resources or stations to respond.**

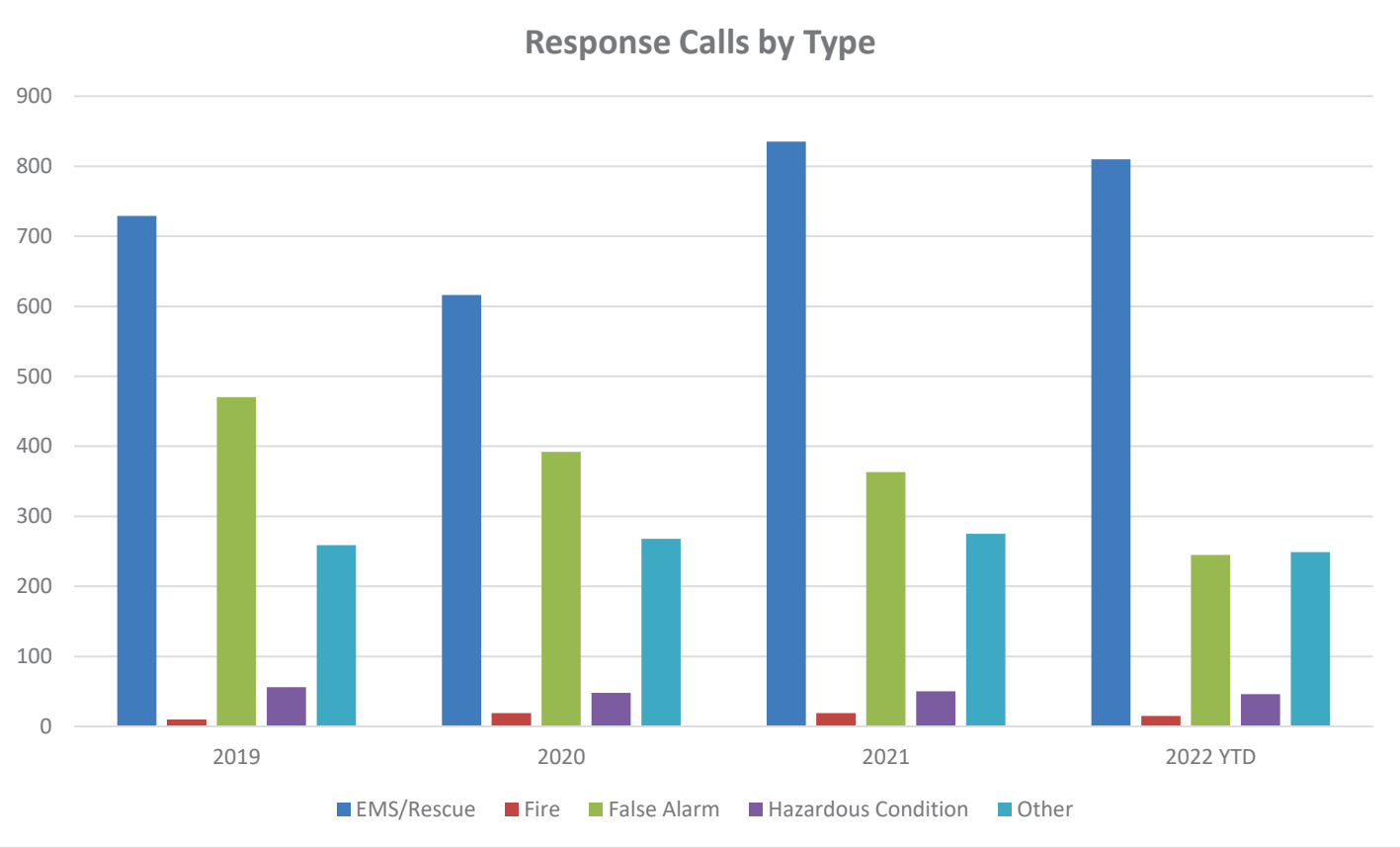
The call load for each fire station is also included below. Over 80% of the total annual workload of the fire district occurs within the Town of Telluride and Mountain Village and responses by Stations 1 and 2.

Graph 1.2 Calls by Station for TFPD



As is typical in most integrated fire/EMS organizations, EMS calls are the largest call type. Below are the response call types for the district over the last four years. The district has a high proportion of false alarms/alarm activations. The "Other" category includes service calls and good intent calls.

Graph 1.3- Response Calls by Type



The fire apparatus response times, dispatch to arrival, fractile, and average, for the periods of 2019 to 2021 are below.

Table 1.1 Response Times in 2019

Incident Zone/District	Total Incidents	80th Percentile Response Time	90th Percentile Response Time	Average Response Time	Median Response Time
Station 1	404		15 minutes	7.47 minutes	6 minutes
Station 2	324		16 minutes	7.74 minutes	6 minutes
Station 3	63	21 minutes	24 minutes	11.29 minutes	9 minutes

Table 1.2 Response Times in 2020

Incident Zone/District	Total Incidents	80th Percentile Response Time	90th Percentile Response Time	Average Response Time	Median Response Time
Station 1	547		18 minutes	9.09 minutes	7 minutes
Station 2	439		21 minutes	11.44 minutes	10 minutes
Station 3	99	28 minutes	35 minutes	18.52 minutes	16 minutes

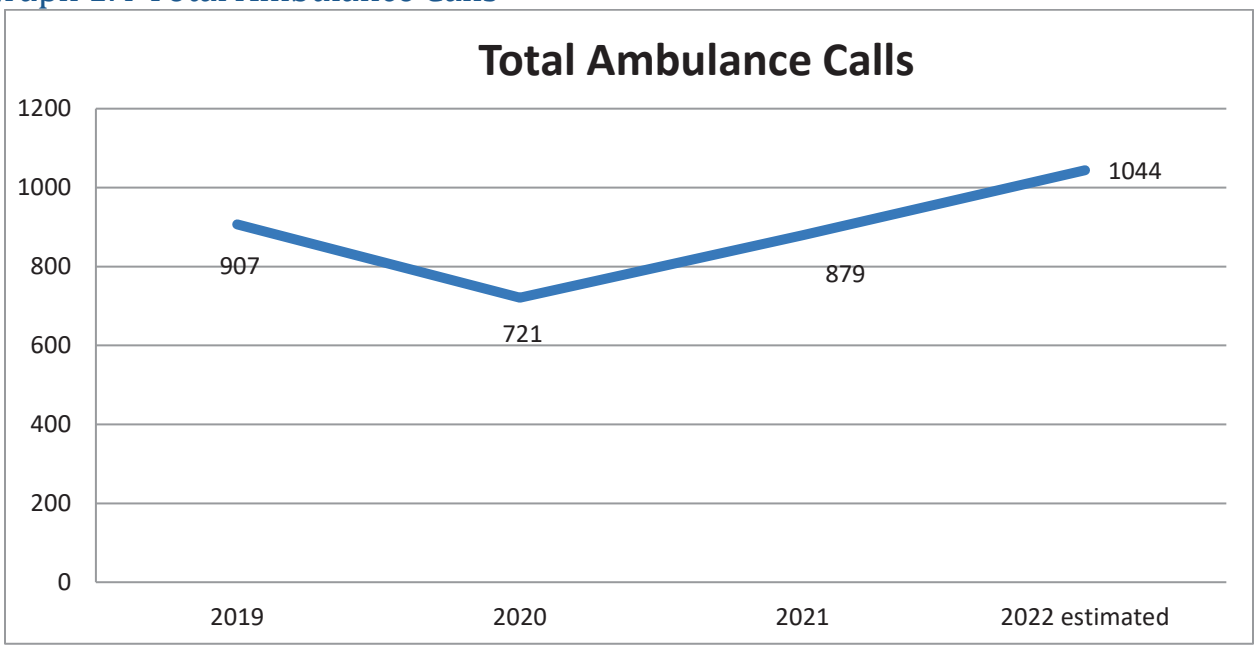
Table 1.3 Response Times in 2021

Incident Zone/District	Total Incidents	80th Percentile Response Time	90th Percentile Response Time	Average Response Time	Median Response Time
Station 1	711		17 minutes	8.98 minutes	7 minutes
Station 2	653		18 minutes	9.73 minutes	9 minutes
Station 3	145	24 minutes	27 minutes	17.23 minutes	18 minutes
Station 4	9	21 minutes	21 minutes	16.03 minutes	19 minutes

In addition to the fractile response times above, the district also provided their "turnout" times at a 90% fractile time. Some of that data did not appear to match the response levels as indicated in the total "response time" reports. However, those fractile "turnout" times appeared to be significantly large, at between 8-11 minutes for 90% compliance over the last three years. The average turnout times were typically between 4-6 minutes. This data is abnormally large compared to the desired standards within 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." Further analysis of this data set is warranted as it may also be a function of how the emergency communications system center, WestCO, is time stamping calls that are dispatched.

The ambulances within the fire district responded 879 times in 2021. This was a 21.9% increase over ambulance runs in 2020 and a 3% decrease from ambulance runs in 2019. As of October 12, 2022, the ambulance runs totaled 842, with a projected 2022 total of approximately 1,044. This would represent an increase in responses of 44.8% from 2020 and an increase of 15% from 2019.

Graph 1.4 Total Ambulance Calls



The average ambulance run times for the district are included below. The "enroute to on-scene times" appear to be within a normal range based on the distances and terrain within the district. However, the "unit dispatch to enroute times" appear excessive and similar to those of the total response counts and add to an increased "at patient side" time frame which can impact patient care. These times should be evaluated for accuracy within the TFPD or from WestCO.

Table 1.4 EMS Response Times

Year	Average Unit Dispatch to Enroute (Minutes)	Average Unit Enroute to On Scene (Minutes)	Average Patient Arrival to Unit Back in Service (Minutes)
2019	5.77	7.99	65.73
2020	5.57	8.08	62.89
2021	6.19	7.36	67.88
2022 YTD	6.14	8.28	60.20

In looking at the EMS call totals by day of the week and time of day (see below) for the last three years, including 2022 YTD, the spread of incidents is typical to when people are most active. For the TFPD, the increase of EMS calls starting on Thursday through Sunday is indicative of the increase in tourist population during weekend for festivals and ski season. Saturday afternoon is the highest period for the fire district for EMS calls. This data should be monitored for trends and changes in the future to consider adjusting EMS unit staffing, if needed.

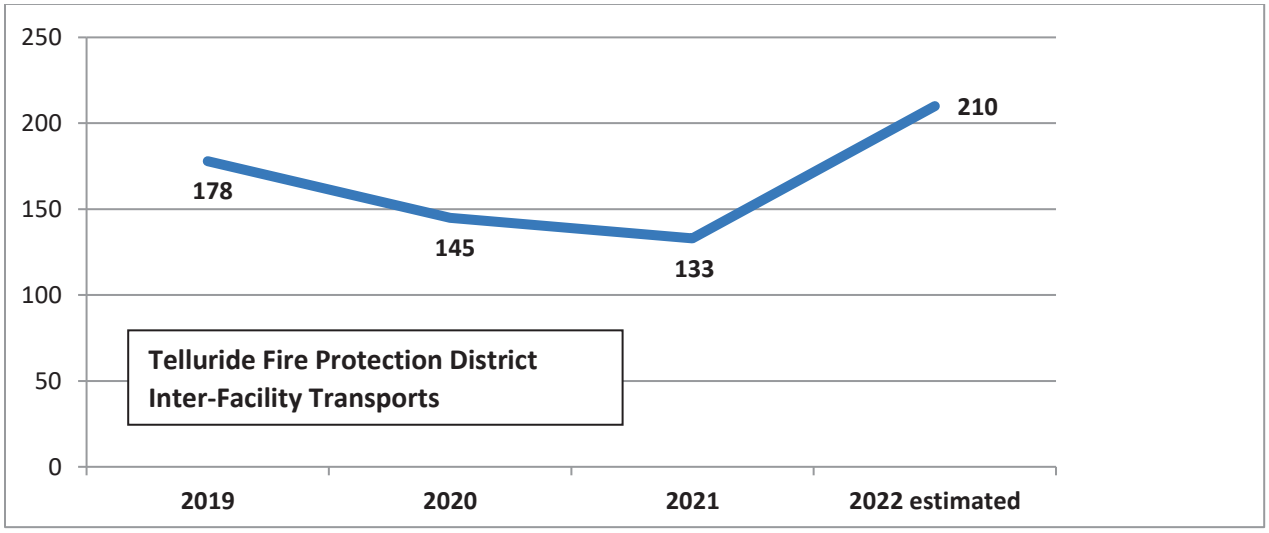
Table 1.5 Trends of EMS Calls Throughout the Week

EMS Calls by Day of Week and Time of Day
Years 2019-2022 YTD

Hour	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Total
0:00-2:59	53	32	35	27	30	35	51	263
3:00-5:59	25	16	13	18	17	17	31	137
6:00-8:59	26	37	34	30	24	32	26	209
9:00-11:59	60	70	41	81	67	50	68	437
12:00-14:59	88	86	61	82	100	94	102	613
15:00-17:59	95	97	80	67	90	78	115	622
18:00-20:59	79	107	68	88	74	86	92	594
21:00-23:59	74	55	55	48	75	64	93	464
Total	500	500	387	441	477	456	578	3339

As part of the EMS system, as described earlier, the fire district also provides inter-facility transports to medical facilities outside of the Telluride area in order to deliver patients to more definitive medical care. Transferring to medical facilities outside of the Telluride area is necessary due to the bed and long-term care limitations of the regional medical center. In 2021, the fire district reported 133 inter-facility transfers. The 2022 estimated number of transfers is 210, a 58% increase over 2021.

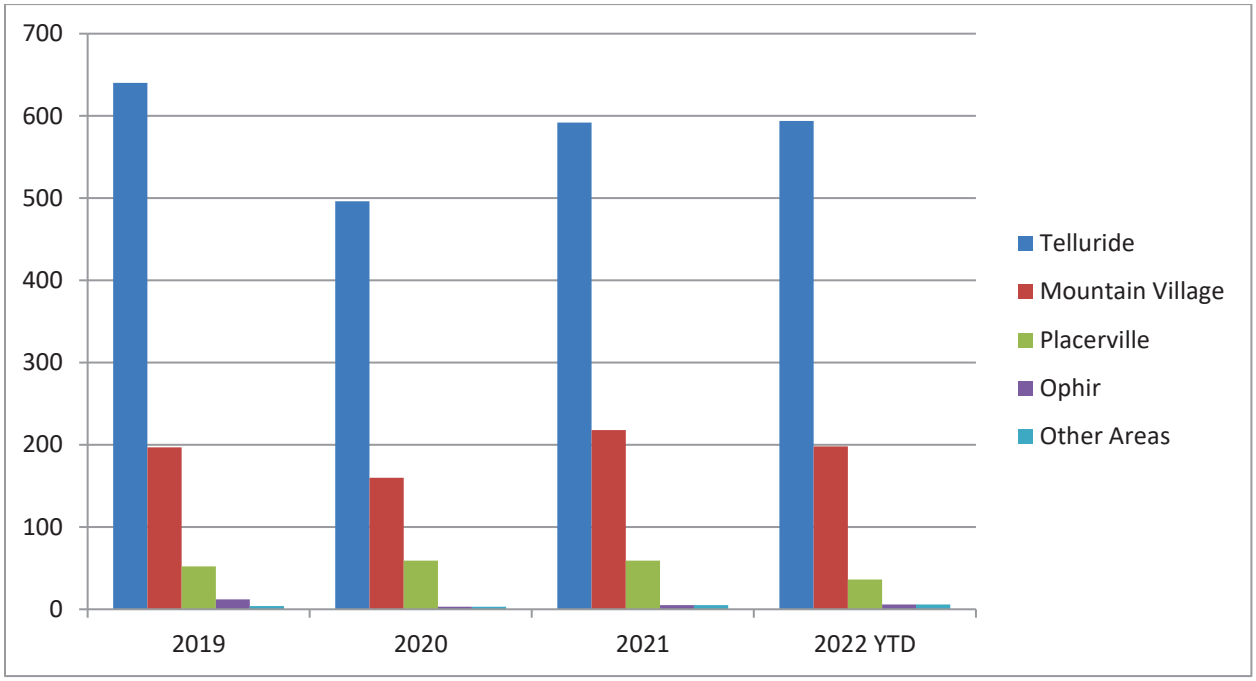
Graph 1.5 TFPD Inter-Facility Transports



The majority of the ambulance calls are centered in the Town of Telluride, with the Town of Mountain Village having the second most concentration of calls. This would be expected based on the population densities in both areas. On average, over 90% of all ambulance calls occur within

the Town of Telluride and Mountain Village. The distribution of ambulance calls within the fire district includes:

Graph 1.6 Yearly Distribution of EMS Calls Within the Fire District



Volunteer Fire System

The Fire District is currently in a state of change as it has transitioned from a completely volunteer organization into a combination staffed organization over the last 3 years. The volunteer fire system provided all responses prior to the hiring of the career staffing for Stations 1 and 2. The volunteer system still provides the entirety of response from Station 3 (Placerville). Once the career personnel were hired, the volunteer personnel were organized into Battalions at each station with shifts to match the 48/96 coverage provided by the career staff. The volunteers are expected to communicate with the Station Captain at their assigned station during their shift. In addition, they are expected to participate in training that occurs at the station with the career shift. The volunteers are only expected to respond to calls during their assigned shift times unless there is a significant incident.

This change in the volunteer response system has been somewhat confusing and disappointing in the opinion of the volunteer members. Through interview sessions facilitated by the consulting team, it was revealed that some volunteer members do not feel that they can attend training with any frequency that occurs on the shift because the career staff trains mostly in the daytime hours when volunteers might not be available. In addition, because the career staff automatically responds to every incident without waiting for volunteer personnel, the volunteer personnel typically respond to the station only to wait for the career crew to return. The volunteers do not feel they are able to effectively contribute to the organization and respond on apparatus to

incidents. This has caused concerns within the volunteer ranks. While the consultant team was onsite, the District Fire Chief and volunteer personnel met to discuss concerns and are drafting a new approach to volunteer training and response, to include a platoon response to second alarm pages.

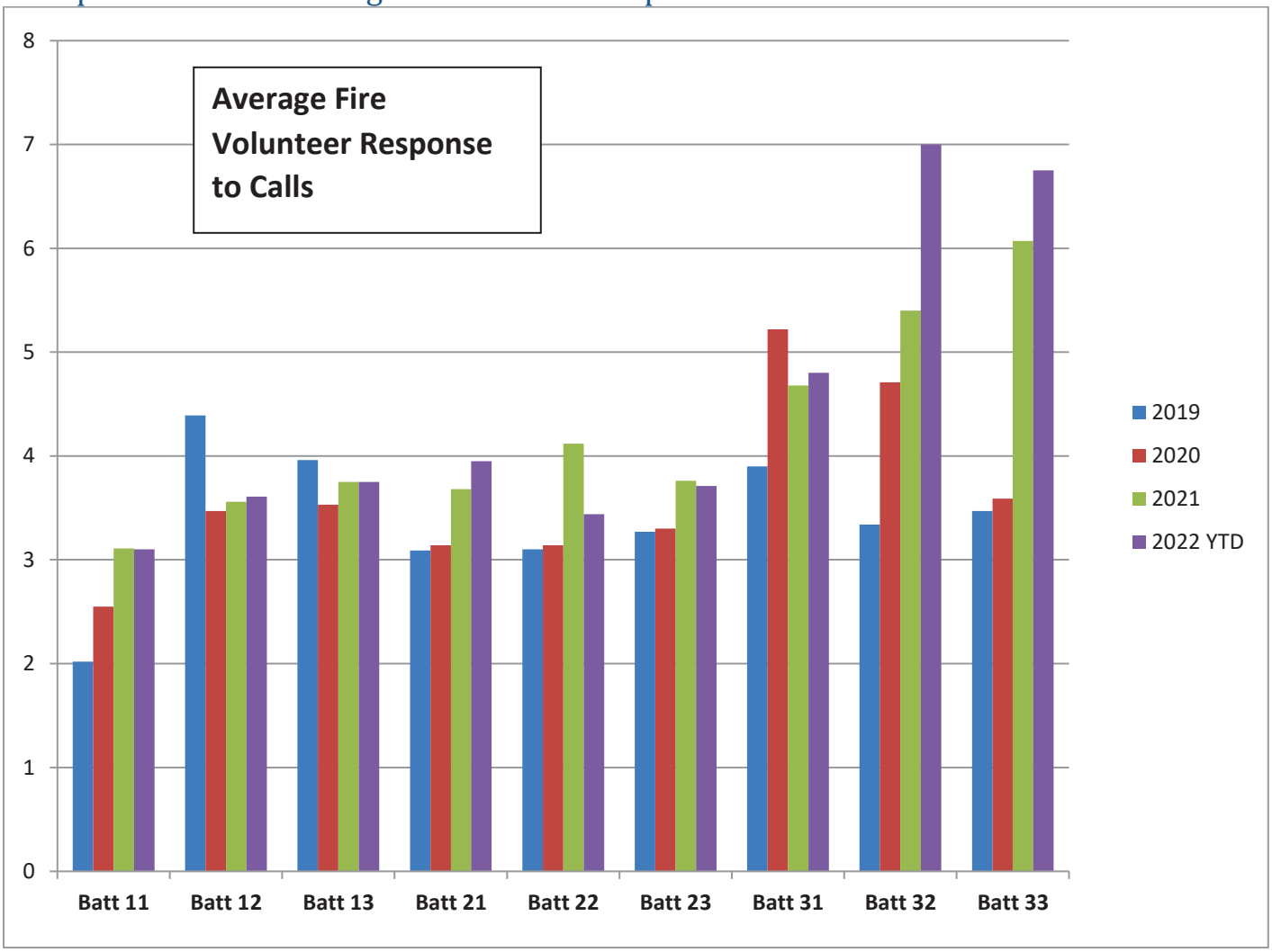
Even with the transition to combination staffing, the volunteer response to incidents has remained stable over the last few years and has even increased at Station 3 (Placerville) on two of the three shift assignments. Below is the average volunteer response per call from 2019 to 2022 YTD. For reference purposes, the battalion assignments align to the stations:

Battalions 11, 12 and 13 – Station 1 (A, B and C Shifts)

Battalions 21, 22, and 23 – Station 2 (A, B and C Shifts)

Battalions 31, 32 and 33 – Station 3 (A, B and C Shifts)

Graph 1.7 Annual Average of Volunteer Response



Training

The Fire District has had a somewhat inconsistent training program over the last few years for various reasons; including the transition to combination staffing, COVID and no dedicated training officer. However, they are in the process of appointing a full-time training officer with the hopes of improving the training program for all personnel.

In a limited review of their training hours, the department averaged 37.2 hours of training per member (career and volunteer) in 2021 and 26.8 hours of training per member in 2022 (YTD). The number of training hours per member varied widely from a very small number for some personnel, and much larger numbers for others.

Benchmark Data

Using benchmark data from other fire departments can be an alternate way to assess the performance or operations of an organization. As part of this project, MissionCIT, LLC conducted a basic benchmark survey with five other fire protection districts within Colorado identified by the Telluride Fire Chief as being similar. Of the five districts surveyed, four responded, for an 80% return rate.

Some of the fire districts operated very close to that of Telluride, while others do not for various reasons. Most use a combination of career and volunteer staffing to provide both fire and EMS response. In addition, most do not staff all their fire stations, but rely on volunteer or call back responses. Regarding response activity, Telluride has the most active calls per 1,000 population rate and the largest coverage area per fire station. All the responding agencies have times of the year with an influx of population due to tourists, some of which more than double their coverage population at any given time. The millage funding rates for all the benchmark agencies is much higher than that of Telluride, which is due to the level of their assessed valuations of property but could potentially provide support for Telluride in any attempt they might make to increase funding to make system improvements.

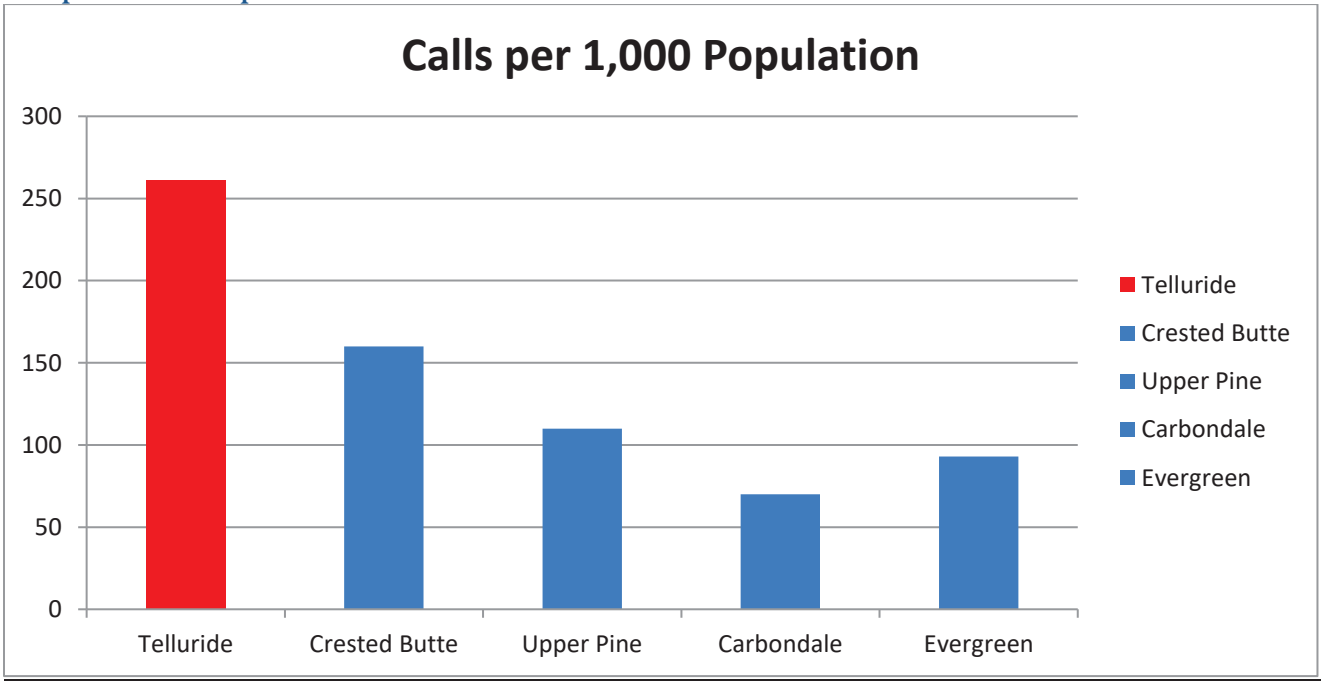
A small summary of each fire protection district who responded to the survey is below.

Table 1.6 Comparative Data Between TFPD and Neighboring Districts

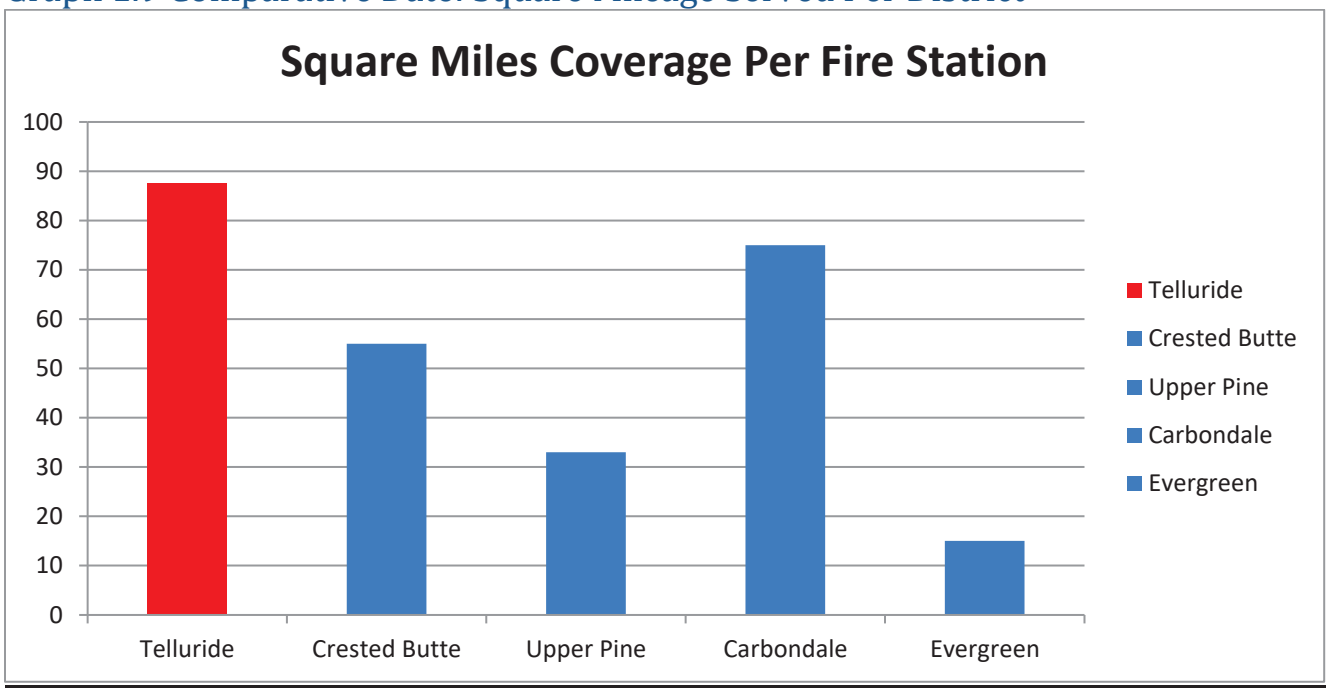
District Characteristics	Telluride	Crested Butte	Upper Pine	Carbondale	Evergreen
Coverage area	350 square miles	220 square miles	294 square miles	300 square miles	120 square miles
Population Protected	5,900	5,000	12,700	20,000	28,000
Peak Population	21,000	15,000	30,000	40,000	30,000
Millage Rate	4.315	7.349	10.9	10.47	12.258
Number of Fire Stations	4	4	9	4	8
Number of Staffed Fire Stations	2	1 or 2	4	2	0
Total Operational Staffing	18 career 35 volunteer	16 career 12 part time 24 volunteer	32 career 6 part-time	24 career 8 part-time 30 volunteer	12 career paramedics 10 part-time paramedics 80 volunteers
Number of Engine Co.	4	3	8	6	7
Number of Aerial Co.	2	1	0	2	1
Number of staffed ambulances	2	2	3	3	4
Total Calls per Year	1,542	800	1,400	1,400	2,600

A selected summary of graphs from the benchmark data compared to that of the TFPD are below. A summary of the full survey results is included in Appendix D of the report.

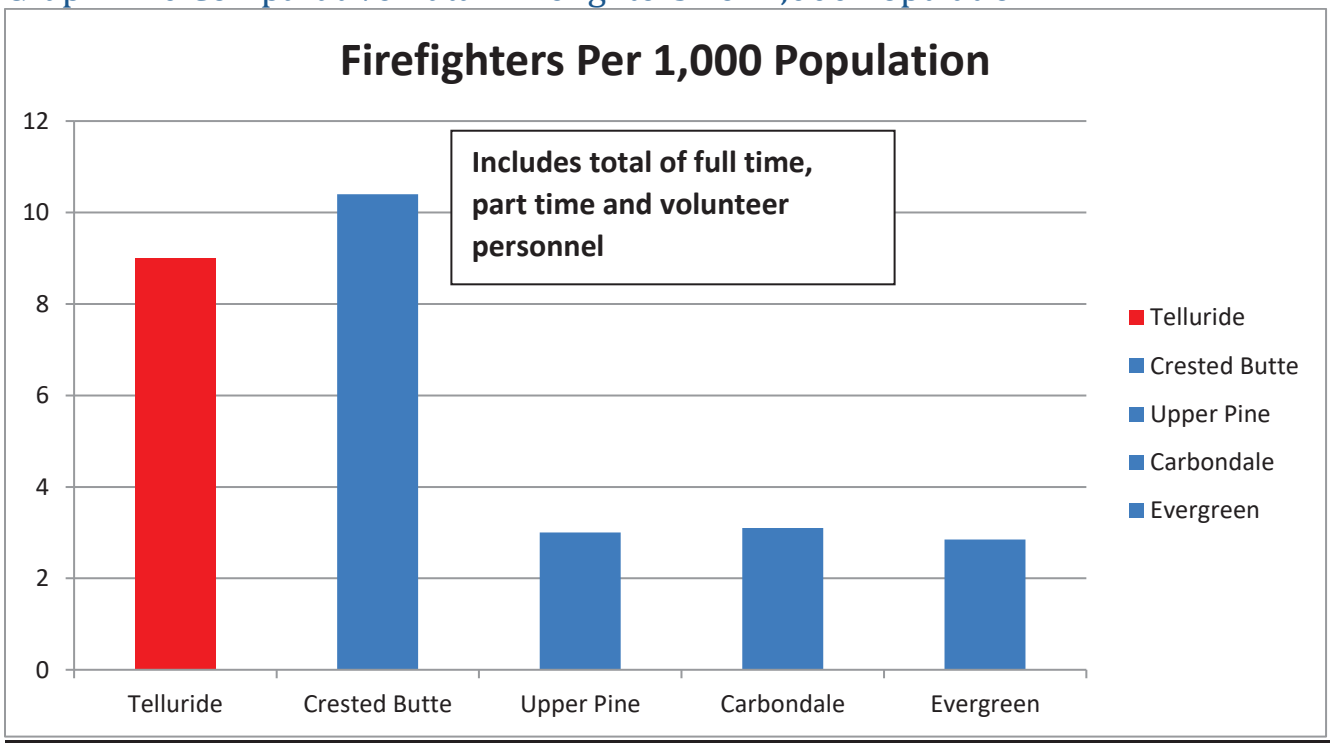
Graph 1.8 Comparative Data: Calls Per District



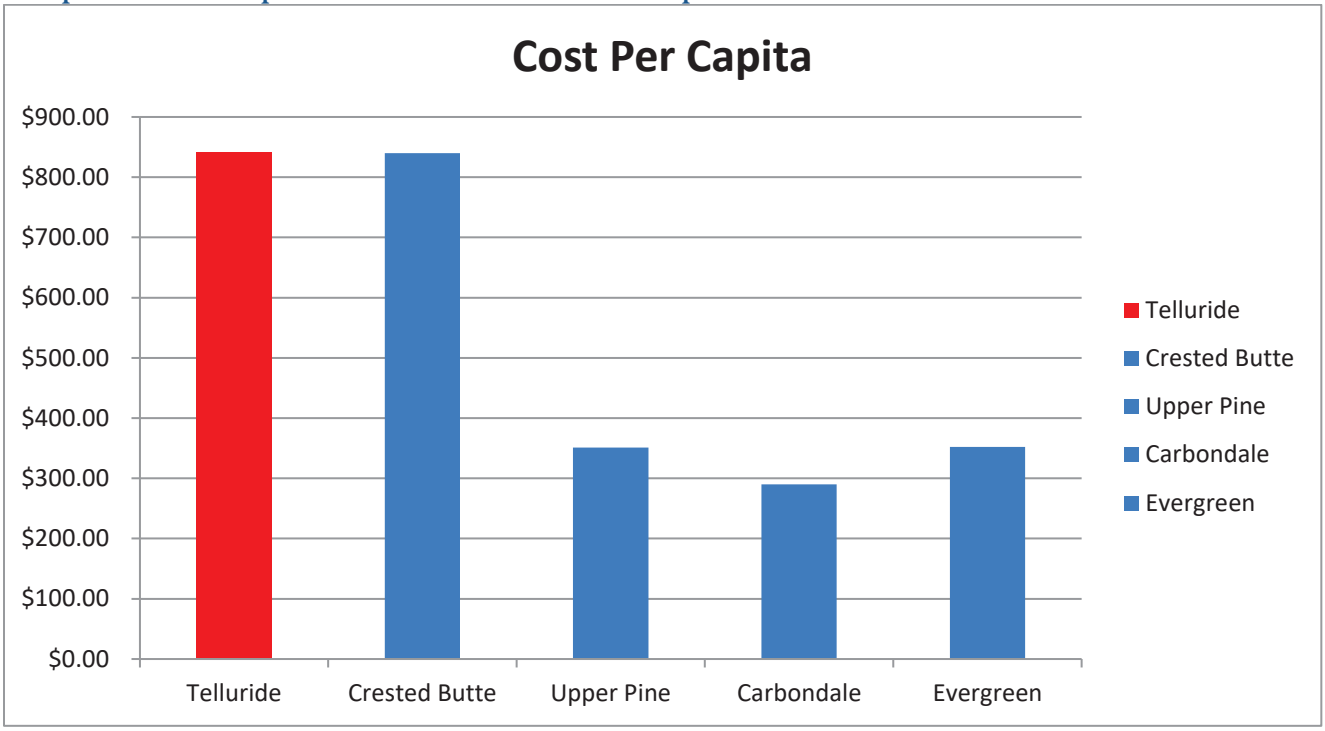
Graph 1.9 Comparative Date: Square Mileage Served Per District



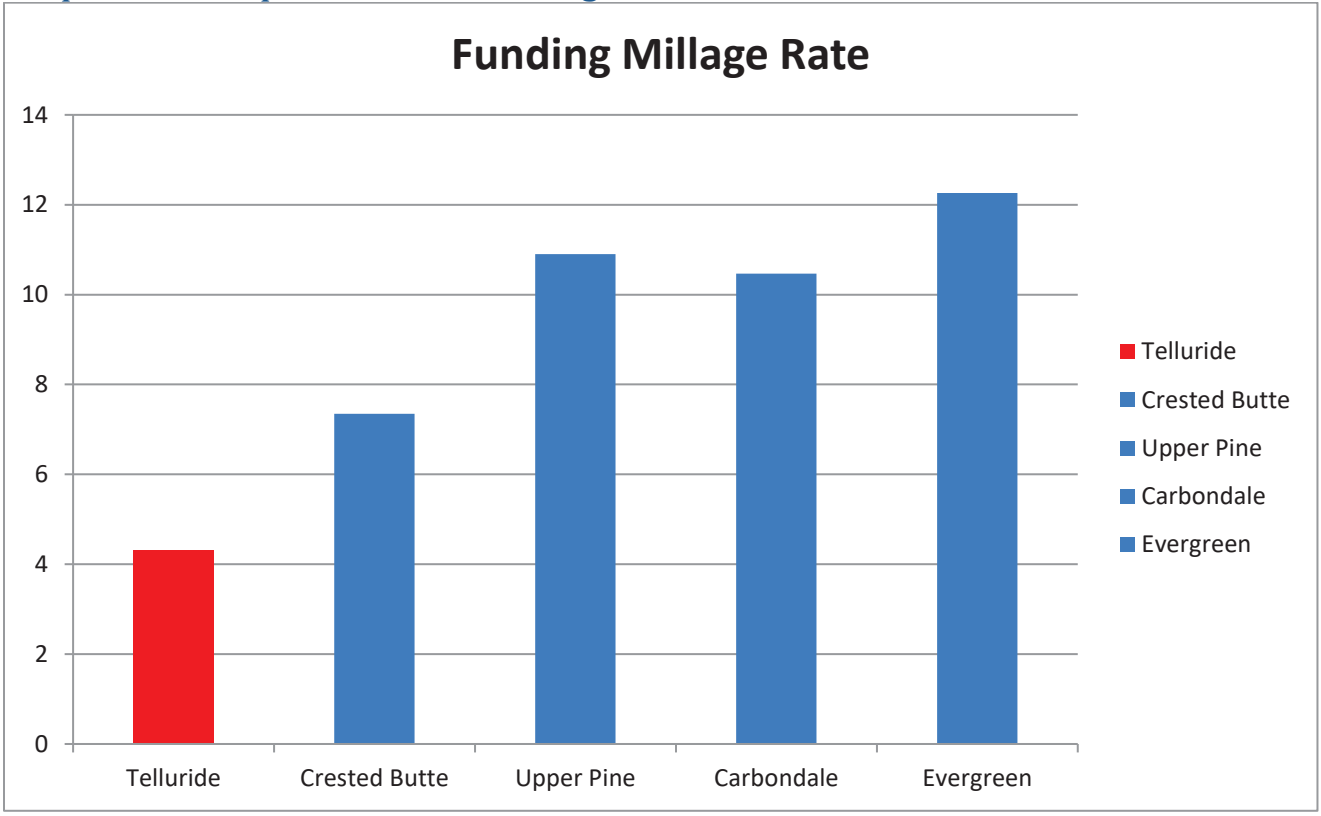
Graph 1.10 Comparative Data: Firefighters Per 1,000 Population



Graph 1.11 Comparative Data: Cost Per Capita



Graph 1.12 Comparative Data: Millage Rate



Section 2 – Strategic Planning Process

MissionCIT, LLC conducted a multi-faceted process as part of developing the Strategic Plan for the TFPD. Online assessment surveys were distributed by the district, to both internal and external stakeholders. The surveys provided anonymity to respondents and were designed to obtain the perspective of each group regarding the operations of the district, and where they can improve. The surveys provided to the external stakeholders were also designed to capture their priorities of the services that should be provided by the district and where they need to concentrate their efforts.

Of the internal members there are twenty-seven career members (operational and administrative) and thirty-five volunteer members, twenty of whom have active status. A total of twenty-seven members responded to the Internal Member Survey. Upon closer inspection of the demographic information, a 74% response rate was obtained from career members. However, there was only a 20% response rate from the total volunteer population. Of the sample size, 74% of respondents identified as career members with 26% identified as volunteer members. Seven percent of respondents indicated their status as Command Staff, with 33% of respondents as Company Officers, 44% as Line Firefighters, and 15% as Support Personnel. Finally, the breakdown of respondents' years of service are as follows: 33% are between 1 and 5 years; 22% are between 6 and 10 years; 33% are between 11 and 20 years; and 11% have 21+ years of service. For a full visual summary of each survey item, please see Appendix B.

With regards to the external stakeholders, there were thirty-eight respondents. Of these respondents, 42% identified as Citizens; 29% identified as Elected Officials; 18% identified as Service Partners; and 11% identified as Other. For a full visual summary of each survey items, please see Appendix B.

In addition, the on-site consultant team conducted nine in-person meetings with internal and external stakeholders to gain their perspective on the Strengths, Weaknesses, Opportunities and Challenges (SWOC) within the district. It is important when looking at an organization and developing long term goals and objectives for the Strategic Plan that the perspective of both members and outside stakeholders be taken into consideration. Each group has its own, unique view of the organization and can add value to the end product and direction of the organization. The following groups are included in the SWOC summaries.

External SWOC Groups	**Internal SWOC Groups**
- Area local government leaders	- Fire District Board of Directors
- Citizens	- Administrative Staff
- Public Works/Parks and Recreation	- Shift Personnel (A, B, C)
- Other Emergency Services Partners	- Volunteer Firefighters

The full results of the in-person SWOC sessions are provided at the end of the report in Appendix A. However, a summary of the External and Internal SWOC sessions is provided below. The results of

the online assessments and the SWOC sessions were used to identify key focus areas that form the basis of the organization's strategic goals and objectives moving forward for a five-year period.

Telluride Fire Protection District - Stakeholder Sessions

Figure 2.1 External Stakeholders Summary

Strengths	Weaknesses
- Well-funded - Personnel and equipment - High community support - Excellent reputation - Training Program - High level of service - Competent Chief - Volunteer base - Legacy organization in Telluride - Great mutual aid and inter-governmental relationships - Affluent area - Shift to career staffing focus - Program/Festival coordination - Response times - Ideas/Technology	- Availability/Cost of housing - No dedicated training facility - "Effective" communications with the public - Transition to a combination system - Infrastructure - Priority maintenance - Recruitment - Response times/distances - Generational changes
Opportunities	**Challenges**

- New hospital to be built
- Future government provided housing
- Centralized maintenance facility
- Alternative response apparatus design
- Public assistance
- Affordable housing
- Improved codes and standards
- Agency coordination
- EOC Training
- Fire Protection system coordination
- Joint training
- Further partner with the Town
- Technology
  ○ Additional tower locations
  ○ Improving fiber to Stations 3 and 4
  ○ GIS improvements
- Continued volunteer engagement
- Recruitment of personnel
	- Volunteer organization – In transition
	- Housing – Homes and bunk space
	- Aging water infrastructure
	- Wildland mitigation
	  ○ Funding
	  ○ Deferred
	- Climate change on water supply and wildfires
	- Dual dispatch system – WestCO vs. Sheriff's Office
	- Coordination with outside agencies
	  ○ US Forest Service
	- Community access
	- Inter-facility transfers
	- Communication with the public
	- Public involvement
	- Engagement in volunteer recruitment and retention
	- Staffing
	- Staffing for public events
	- Facility improvements
	- Improvement of facilities

Figure 2.2 Internal Stakeholders Summary

Strengths	Weaknesses

- Personnel
  ○ Well trained – balance of experience
  ○ Attitudes
  ○ Commitment
  ○ Community focused
- Built in suppression for residential occupancies > 3600 ft2
- Community support
- Stability in department
- Strong culture
- Volunteer fire personnel
- Community presence – visibility
- Municipal water supply
- Equipment for needed tasks
- Educational opportunities
- Good revenue – Strong budget
- Communications with Operations Captains
- Inter-agency cooperation
- Good HR staff
- Crew integrity – good communications
	- Housing for staff – career and volunteer
	- Area coverage
	- Lack of definitive care facility
	- Pressure from inter-facility transports – Draw down staffing
	- Executive communications
	  ○ Methods
	  ○ Deliveries
	- Facilities – space and equipment
	- Span of control
	- Compensation
	  ○ No automatic cost of living
	  ○ No pay step plan
	- Communications on training from shift officer
	- Leadership – Chief/Division Chief
	- SOP's for Volunteers
	  ○ Response
	  ○ Defined volunteer role
	  ○ Vol. Job description
	- Training – availability and consistency
	- Connection with fire volunteers
	- Accountability of fire volunteers
	- Communications
	- Apparatus Maintenance
	  ○ Volume of equipment
	  ○ Accountability
	  ○ Units Out of Service
	  ○ Operating with broken equip.
	- Organizational chart vs. reality
	- Active 911 reliability
	- Decline of volunteer backfill
	- Health, safety and wellness
	  ○ Apparatus exhaust
	  ○ OSHA Fit Testing
	  ○ No Physicals
	- Career development plan

Opportunities	Challenges

- Community risk assessment
- Recruitment and retention of volunteers
- Increased revenue
- Improved radio communications system
- Wildfire mitigation
- Strengthen building codes
- Volunteer integration
- Training facility
- Facility upgrades/replacement
- Span of control
- Consider other apparatus vendors
- Expanding wildland staff
- Benefits
  ○ Increased sick leave accrual cap
- Developing a consistent training schedule
- Establish SOP's
- Health and Safety
  ○ Exhaust systems
  ○ Cancer prevention
  ○ Gear storage
  ○ Physicals
- SOG's – More defined and consistent procedures
- MDC's in apparatus
- Organization can create its future
- Bring Station 3 into the system regarding operational procedures and volunteer officers
- Continued community involvement
- Replace TEMTA activities
- Other outreach
- Active shooter training
- Cross training of volunteers
- Review of Haz Mat response status
	- Increased call load
	- Value of volunteers
	- Training requirements
	- Rural water supply
	- Managing the transition to combination system
	- "Change" – "Traditions"
	- Equal access to educational opportunities for career and vol.
	- Workload of specialty/admin. Positions
	- Cost and availability of housing
	- Communications
	  ○ Conflicting messages
	  ○ "Massive" communication inconsistencies
	  ○ Little to none from leadership
	  ○ Different modes – groups, methods, etc. "Google chat"
	  ○ Delays in message delivery
	  ○ Not integrated between Chief and Division Chiefs
	- Organizational structure
	- Time of training
	- New training officer support
	- Volunteer on-call schedule
	- Growing pains – Loss of EMS vol.
	- Inter-facility transfers
	- Inconsistent operations by shift and positions
	- Staffing for community events
	- Volunteer management roles, responsibilities, training
	- No integrated chain of command
	  ○ Dual hierarchy
	- Long term effects of inter-facility transports
	- Clarification of roles/responsibilities

Strategic Themes

From the SWOC exercise, there were multiple common themes that were revealed as possible focus areas. These included the following.

- Organizational communications
- Fire District Training
- Community Risk Reduction
- Member Health and Safety
- Community Involvement
- Service Delivery/Safe Staffing
- Volunteer System
- Stations/Infrastructure
- Organizational Structure/Employee Benefits

These themes were raised by both the internal and external stakeholders during our sessions. These focus areas are used to form the organizational goals for the TFPD. Within each goal specific objectives action plans are delineated. Together, these goals, objectives, and action steps create the Strategic Plan for the district moving forward. The Strategic Goals below are in no priority order.

Strategic Goals

Goal 1 – Improve organizational communications through identified standard processes and procedures

Goal 2 – Develop a district wide training plan utilizing the newly appointed Training Officer

Goal 3 – Continue with a comprehensive Community Risk Reduction Program

Goal 4 – Develop a comprehensive member Health and Safety program within the fire district

Goal 5 – Continue to engage the Community in public education and public relations efforts

Goal 6 – Implement fire and EMS service delivery improvements through the adoption and implementation of the Telluride Fire Protection District Master Plan as presented to the district

Goal 7 – Develop a long term, strategic approach to the recruitment, use and retention of volunteer fire personnel within the district

Goal 8 – Continue with the long-term plan to improve fire station facilities and infrastructure within the district

Goal 9 – Modify the organizational structure of the TFPD for increased efficiency and effectiveness, including the development of long-term human resource strategies for both career and volunteer personnel

Mission, Vision, Values Statements

As part of the scope of work with the TFPD, MissionCIT, LLC was asked to review the existing Mission Statement, Vision Statement and Organizational Values with the internal stakeholders for relevancy and accuracy. These statements were reviewed in prior strategic plans (2015) with minor changes.

At the end of each SWOC session with internal stakeholders, the consultant team reviewed the current mission, vision and values with the groups. They were asked if the statements were still current and relevant. Below is a summary of the comments received.

Mission Statement

The current mission statement states:

"Protecting life, property and the environment, by responding to the emergency needs of our community"

Most comments received stated that members were comfortable with the current mission statement. Several comments were received to add the term, *preventing and*, before the word responding in the original mission statement.

One group of stakeholders desired to completely re-write the mission statement to say:

"Protecting the needs of our community through prevention, preparedness, and response"

Current Vision Statement

The current vision statement for the fire district states:

"We are a community-centric volunteer organization, guided by outstanding leaders and sound fiscal practices. We are a team of competent professionals who, through training and professional development, consistently and safely respond to all our community's emergencies. We embrace our rich heritage, yet enthusiastically face tomorrow's challenges for a safe community"

Most of the stakeholder discussion centered on the current vision statement and suggestions made to update and modify it. Most wanted to remove the word *"volunteer"* from the statement as the department is now combination in nature and either have the statement stand-alone without it or add the word *"combination"* in its place. In addition, there were several comments to remove some of the *"fluff"* wording in the statement, such as *"outstanding", "competent",* and *"rich heritage"*. There were also comments to change the word *"leaders*" to say *"members"* and to add the word *"prevention"* after the word *"training"*.

One of the stakeholder groups suggested a complete re-write of the vision statement using phrases such as:

- Excellent
- Consistent response

- Constantly evolving and improving
- Striving for growth and improvement
- Economically, fiscally and environmentally responsible
- Committed professionals
- Adapting to a changing community
- Member and community wellness

Core Values

The current list of core values for the fire district includes:

- Volunteerism
- Integrity
- Excellence
- Professionalism
- Teamwork
- Commitment

About half of the stakeholder groups indicated that they were in agreement with the current list, while the other half indicated that the value "Volunteerism" should be removed since the organization was now combination in nature.

Recommendation
Due to the length and interruptions of some of the stakeholder sessions, the consultant team was not able to gather enough comments to make specific wording suggestions for the mission, vision and values statements. As a result, TFPD should form a small, representative group of the organizational members to further refine and define their Mission Statement, Vision Statement and Core Values. It is also suggested that the core values be defined with several sentences as to what each value means so that there is consistency of understanding by the members of the organization.

Strategic Plan

As a result of the strategic planning process conducted by the MissionCIT, LLC consultant team, the following are the recommended Goals and Objectives for the Telluride Fire Protection District for the next 5 years. These goals and objectives were guided by the comments and feedback obtained by the internal and external stakeholders within the organization.

Goal 1 – Improve organizational communications through identified standard processes and procedures
Objective 1-A Develop a process of communications from the executive staff so that there is consistency and one coordinated message being communicated
Objective 1-B Standardize the method of communications within the organization to one core method (Memo, email, Google Chat, Text, etc.) for important and daily communication messages
Objective 1-C Develop a limited number of established “groups” within the email system, and/or the identified primary method of communications within the organization
Objective 1-D Establish guidelines and expectations of the level and degree of communications that are expected of career personnel when they are not on-duty
Objective 1-E Establish guidelines and expectations of front-line supervisors for communicating information and messages received from the executive staff to their personnel

Goal 2 – Develop a district wide training plan utilizing the newly appointed Training Officer
Objective 2-A Establish a Training Committee consisting of the Division Chiefs, Front Line supervisors and volunteer personnel to establish a training calendar for regular, scheduled training for all personnel based on identified needs, position requirements and state requirements
Objective 2-B Develop a consistent and regular training calendar for all volunteer personnel so that it meets their needs and availability
Objective 2-C Provide the Training Officer with an identified training budget to purchase any needed equipment or to provide tuition assistance for outside training participation by members
Objective 2-D Develop a Standard Operating Procedure for out of area course attendance and reimbursements applicable to all front-line career and volunteer personnel to ensure consistency and fairness
Objective 2-E Work to orient and train the Training Officer position within the organization to also serve as an Incident Safety Officer for response to significant incidents
Objective 2-F Develop a plan to find property and construct a training facility to provide regular fire and rescue skills training to all personnel and that could also be used on a regional basis

Goal 3 – Continue with a comprehensive Community Risk Reduction Program
Objective 3-A Continue to work towards the installation of automatic fire sprinkler systems in all newly constructed residential construction within the district through code modifications
Objective 3-B Continue to work towards the retrofit installation of automatic fire sprinkler systems in commercial construction within the district through code modifications
Objective 3-C The Fire Chief should continue to play an active role, within the community, to push the improvement and upgrade of the water infrastructure system for the fire district
Objective 3-D Continue to solicit for grants and funding methods to continue with wildland fire mitigation work in the high-risk areas of the district
Objective 3-E Continue to investigate and work to invest in technology that will help with wildland fire risk reduction, such as the PANO.AI project, additional suppression measures and products
Objective 3-F Continue to actively work at the community/HOA level to provide information on the wildland fire risk and work with them to implement wildland risk reduction improvements to their communities
Objective 3-G Develop an emergency management training plan with other local agencies and annually hold an Emergency Operations Center exercise, such as a Multi-Agency Coordination (MAC) exercise to walk through “what if” scenarios (wildfire, avalanche, severe drought, festival emergency, etc.).

Goal 4 – Develop a comprehensive member Health and Safety program within the fire district

Objective 4-A

Conduct an audit of the department following NFPA 1500, "Standard on Fire Department Occupational Safety, Health, and Wellness Program", to identify safety and health gaps within the organization

Objective 4-B

From an NFPA 1500 audit, develop a comprehensive safety improvement plan to work towards an improved environment within appropriate funding mechanisms

Objective 4-C

Develop a plan to invest in fire station improvements to reduce PPE contamination from exhaust fumes and reduce the emission of exhaust fumes through appropriate mitigation techniques

Objective 4-D

Work to implement and provide NFPA 1582, "Standard on Comprehensive Occupational Medical Program for Fire Departments", physicals to all new hires and volunteers as well as all existing personnel on an annual basis

Objective 4-E

Work to develop a department wide physical fitness program for all members with appropriate equipment to meet NFPA 1583, "Standard on Health-Related Fitness Program for Fire Department Members"

Objective 4-F

Move to provide annual OSHA approved SCBA face piece fit-testing for all personnel who are required to operate using self-contained breathing apparatus

Goal 5 – Continue to engage the Community in public education and public relations efforts
Objective 5-A Develop a plan, and a commitment, as to which local Telluride festivals and events that TFPD is able to continue participation in to remain visible to the public
Objective 5-B Include not only EMS coverage, but also fire prevention and risk reduction messages to those attending any department covered events and festivals
Objective 5-C The Fire Marshal and school system, should work to regularly provide fire prevention and public education sessions and materials to school aged children with the district schools
Objective 5-D Staff should continue to engage with the Telluride Regional Medical Center staff and executives to facilitate the improvement of the center and its ability to treat, and provide overnight care to patients

Goal 6 – Implement fire and EMS service delivery improvements through the adoption and implementation of the Telluride Fire Protection District Master Plan as presented to the district
Objective 6-A Conduct an audit of its hazardous materials response capabilities and qualified personnel to develop a plan for the level of response to be provided and for capability improvements
Objective 6-B Identify the causes of the long turnout times for fire and EMS responses and work to address getting them within nationally recognized standards of NFPA 1710
Objective 6-C Develop a long-term plan, with timelines and funding sources, for the implementation of improvements identified within the District Master Plan

Goal 7 – Develop a long term, strategic approach to the recruitment, use and retention of volunteer fire personnel within the district
Objective 7-A Develop Standard Operating Policies regarding the role, expectations and response use of volunteer personnel within the district
Objective 7-B Develop a volunteer position description with position training requirements and service requirements for the volunteer member to continue with the district
Objective 7-C Designate one person as a volunteer recruitment and retention coordinator to focus efforts towards recruiting volunteer personnel, helping facilitate them through the administrative and training processes to join the organization and to help determine the reasons when volunteer personnel leave the organization
Objective 7-D Standardize the use, selection process and number of volunteer officer positions between all stations to ensure consistency
Objective 7-E Volunteer fire officer positions that are established by the fire district should have to meet the same training requirements as career officer positions
Objective 7-F Encourage volunteer personnel to provide additional duty crew staffing to supplement the career staffing at Stations 1 and 2 as much as possible
Objective 7-G Work to establish response standards and threshold metrics for volunteer personnel to serve as trigger points for the potential need for additional career staffing at stations

Goal 8 – Continue with the long-term plan to improve fire station facilities and infrastructure within the district
Objective 8-A Continue to keep fire station improvement plans updated based on current and projected costs to include dormitory space, living space, bathroom/shower space and health and safety improvements
Objective 8-B Begin to identify concrete funding strategies and timelines to make the identified fire station improvements necessary for additional dormitory/living space
Objective 8-C Future fire station facilities should be considered based on the growth areas or response time gap areas within the district with a cost/benefit consideration in mind
Objective 8-D The identified apparatus replacement plan should be continued so that the fleet remains high quality, ready for response with reasonable maintenance costs
Objective 8-E Consider having more “engine” fire apparatus in reserve status to allow for up staffing by volunteer or call back personnel to increase response capacity
Objective 8-F Establish a small apparatus committee of a cross section of members to assist with the design and selection of vendors to allow those operating the equipment to have a voice in its design and selection
Objective 8-G Develop a plan to build a dedicated fire department/heavy vehicle maintenance facility or consolidate basic apparatus maintenance with other local municipal repair and maintenance facilities to improve operations, parts accessibility, and inventory control.

Goal 9 – Modify the organizational structure of the fire district for increased efficiency and effectiveness, including the development of long-term human resource strategies for both career and volunteer personnel

Objective 9-A

Streamline and modify the organizational chain of command by having only one supervisor for all field (career and volunteer) personnel.

A suggested organizational chart is included in Appendix C

Objective 9-B

Lieutenant/Paramedic positions should be modified to be renamed Firefighter/Paramedic positions as they currently do not directly supervise others, except on ALS level incidents to direct patient care

Objective 9-C

Streamline the current pay scales for line personnel to create simplicity within its structure. The scales should include the following positions:

- Firefighter/EMT
- Firefighter/Paramedic
- Captain/EMT
- Captain/Paramedic

Objective 9-D

Work to develop standard seating position responsibilities and apparatus response configurations across all three shifts to reduce confusion with personnel working on different shifts and to increase efficiency

Objective 9-E

Should the Fire District add career staffing at Station 3 or any other new stations, consideration should be given to adding a Shift Battalion Chief to coordinate shift activities and provide incident command on a 24/7 basis

Objective 9-F Standardize the compensation system within TFPD to provide for pre-established criteria for cost of living pay increases
Objective 9-G Standardize the personnel evaluation system within TFPD to provide for pre-established criteria for merit or performance pay increases
Objective 9-H Regularly evaluate the workload of the existing administrative support staff (Office Manager, Fire Marshal, Mechanic, and Training Officer) to monitor their workloads and to identify future needs for additional support staffing as the district continues to grow in size, stations or personnel
Objective 9-I Appoint an interested member to help coordinate career recruitment as they continue to grow in size. This will help to ensure that a wide candidate pool is created.

Section 3 - Master Plan

A developed master plan for an organization looks at how they are operating, the services provided and what infrastructure and staffing they have in place, all relative to the risks and demographics of the community. A long-range forecast is then developed to make improvements in their service levels, infrastructure and staffing. MissionCIT, LLC has developed the following master plan for the TFPD based on all of the known data, level of operations, and future projected needs. The master plan is broken down into several key areas that include Infrastructure, Stations, Apparatus, Community Risk Reduction, Health, Safety and Wellness, Staffing and Cost Projections.

I. Community Risk Reduction - Infrastructure:

A. Firefighting Water Supplies:

1. Number of Impoundments/Approximate Gallonage/Drafting Sites:

The TFPD relies upon a number of water impoundments for community firefighting, as well as domestic water supply. Most of these impoundments are in elevated areas of the towns and villages and provide more than adequate head pressure to supply fire apparatus. Whereas these impoundments are viewed as an asset, supplies can become vulnerable during periods without sufficient rain and snowfall to replenish them. In addition, the possibility of wildfires in their vicinity can jeopardize these supplies due to the loss of ground cover which acts to shield them from mud slides and avalanches. The risks include excess silting, which can clog pipes used to transmit water to fire hydrants, and general breaching of containment structures. Another risk caused by improper tree management is blocked helicopter access during wildfire firefighting operations.

Where no municipal water supply distribution system exists, firefighting water supply is obtained by engines from static sources, or “drafting,” from ponds, lakes, streams, and cisterns. Operations include the direct pumping from a source to another pumper or supplying roving apparatus in a tender “shuttle” from the supply area to the fire scene. Regardless of the type of operation, having clear and reliable access to these drafting sites is critical. Access points must be highly compacted with gravel or paved to ensure “all weather” access. During periods of snowfall, communities and residents should be encouraged to ensure timely clearing of access points during periods of heavy snow.

The following lists the primary water supply locations and drafting sites within TFPD.

Table 3.1 Water Supply Locations

Area	Gallons	Location (lat-long)
Telluride		
Stillwell	480,000 (2@ 240,000)	37.9418423, -107.8102421
Pandora	750,000	37.9344955, -107.7886978
Mountain Village		
Double Cabins	200,000	37.9175804, -107.8534808
San Joaquin	500,000	37.9152408, -107.8554156
Ski Ranches	100,000	37.9190666, -107.8688467
Wapiti	2,200,000	37.9220062, -107.8318955
Coonskin	100,000	37.9190991, -107.8317238
Ophir		
Old Ophir	20,000	37.8581931, -107.8312500
East Ophir	70,000	37.8591844, -107.8260377
Aldasaro		
Main Tank	550,000	37.9649650, -107.8798214
PS1	15,000	37.9570136, -107.8763086
KTEX		
Main Tank	500,000	37.9563541, -107.9008473
Meadows Subdivision		
Meadows Tank	25,000	37.9563541, -107.9008473
Last Dollar Subdivision		
Last Dollar Tank	150,000	37.9510912, -107.8833901
Elk Run		
Main Tank	150,000	37.9053909, -107.8769767
Medium Tank	85,000	37.9053909, -107.8769767

Small Tank	50,000	37.9053909, -107.8769767
Wilson Mesa Ranch		
Lower Tank	30,000	37.9291083, -108.0137065
Lower Pond	5-acre/feet	37.9265594, -108.0081313
Upper Tanks	150,000 (2@ 75,000)	37.9139622, -108.0131695
San Bernardo		
Main Tank	150,000	37.8455374, -107.8833668
Lakes, Streams, Ponds		
Trout Lake	5,000-acre/feet	37.8271482, -107.8868295
Preserve Pond	Unknown	37.9025061, -107.8963710
Elk Pond	Unknown	37.932849, -107.8573359
McKensie Springs	Unknown	38.1016274, -108.0476118
San Miguel River		
San Miguel Park Pond		
Applebaugh Pond		
South Fork San Miguel River		
Howard Fork		
Deep Creek		
Big Bear Creek		
Fall Creek		
Leopard Creek		
Drafting Sites		
Trout Lake	N/A	37.9025061, -107.8963710
Elk Pond	N/A	37.932849, -107.8573359
McKensie Springs	N/A	38.1016274, -108.0476118
San Miguel River	N/A	37.9425564, -107.8366539
	N/A	37.9490063, -107.8707078

	N/A	37.9470853, -107.9199614
	N/A	37.9542452, -107.9321907
	N/A	37.9668854, -107.9708113
	N/A	37.9928587, -108.0230830
	N/A	37.9993654, -108.0358316
	N/A	38.0055182, -108.0429296
	N/A	38.0186094, -108.0575215
	N/A	38.0310346, -108.1133146
South Fork		
	N/A	37.9281183, -107.8986679
	N/A	37.8651669, -107.8814923

Recommendation
It is recommended that community leaders place a high priority on the maintenance of these impoundments, as they relate to all aspects of wildland fire mitigation. It is also recommended to increase storage supplies whenever and wherever possible.

2. Fire Hydrants:

Fire hydrants are used in the towns of Telluride, Mountain Village, Ophir (limited), and Homeowner's Associations (HOAs) and subdivisions, including Elk Run, Aldasoro, San Bernardo, Wilson Mesa, Lawson Hill, West Meadows, Two Rivers, Ilium industrial area, Hillside, Last Dollar and Meadows. Fire hydrants allow for rapid access to firefighting water, but they must receive regular maintenance to ensure their proper operation, especially given the freezing climate periods. Communities and residents should be encouraged to ensure timely clearing of fire hydrants during periods of heavy snow. TFPD encourages "Adopt a Hydrant" program for the public as a means to expose hydrants when covered by snow.

Recommendation
It is recommended that community leaders place a high priority on the maintenance of fire hydrants and ensure timely and efficient communication with TFPD whenever fire hydrants are out of service.

Recommendation
It is recommended that new fire hydrants and water mains be designed with input from TFPD, using guidelines established by the American Water Works Association (AWWA) or another reliable municipal standard.

Recommendation
It is recommended to increase fire hydrant installation in the Pandora area, Sawpit, Placerville, Ames (power plant area), and the down valley corridor between Sawpit and Placerville. All new and existing fire hydrants should be equipped with "Storz" couplings to reduce the time needed to connect supply fire hoses.

3. Auxiliary Tenders (Commercial):

TFPD is fortunate to have several water supply tenders which provide firefighting water in areas not typically served by fire hydrants. However, due to staffing limitations, tenders from TFPD may not be able to respond when needed. The

water on an average first arriving fire department pumper usually lasts only for the initial 4-5 minutes of firefighting. Supplemental water supply from tenders is critical to sustained fire attack, and a lack of water can jeopardize the safety of firefighting personnel.

Several water carrying vehicles from the Public Works department have been outfitted with equipment and radio communications to assist TPFD as available. In the right situation, their response to an emergency incident is critical.

Recommendation
It is recommended that staffing be considered to ensure the timely response of TFPD tenders, especially in the Placerville and San Bernardo areas of the district. Because of low incident volume, these personnel could perform additional roles to assist with wildland mitigation and EMS response and transport. It is also recommended to continue the partnership with Public Works and other agencies having water carrying vehicles, and to ensure funding for TFPD to support these efforts.

B. Fire Sprinklers:

1. Commercial:

TFPD is fortunate to have vibrant commercial resources, especially in the towns of Telluride and Mountain Village. Revenue from commercial business operations is critical to the tax base. Commercial business operations employ workers who pay taxes and purchase goods and services to maintain a healthy economy. And, especially in the TFPD, commercial operations attract tourists, who further contribute to the economy.

Fire sprinklers are a key component in building and maintaining a healthy economy. In many instances, fire sprinklers are required by code for new construction. However, when they are not, or when dealing with existing structures, and despite recommendations by the local fire official, this fact is routinely overlooked by developers and government leaders, who may subscribe to the philosophy of “low cost” at all costs. Yet, throughout the country, commercial buildings have burned which could have been saved by the early fire suppression of sprinklers.

When a commercial business operation is interrupted by fire, the ability to produce goods and services is interrupted as well. The “ripple” effect may be felt throughout the local economy in the form of loss of tax revenue and loss of

employee salary. The latter then affects the ability to purchase goods and services, pay mortgages and car or personal loans. Compounding all of this is the increased risk to firefighters, especially when operating with extremely limited staffing, as in TFPD, who instead of responding to a fire scenario, under control, often are faced with complicated rescue operations, insurmountable fire conditions, and the increased chance of a dangerous building collapse.

Fire also destroys historical properties and records, for which no value can be assessed, and no insurance can replace. A prime example occurred in the town of Tappahannock, VA in July 2022. Located on the historic eastern shore area of the state, the tourist town suffered the loss of most buildings on an entire street in the downtown area. Many buildings were over one hundred years old.

(https://richmond.com/news/state-and-regional/a-month-after-a-massive-fire-tappahannock-presses-on/article_0dc0defd-8d5a-5c3b-a8b9-81476c9e824d.html)

Recommendation
It is recommended that commercial and government leaders encourage the installation of fire sprinklers in all commercial buildings, with a particular emphasis on the downtown Telluride business district.

Retrofitting existing properties should be viewed as historic preservation and may be eligible for grants to building owners. The 2017 Tax Cuts and Jobs Act (TCJA), as amended by the Coronavirus Aid, Relief, and Economic Security Act (CARES) of 2020, provides tax incentives, in the form of an increased depreciation schedule, for businesses on any size to retrofit their properties with fire sprinklers.

Recommendation
TFPD should be staffed with adequate resources in the Fire Marshal's Office, to inspect all commercial business properties on an annual basis and to exercise oversight of the testing and certification of existing fire sprinkler systems.

2. Residential:

Today in America, over 3,000 civilians die each year in fires. Seventy-five percent of these deaths occur in the residence. Despite advances over the last 35 years in

early warning from fire, i.e., smoke alarms, the home fire remains the primary life safety risk to communities.

There are several contributing factors to the continued risk posed by home fires. These include:

- Continued lack of public awareness ("It won't happen to me") of fire and fire and life safety practices,
- Use of diminished wooden construction materials (floors and trusses) which have a shortened "burn through" timeframe, thus causing building collapse,
- Use of engineered building components which often use glue instead of nails to connect materials, which also accelerate building collapse,
- Extensive use of synthetic materials, which burn hotter with increased toxic smoke, in furnishings and fixtures,
- "Open" floor design, which allows for more rapid fire and smoke permeation throughout the home,
- Use of combustible exterior walls, which allow rapid vertical fire travel from ground level to the attic,
- Inadequate number and placement of working smoke alarms,
- Failure of government and developers to address and understand the function and value of residential fire sprinklers.

It has been documented through studies done by Underwriters Laboratories' Fire Safety and Research Institute (FSRI) that escape time from a home fire has been drastically reduced by the construction aspects mentioned above. The main phenomenon affecting this is known as "flashover." Flashover occurs when all of a room's contents achieve their ignition point simultaneously, resulting in total flame development with associated temperatures in excess of 1,000 degrees Fahrenheit. This situation is non-survivable, for both occupants and firefighters, whose arrival and entry into a home coincides with the flashover. (https://homefiresprinkler.org/product/side-by-side-animation-and-live-burn/)

Whereas the timeframe for occupant escape in older (1970's and earlier) homes was 10-13 minutes, that timeframe is now 3-5 minutes, thanks to flashover. This timeframe assumes the successful early warning of fire from working smoke alarms, placed on all living levels of a home, inside and outside of sleeping areas, and enhanced by the practice of closing bedroom doors while sleeping and practicing home escape drills.

TFPD is fortunate to have a government which enacted local code provisions to have all homes in excess of 3,600 square feet equipped with residential

sprinklers. By suppressing the fire at its growth, or incipient phase, flashover is prevented. This ensures a tenable inside atmosphere so that occupants may have time to escape. It will also reduce the risk to firefighters from thermal assault and early building collapse.

Recommendation
Community and government leaders should continue to embrace the benefits of residential sprinklers, and consider lowering the square footage threshold, or eliminating it altogether, for the installation of residential sprinklers.

C. Public Access Defibrillation (PAD) program:

There are six interdependent links in the sudden cardiac arrest chain of survival. These are:

- Early recognition of sudden cardiac arrest,
- Early 9-1-1 (or access to emergency medical care),
- Early cardio-pulmonary resuscitation (CPR),
- Early defibrillation
- Early advanced cardiac life support (ACLS), and
- Physical and emotional recovery.

Travel to the TFPD area brings with it conditions which could contribute to sudden cardiac arrest. These include lowered oxygen pressure at high altitude and physical stress due to recreational activities (hiking and biking). The PAD program within the Telluride Fire Protection District is comprised of approximately thirty automatic external defibrillators (AED) located at various building locations throughout the district. While most of these devices are centered throughout the Telluride and Mountain Valley communities, several are located in the rural and remote areas. In addition, the Mountain Village Police Department (MVPD) and Telluride Marshal's Office (TMO) carry AEDs in their patrol cars. TFPD provides virtual information and a map of these locations on its public website. These devices have been provided by local business donations and grants, and continued financial investment from TFPD, and have been credited with contributing to several successful resuscitations. TFPD inspects these devices on a regular basis.

Recommendation
TFPD is presently not staffed to teach CPR/AED to the public, it is recommended to consider doing this.

This would increase public visibility for the district and would build civilian resources to expand emergency medical services. Other localities throughout the country have also used civilian training as a recruitment tool for career and volunteer staff, again something that could benefit TFPD. TFPD could charge a nominal fee which would partly offset the cost of an "in house" instructor.

Recommendation
It is also recommended that TFPD explore additional technologies to support the PAD program.

This includes technology to automatically notify 9-1-1 when an AED is deployed and Pulse Point, a 9-1-1 connected mobile app which can immediately notify the public about an emergency occurring in the community. This rapid notification can bring trained civilian resources to a patient well before the arrival of first responders.

D. Telecommunications:

Telecommunications is integral to an emergency response system. While highly technical, in simple terms there are three integrated components to a modern telecommunications system:

- 9-1-1: This component uses telephone technology to connect a caller with personnel located at a public safety answering point (PSAP),
- Radio communications: This component provides voice dispatch of the incident to guide responders to a location, as well as on-going two-way communications for incident management,
- Computer Aided Dispatch (CAD): This component utilizes the information provided by the caller to recommend the proper complement of equipment to be dispatched on an incident. CAD may also be equipped with other technology to alert stations, to provide relevant incident information to response units via mobile data computer (MDC), and to capture and process incident information, using a records management system (RMS) software, for overall data reporting.

Organization and Funding

Telecommunications services are provided for TFPD from the Western Colorado Regional Dispatch Center, known as WestCO. WestCO is located in the City of Montrose and is a stand-alone PSAP formed pursuant to an Intergovernmental Agreement (IGA) authorized under Colorado State Statues. The agreement was formed in 2015 and was most recently updated in 2018. Presently WestCO represents the interests of eleven voting entities and four non-voting agencies, as follows:

Table 3.2 Voting Entities vs Non-Voting Agencies

Voting Entity	Non-Voting Agency
City of Montrose (Montrose Police Dept)	Black Canyon National Park Rangers
Montrose County (Montrose Sheriff's Office, Posse, West End, Montrose Airport Fire	Log Hill Mesa Fire Protection District
Town of Olathe (Olathe Police Dept)	Nucla Naturita Fire Protection District
Montrose Fire Protection District	Ridgway Fire Protection District
Olathe Fire Protection District	
Town of Mountain Village (Mountain Village Police Dept)	
Town of Telluride (Telluride Marshal's Office)	
Telluride Fire Protection District	
Ouray County (Ouray Sheriff's Office, Ouray EMS, Horsefly Fire)	
Town of Ridgway (Ridgway Marshal's Office)	
City of Ouray (Ouray Police Dept, Ouray Fire Protection District)	

The PSAP occupies leased space from Montrose County. WestCO also utilizes a secondary or back-up PSAP, located in a building owned by the City of Montrose. There is no charge for this use.

A Board of Directors (BOD) acts as the governing body of WestCO and consists of eleven members who represent a government entity or political subdivision. Presently the BOD members are from:

- The City of Montrose
- Montrose County
- The Montrose Fire Protection District
- The Town of Telluride
- The Town of Mountain Village
- Telluride Fire Protection District
- The Town of Olathe

- Olathe Fire Protection District
- Ouray County
- City of Ouray
- Town of Ridgway

General administrative support is provided by the City of Montrose, who may appoint an administrative representative with voting authority to serve on the BOD.

The WestCO by-laws create an administrative core team, consisting of the officers of the BOD and the Executive Director to streamline recommendations for budget, procurement, personnel management, operating procedures, dispute management, and other matters of concern for approval by the BOD.

The WestCO annual budget is comprised of individual organization "user fees" and contributions from the Montrose Emergency Telephone Authority (METSA) and the San Miguel Emergency Telephone Authority (SMETSA). Contributions by member organizations are based upon a calculation of work-load percentage. In 2023 METSA will contribute $1,097,756.05 and SMETSA will contribute $104,736.31. These funds generally cover contract and professional services fees for the maintenance of the 9-1-1 system and other allowable expenses under Colorado Revised Statutes (CRS).

WestCO is staffed by twenty-four employees, to include an Executive Director, who is responsible for the day-to-day operations, administration, and management of WestCO. The Executive Director works at the pleasure of the BOD. In addition to the Executive Director, WestCO employs:

- Supervisors (4)
- Regional Data Specialist (1)
- Emergency Communications Specialists (16)
- Emergency Communications Specialist I (2)

The user fee component of the budget covers the operations of WestCO, to include personnel salaries and benefits, staff training and membership in professional organizations, software licensing fees, hardware and system replacement, and other service contract fees. The 2023 budget is $3,422,214.06. TFPD's contribution is $39,039.20.

Operations

WestCO generally operates according to industry "best practices" as developed by the Association of Public Safety Communications Officials (APCO) and the National Emergency Number Association (NENA). Both organizations provide guidance in policy development, training, outreach, and advocacy. WestCO also attempts to follow NFPA 1225, "Standard for Emergency Services Communications" (previously NFPA 1221, "Standard for the Installation, Maintenance, and Use of Emergency Communications Systems", and NFPA

1061, “Standard for Public Safety Telecommunications Personnel Professional Qualifications”).

The design of the WestCO system has redundancies in the event one or more of the system components incur disruptions. The greatest risk is for the 9-1-1 system to become inoperative as the public must be alerted quickly to use an alternate emergency number. This is done through messaging through social media, text and local television and radio.

All WestCO telecommunications personnel are certified according to Priority Dispatch’s Emergency Medical Dispatch (EMD) standards, meaning they are able to prioritize emergency medical calls and provide life-saving instructions to callers while emergency responders are enroute to the incident address. In addition, these personnel are certified under the standards of the Criminal Justice Information Services (CGIS) due to their law enforcement support requirements.

WestCO telecommunications personnel are not assigned to fixed platoons or work shifts. Instead, their scheduling is based upon peak demand periods, using staggered 12-hour shifts to ensure the proper blend of supervisory/non-supervisory personnel. The current schedule is anticipated to be revised in 2023. While on duty, personnel actively listen to three law radio channels and monitor eight other radio channels, three of which are assigned to law enforcement and five are fire channels. Depending on staffing, there may be no singular fire channel staffed, nor is there an assigned tactical channel fire/EMS dispatcher.

Presently WestCO is understaffed by six positions (three supervisors and three ECS personnel).

Risks and Recommendations

WestCO uses leading technology to manage a complex and diverse service district. It is able to coordinate the interests of a widespread user network and has a system of “checks and balances” to ensure effective resolution of conflict. However, there are clear risks associated with WestCO that could negatively affect TFPD:

1. WestCO is understaffed by twenty-five percent of its telecommunications workforce. Personnel are being required to work excessive hours in order to maintain minimum service requirements. Without appropriate time away from work, personnel cannot decompress from the stresses of the job and do not attain proper rest. This is unhealthy and can lead to job-related mental and physical illness, or personnel may simply leave the job. Fortunately, the Executive Director has funds to “over hire” positions to address staff vacancies, but this should not be a permanent solution.

2. WestCO telecommunications staff is hampered by a lack of affordable housing. This is similar to the situation faced by TFPD with its career and volunteer members. Unlike the “deed restricted” housing opportunities which exist in Telluride, the Montrose

community has not employed this approach. Instead, it is working with developers to create "affordable" housing. However, an average one-bedroom apartment rental is approximately $1,200.00 per month and does not include utilities.

Recommendation
The WestCO members should work collectively with and among policy leaders to seek more housing options in the Montrose community. This could also benefit other first responders who may be challenged by housing costs. In addition, policy makers should conduct regular comprehensive reviews of salaries for WestCO personnel. Given compensation is relatively low in the region; a comparative study should consider other regions of the country.

3. The efficiency of WestCO's operations is difficult to assess. Basic performance evaluation includes the measure of call processing time. Simply, the quicker the caller information (person's name, location of the incident, type of situation, and call back number) is obtained and units are dispatched, the greater is the chance for a successful outcome. Call processing time for telecommunications usually is divided into three components:

    a. ***Call answering***: The time it takes to answer an incoming 9-1-1 call,
    b. ***Call processing***: The time it takes to obtain the necessary information to dispatch a call,
    c. ***Incident dispatch:*** The time is takes to alert responders with the incident type and location.

    WestCO was unable to provide this data as well as the number of telephone calls (emergency and non-emergency) it handles. While these aspects may not be absolute indicators of workload, they are important and can supplement the argument for additional staffing.

Recommendation
WestCO members should reassess the workload measures used to bolster support for the hiring of additional staff.

4. The absence of active monitoring of the WestCO fire channel presents a safety issue for fire and EMS responders. Although it is accepted that law enforcement radio traffic is steady (as compared to fire and EMS radio traffic), the nature of a violent EMS incident or a "Mayday" fire situation requires comprehensive radio discipline and full attention from telecommunicators. Constant situational awareness is needed for all incidents and not having the fire channel actively monitored prevents this. Further, it is likely that a significant fire or EMS situation would require law enforcement assistance, which could compromise attending the fire channel.

Recommendation
The WestCO fire and EMS members should work with the WestCO BOD to ensure dedicated, consistent staffing for a tactical fire channel during significant incidents.

5. Currently, emergency apparatus in TFPD do not utilize mobile data terminals but rely on voice communications from WestCO or Active911 for information updates to an incident. With the workload and staffing issues at WestCO, and the issues the district has had with Active911 getting critical, updated call information is important.

Recommendation
TFPD should consider installing mobile data terminals in their fire and EMS apparatus in order for responding personnel to obtain the most current call information.

E. Telluride Regional Medical Center:

The Telluride Regional Medical Center (TRMC), located in the town of Telluride, is the only 24-hour emergency and trauma care facility within the TFPD. It has been in operation since 1978. TRMC is classified as a Level V Trauma Center. TRMC offers a full range of services to the community, from primary level care to advanced level care. The medical staff at TRMC are all Board certified, and the TFPD Operational Medical Director was recently named the "Regional EMS Physician of the Year" by the Western Regional EMS and Trauma Advisory Council (WRETEC). She was also named by the Emergency Medical Services Association of Colorado (EMSAC) as the 2022 Medical Director of the Year.

The relationship between TRMC and TFPD is good overall. TFPD maintains direct communication with TRMC through the Division Chief of Emergency Medical Services, who acts as the primary liaison between TFPD and TRMC for quality assurance and quality improvement (QAQI).

Whereas TRMC is a strength in overall community services, it also is viewed as a challenge for TFPD operations. This is due to the fact that TRMC does not provide "in bed" definitive care services for patients. Patients needing continuing care, to include emergency care, require "inter-facility" transport to hospitals located at significant distances from TRMC. The closest such hospital is located in Montrose, CO, approximately one hour from Telluride. There are no private ambulance transport services in the district thus these transports become the responsibility of TFPD.

As will be discussed throughout this document, TFPD is not staffed to manage these transports without reducing the number of firefighters to an unsafe operational level. At present, only Stations 1 and 2 are staffed with 24/7 staffing, with three personnel each. Whenever inter-facility transport is needed, two personnel from one of the stations takes a specially equipped ambulance to TRMC and fulfill the transport. It is estimated that the Montrose transport turnaround is between three and four hours, even longer during periods of inclement weather.

TFPD is attempting to mitigate the staffing issue by hiring three wildland personnel, one each per shift for Station 3 (Placerville). In addition, the volunteer EMS program has been recently discontinued, however TFPD hopes to create a full-time equivalent position (hours) from which it can use qualified EMS members to fill slots for these transports, thus leaving the fire apparatus staffed.

The real solution here, aside from the need for more TFPD, staffing, is the expansion of TRMC to include the full continuum of care, which would reduce the number of inter-facility transports. These discussions have been on-going for several years, but MissionCIT, LLC believes it is time to enact change.

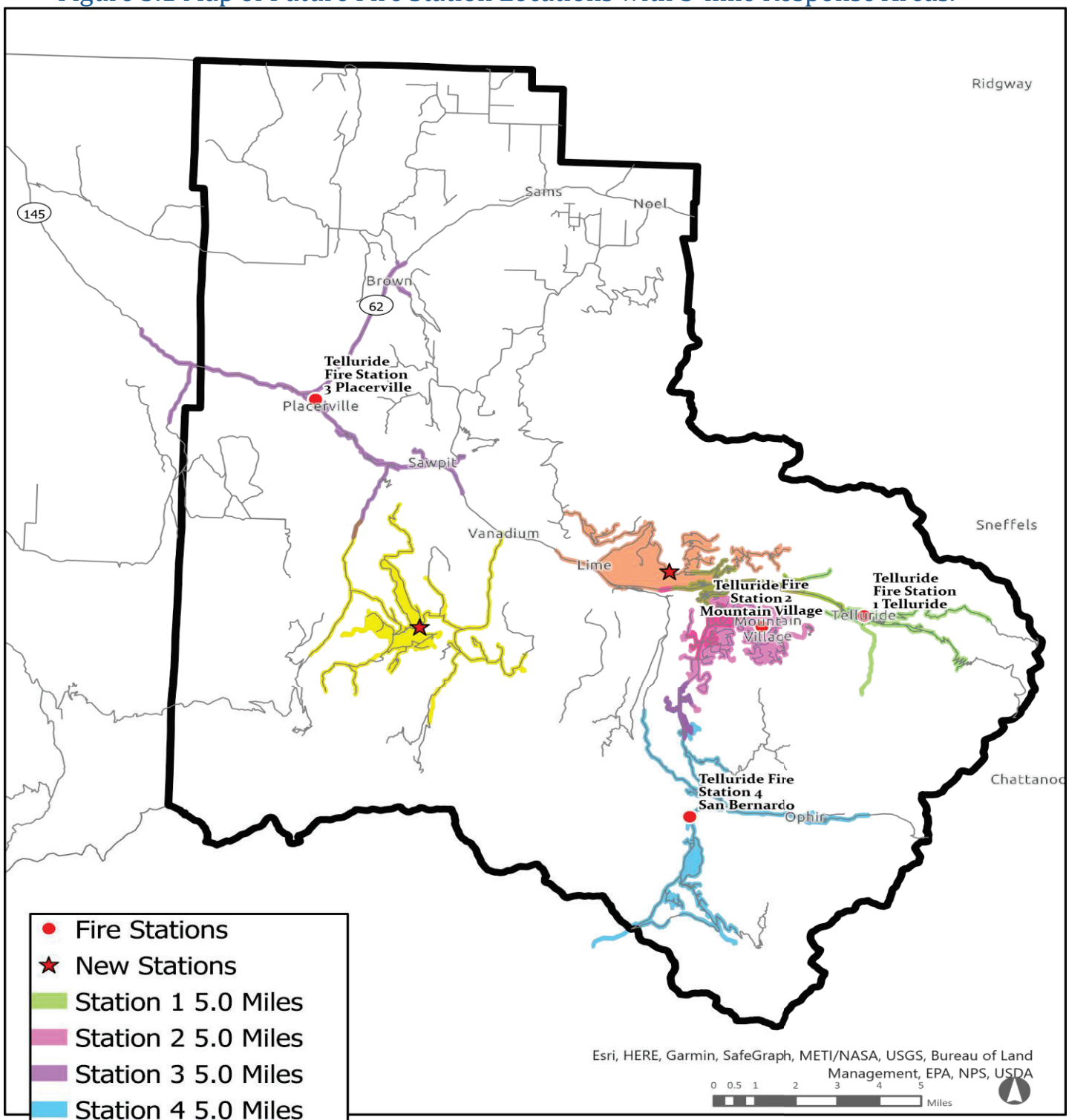
Stations

MissionCIT, LLC staff reviewed the current fire station locations and response area metrics for the TFPD. At present, approximately 80% of all responses and 90% of EMS responses occur within the Towns of Telluride and Mountain Village. The district has indicated a desire to construct two additional fire stations on property that is intended to be donated to them. These new station locations include the Aldasoro area and the Wilson Mesa area of the district. These stations would greatly increase the 5-mile coverage response areas within the district for ISO requirements and reduce response time to incidents, if staffed with career personnel (See map below). The district has estimated total construction costs for both of these stations to be approximately $13.5 million dollars. If these stations were staffed with career personnel, similarly to the recommended staffing for Stations 1 and 2 for the fire apparatus (later within the master plan), the annual personnel costs would be almost $2.1 million for response to between 10-20 calls per year as estimated by TFPD staff.

Given the population growth of TFPD, it may become necessary to expand response capability with the addition of these new stations in the future. Careful consideration must be given to the benefits of adding a station, especially in areas where call volume is limited versus the construction, equipment and staffing costs. TFPD could also opt to add EMS only services, at these future locations, if the incident analysis does not point to a need for increased fire services.

Recommendation
At this point in the evaluation of the TFPD, MissionCIT, LLC does not recommend the construction of additional fire stations in these areas until the call volume dictates the need for such. However, consideration could be given to potential construction of these stations if operated like the Aspen/Starwood Model where land, construction and upkeep of the stations are provided by the HOA groups and there is housing included for volunteer or career personnel. In addition, the Aldasoro station could be co-located with the needed training facility recommended in other areas of the report.

Figure 3.1 Map of Future Fire Station Locations with 5-mile Response Areas.



DISCLAIMER
This information is a product of the San Miguel County GIS Department and is intended for the display of relative positions and locations only. Users of this information agree that no assertion or warranty of any kind has been made by San Miguel County as to its accuracy. The presence on the map of a road feature does not indicate public access.

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Heather Widlund gis@sanmiguelcountyco.gov

Apparatus

The Telluride Fire Protection District appears to have a good apparatus rotation program in place that is appropriately funded. The desired rotation time frames are within industry standards. As with all fire departments today, supply chain issues with vendors are delaying, sometimes significantly, with delivery of orders causing departments to operate older apparatus longer.

After review by the MissionCIT, LLC consulting team, the following are some additional considerations that the TFPD should take into account with their apparatus replacement program and how they are operating their fleet.

1. Future consideration may have to be given to lease-purchase of apparatus to spread out payments over a longer period of time instead of paying all up front to reduce the impacts on the budget.
2. The ordering of fire apparatus may have to be done earlier than actually needed to allow for supply chain delays, which in some cases are delaying the delivery of orders by two years.
3. In the future, the fire district may need to perform another review of the life cycle of their apparatus, particularly engines, as with the addition of career staffing, this apparatus is more mobile, more frequently, for public events, training, response to more calls, etc. than when the department was staffed solely by volunteer personnel. This increased use will cause increased wear and tear potentially reducing the life span for the apparatus.
4. The district may need to consider having more reserve/back-up engine capacity in their fleet to allow for volunteer personnel to up staff them for response to significant events or to provide additional coverage when career crews are busy.
5. The district, once fully staffed to the recommendations in the Staffing Section of the Master Plan, at 4 personnel on an engine and 2 on a medic unit, should consider reducing the number of support vehicles that are located at Stations 1 and 2 (EMS Squad's and Fire Command Vehicles) to reduce the maintenance costs and any confusion of which response vehicles to take to an incident. Crews at that point would be better served by staying intact on their assigned apparatus for crew integrity and safety.

II. Community Risk Reduction -Programs

A. Fire and Building Codes:

The Towns of Telluride and Mountain Village and San Miguel County have adopted by ordinance the International Code Council (ICC) family of model building and fire prevention codes. These include the 2018 International Building Code (IBC), the 2018 International Residential Code (IRC), and the 2018 International Fire Code (IFC), as well as several "legacy" codes, which include amendments to several of the 2009 International Codes. The jurisdictions have also adopted certain standards developed by the National Fire Protection Association (NFPA).

Using model codes is important to the TFPD community as they serve to promote the safe and efficient construction and maintenance of buildings. When buildings are built and maintained according to these model codes, they are better prepared to withstand detrimental effects of the environment, i.e., snow load, and fire, which is good for the community's overall economic health and quality of life. One of the outstanding facets within TFPD is the building code amendment which requires residential sprinklers in one-and-two-family dwellings exceeding 3,600 square feet.

A major limitation of code management has to do with buildings which were constructed prior to the adoption of newer, more modern codes. These buildings are typically only required to meet the building and fire protection codes which were in effect at the time they were built. In many instances, buildings were built before there were any legislated building and fire protection codes. Compounding this is the fact that much of the "downtown" business district of Telluride falls within the "historical district," which can be very restrictive in terms of making changes to improve building safety. However, if a building were to undergo substantial renovation/remodel, it would be required to meet current building and fire protection standards, to include fire alarm and fire suppression systems. Of note, three downtown Telluride buildings have been remodeled and have been retrofitted to have all fire and life safety upgrades.

The TFPD has responsibility for reviewing new building construction plans, participating in new building occupancy inspections, and conducting building fire and life safety inspections in existing buildings. These include commercial buildings and residential properties, as well as target locations, such as schools, Telluride Airport, water storage and treatment facilities, the Gondola (public transportation), and at least four special events (combined attendance of approximately 40,000 people), as follows:

Commercial Inspections:

Existing commercial occupancies are inspected annually. Currently the Fire Marshal conducts the inspection.

The inspection consists of:

- Fire lane: clear of obstructions.
- Addressing: clear of obstructions, height, reflective.
- Knox Box: clear of obstructions, height, and reflective sticker.
- Egress: obstructions, door operation, signage.
- Fire extinguishers: location, access, date of service.
- Sprinkler systems: service of riser and backflow, coverage, obstructions, visual.
- Alarm systems: service of panel, coverage, obstructions, visual.
- Hood systems: service, head alignment, grease accumulation.
- Electrical: clear area at panel, cords, covers, labeling.
- Storage: flammable storage, removal, height, waste, ignition source

- Other Hazardous Conditions

New commercial occupancies require a plan review of access, addressing, fire sprinkler systems, fire alarm systems, and fire flow requirements. During construction, inspections are conducted and documented.

The inspections consist of:

- Rough-in: Sprinkler and alarm location of devices, design, code compliance.
- Final: addressing, access, device operation, flow/alarm test, verification of monitoring.

Residential Inspections:

Existing residential occupancies are inspected when remodeled. Remodels go through the permitting process of town jurisdictions and fire department plan review. If the review requires fire code compliance, a sign off is issued with conditions of compliance. During construction, inspections are conducted and documented.

The inspections consist of:

- Rough-in: Sprinkler and alarm location of devices, design, code compliance.
- Final: addressing, access, device operation, flow/alarm test, verification of monitoring.

New residential occupancies are required to go through the permitting process of town jurisdictions and fire department plan review. If the review requires fire code compliance, a sign off is issued with conditions of compliance. During construction, inspections are conducted and documented.

The inspections consist of:

- Rough-in: Sprinkler and alarm location of devices, design, code compliance.
- Final: addressing, access, device operation, flow/alarm test, verification of monitoring.

Several recommendations are paramount to increasing building fire and life safety for TFPD.

Recommendation
The success of retrofitting existing buildings to meet modern fire and life safety requirements should compel continuing discussions for future existing building renovations. Given the current availability of grant funding for preserving historic properties and tax exemptions for fire sprinkler installations, there is great opportunity to see those changes through.

Recommendation
Given TFPD's limited fire inspection staff, an inventory of properties should be developed and prioritized for inspections. This will help to identify gaps in other properties needing regular inspections.

Recommendation
Once the inventory of properties is developed, there should be adopted an annual schedule of desired fire and life safety inspections, based upon risk to life as well as any other mandates imposed by federal, state, and local government. This would place a priority upon buildings with an occupancy limit of fifty people or more (schools, churches, restaurants, theaters, meeting halls, and similar) as well as institutional buildings and buildings where high hazard materials and processes are used, i.e., factories and manufacturing facilities.

Recommendation
TFPD should work to increase fire and life safety inspection resources to assist the Fire Marshal in achieving more regular fire and life safety inspections. This should involve the hiring of additional staffing for the Fire Marshal, to include additional inspectors and a plans reviewer.

This would form the basis for the inspection program to be divided among the towns of Telluride, Mountain Village, Placerville, Ophir, and Sawpit. One workload measure to use in this determination could include a measure on the number of inspections needed in a year. Some organizations use the benchmark of 750 inspections per year, per inspector. A plans reviewer would provide the Fire Marshal with additional time to conduct inspections as well as provide overall management for the office. An option to hiring a plans reviewer is to contract out plans review to a licensed architectural firm, although this approach could limit accountability and quality of service.

Recommendation
TFPD should explore the use of "on duty" firefighters to conduct lower hazard inspections, such as business, professional and retail offices.

This would require training for personnel to achieve the level of NFPA 1031 Fire Inspector, which could be done in-house. An option to this is to develop a field inspection policy to guide firefighters through a "common fire hazard" type of inspection. Through inspections, firefighters

are also improving their knowledge of the building and its features, which can increase their safety during a fire.

Recommendation
Where possible, TFPD should continue to work with business owners and government to add sprinklers to existing buildings and to lower the threshold for residential sprinklers to below 3,600 square feet.

B. Wildland Fire Mitigation:

Another important model code is the International Wildland Urban Interface Code (IWUIC), which is designed to mitigate the risks associated with wildland fires. This code is gaining acceptance across the country where wildland fires have and continue to represent considerable risk to life and property.

A typical wildland urban interface (WUI) code will address specific areas related to development and infrastructure. These include structure density and location, building materials and methods and means of construction, vegetation management, emergency vehicle access, firefighting water supply, and “built in” fire protection.

In Colorado, there has been no statewide adoption of the IWUIC, or other wildland codes, notably NPFA standards for development and managing community risk from wildfire. Adoption of WUI codes can often be seen as an infringement of property rights. WUI codes also can result in increased development costs, both from the development aspect as well as the local costs to implement and sustain a mitigation program. For these reasons, adoption of WUI codes is best done at the local level, where collaboration and communication with stakeholders produces the support through awareness and education

TFPD has established a wildland fire mitigation program. Recently, Section 503.2 of the 2018 IWUIC was adopted governing ignition resistant building material. Three members of TFPD staff are seasonal wildland employees who conduct wildfire mitigation and, in some areas “pile burns” in strategic areas of the district. Effective November 1, 2022, these three employees will become full-time employees which will enable TFPD to further concentrate its efforts on wildland mitigation.

TFPD provides community outreach and education using nationally recognized programs such as “Ready, Set, Go” from the International Association of Fire Chiefs (IAFC). In addition, the Town of Mountain Village employs its own forester to develop and coordinate its mitigation program.

TFPD is engaged locally and regionally in wildland fire mitigation and cooperates with the West Regional Wildfire Council (WRWC), and the Upper San Miguel Watershed and

Wildfire Mitigation Collaboration Group. Regional collaboration serves as a necessary and advantageous "force multiplier" when dealing with these complex issues.

Several recommendations are provided to enhance TFPD's resiliency from wildfire:

Recommendation
TFPD should continue to collaborate with community leaders, regional partners (WRWC, United States Forest Service, Colorado State Forest Service, Bureau of Land Management, to name but a few) and stakeholders, principally local landowners, to identify additional wildland mitigation overlays throughout the district. Several of these are "shovel ready" projects. This will be critical as new development pressures increase in the Telluride and Mountain Village areas.

Recommendation
TFPD should continue to examine, in coordination with local building officials, the IWUIC for additional regulatory provisions to require "defensible spaces" in new construction and to protect/enhance its firefighting water supply and access.

Recommendation
TFPD's approach to upgrading its wildland firefighting apparatus fleet is strategically correct and should continue.

The pending deliveries of another Type III engine (2023) and a Type 4 engine (2024) will add demonstrative depth to local and regional fire protection. In addition, local and regional training and response opportunities will benefit career and volunteer responders from an experience standpoint.

C. Fire and Life Safety Education:

TFPD provides general fire and life safety education for the community. It does this without a full-time staff person to conduct community risk analysis and to coordinate the delivery of fire and life safety education programs. Instead, it relies on existing staff and technology to conduct traditional programs as a collateral responsibility. While this may be effective at present, expansion of messaging to address all facets of community risk reduction will be limited.

TFPD disseminates primarily fire prevention educational material to the community. The TFPD website contains a link to Safe Kids Worldwide (www.safekids.org/fire) for information on home fires, smoke alarms, and home fire escape planning, with links to other fire safety educational topic areas. The website also promotes free citizen fire extinguisher training and wildland fire mitigation information. In addition, TFPD

participates with the local school system to visit classes during Fire Prevention Week. Other outreach activities include a Wildfire Awareness community event (Mountain Village), National Night Out, and a Halloween community event.

TFPD does not utilize a smoke alarm installation/replacement program. This is due to stated increased liability by the district's insurance carrier, despite the estimate from NFPA that three out of every five home fire deaths occur in homes with no smoke alarms or improperly working smoke alarms.

TFPD has partnered with the TRMC for "Community Connect." Community Connect is a general pre-planning software suite through First Due, Inc., which is a component of TFPD's pre-planning software "First Due" which allows first responders to track and receive important "pre-arrival" information during an emergency. Rapid access to information, such as hydrant location and status, alternative water sources, property owner information, etc., is critical to successful incident outcomes. Community Connect provides access for individual owners/community members to update their own information as it changes (property access codes, contact numbers, building changes or upgrades, wildfire mitigation efforts, etc.).

The following are recommendations to reduce community risk for TFPD:

Recommendation
TFPD should explore hiring a full or part-time staff person to manage community risk assessment (CRA) and to coordinate fire and life safety education programs.

Pursuant to NFPA 1300, "Standard for Community Risk Assessment and Community Risk Reduction Plan Development", the CRA is defined as a process to identify and prioritize local risks, followed by the integrated and strategic investment of resources to reduce their occurrence and impact. This is important especially when resources are limited, and efforts must be targeted to the data-driven, versus tradition-centric fire and life safety risks. An option to this would be to create the position to serve in a blended role to support wildfire mitigation or other TFPD outreach activities.

Recommendation
TFPD should consider seeking administrative volunteers who can be trained to deliver fire and life safety messaging.

Trained and supervised volunteers can typically be recruited and offer a variety of expertise to assist in CRR programs. Retired teachers, people with public speaking backgrounds, and retired IT professionals are all community assets to invest in.

Recommendation
TFPD should have legal counsel re-examine the liability of establishing a smoke alarm installation/replacement program.

Tied to this could be a home fire safety program. Many localities have successfully implemented this program and have executed waivers to avoid corporate and personal liability.

Recommendation
TFPD should seek to expand its previously noted community engagement activities.

The Telluride community hosts numerous public gatherings throughout the calendar year which offer continual opportunities for TFPD to be a prominent participant. Augmenting exposure through Community Connect and additional events such as Bike Week and the summer concert series, as well as working with other entities (San Miguel Resource Center, Tri-County Health and One-to-One) provide opportunities to satisfy and improve community relational "gaps." Of note, rank-and-file TFPD staff consistently identified this area as an opportunity.

Recommendation
TFPD should consider the use of Fire Prevention and Safety grants from the Federal Emergency Management Agency (FEMA) to acquire a fire safety house.

A fire safety house is a mobile platform which can be used throughout the district to teach fire safety topics. It can also be used as a platform to recruit new members. Another option is to obtain a fire extinguisher training system and offer this training to the public at various times throughout the year.

Health Safety and Wellness

In general, the Health, Safety, and Wellness programs available to TFPD personnel are considered a weakness. MissionCIT, LLC consultant team heard this from the rank-and-file as well as the Fire Chief and believes the clear intent is to make improvements, but these will require time, personnel, and resources.

Today, firefighting continues to rank as one of the most dangerous occupations. Over the last thirty years, significant research has been done to highlight the causes of firefighter line-of-duty (LODD) deaths and injuries, and to develop awareness and training to prevent these occurrences. The National Institute of Occupational Health (NIOSH), in combination with the United States Fire Administration (USFA), the International Association of Firefighters (IAFF), the International Association of Fire Chiefs (IAFC), the National Fallen Firefighters Foundation (NFFF), the NFPA, and other industry stakeholders, have developed strategies to reduce LODD events and to create a culture of survival in the fire service.

Over this thirty-year period, there has been a downward trend in the number of firefighter LODD events. With the exception of the last few years, which were influenced heavily by COVID-19, firefighter deaths have averaged less than one hundred per year.

Every year, the NFPA produces a report on firefighter fatalities. Data from 2021 is summarized as follows:

- There were 135 on-duty firefighter deaths in 2021. Sixty-five were due to COVID.
- Of the seventy non-COVID deaths:
    - Thirty-five were volunteer firefighters, twenty-seven were career firefighters, seven were contractors to state and federal land management agencies, and one was a member of an industrial fire department.
    - The largest share of deaths occurred while firefighters were operating at fires or explosions (28 deaths).
    - Overexertion, stress, and medical issues accounted for more than half of the deaths (40 deaths), including twenty-nine sudden cardiac deaths.
    - Sixteen firefighters died in vehicle-related incidents, including ten firefighters who died in vehicle crashes and six who were struck by vehicles.

The chart below details this data (this does not include the eight victims who were employees or contractors with federal or state land management agencies or the employee of an industrial fire department).

Table 3.3 Incident of Injury

Cause of Injury	Fatalities	Percentage
Overexertion/stress/medical	38	61%
Rapid fire progress/explosions	3	4%
Struck by vehicle	6	10%
Motor vehicle crash	6	10%
Fell	1	2%
Structural collapse	4	5%
Lost inside	1	2%
Assault	1	2%
Struck by equipment	1	2%
Contact with electricity	1	2%
Total	62	100%

Nature of Injury	Fatalities	Percentage
Sudden cardiac death	31	50%
Internal trauma and crushing	16	26%
Burns	3	4%
Asphyxia, including smoke inhalation	3	4%
Stroke	4	6%
Gunshot	1	2%
Suicide	2	4%
Electrocution	1	2%
Unspecified medical symptoms	1	2%
Total	62	100%

Current Issues and Trends

Although structure fires have and continue to represent a significant risk to firefighters, they are not the largest cause of firefighter fatalities. Notwithstanding the hazards of deadly flashover and structure collapse, data is revealing other areas of occupational disease and exposure as the largest cause of firefighter fatalities.

Similarly, the pervasive threat from wildfire is already being addressed by TFPD, through growth of personnel, training, and equipment, as well as the continued partnerships with federal, state, and local resources.

The following points highlight emerging challenges to firefighter health, safety, and wellness.

A. Cardiovascular Disease

Firefighters are among the highest risk groups for serious medical conditions, notably cardiovascular disease (resulting in sudden cardiac arrest) and cancer. Cardiovascular disease is fostered by many factors associated with the job:

- Lack of sleep,
- Poor diet,
- Dehydration,
- Lack of proper exercise,
- Physical demands of the job,
- Adrenaline “rush” cycle,
- Exposure to the environment,

- Lack of “down time” in between work shifts.

Consistently, cardiovascular disease is the most common cause of death among firefighters. The National Fire Protection Association (NFPA) routinely reports that approximately 45% of all firefighter duty related fatalities are caused by cardiac events.

Source: LeDuc, Todd. “Surviving the Fire Service.” Tulsa, OK. Fire Engineering Books and Videos. 2020

B. Cancer

Occupational cancer has rapidly emerged as the greatest threat to firefighters’ health. In 2005, the Firefighter Cancer Support Network (FCSN) was formed by a firefighter who had been diagnosed with colon cancer. He spurred research into this devastating disease and learned that many firefighters were dead or dying from this occupational disease. In 2013, the FCSN published a white paper highlighting eleven “best practices” entitled “Taking action Against Cancer in the Fire Service.” Other areas of research continued as researchers from the National Institute for Occupational Safety and Health (NIOSH) launched a multi-year study to examine whether firefighters have a higher risk of cancer and other causes of death due to job exposures. The study was a joint effort led by researchers at NIOSH in collaboration with researchers at the National Cancer Institute and the University of California at Davis Department of Public Health Sciences and supported by the U.S Fire Administration. This study, completed in late 2015, included 30,000 career firefighters from Chicago, Philadelphia, and San Francisco who were employed at any time between 1950 and 2009. NIOSH researchers found that, when compared to the number of cancers expected using U.S. population rates, the firefighters in this study had a modest increase in cancer diagnoses (9% increase) and cancer-related deaths (14% increase).

Source: LeDuc, Todd. “Surviving the Fire Service.” Tulsa, OK. Fire Engineering Books and Videos. 2020

Research continues today by the National Development and Research Institutes (NDRI) in cooperation with other entities, such as the American Cancer Society, the International Association of Firefighters (IAFF), and the International Association of Fire Chiefs (IAFC). In 2018, Congress passed the Firefighter Cancer Registry Act which mandated the Centers for Disease Control (CDC) create a voluntary registry to collect health and occupational information to determine cancer incidence in the nation’s fire service.

Fighting today’s fires exposes personnel to various hazardous substances. Firefighters can be exposed to hundreds of different chemicals in the form of gases, vapors, and particulates. Some of these chemical substances are known or suspected to cause cancer. Some of these hazardous substances are byproducts of combustion or burning, such as benzene and formaldehyde. Others come from the materials burning

or in the fire debris, such as asbestos from older structures. Research now points to the presence of Polyfluoroalkyl Substances (PFAS), a compound found in firefighting foams and turnout gear as contributing to occupational cancer in the fire service.

Firefighters can come into contact with chemicals by breathing them in, getting them on their skin or in their eyes, or by ingesting them. If protective clothing, known as turnout gear, is not cleaned after a fire response or training event, chemicals on the gear or equipment can contaminate vehicles and the fire station. Reusing dirty turnout gear or respiratory protection can also result in exposure to hazardous substances. These exposures can occur by skin contact with contaminated personal protective equipment (PPE) or by breathing in or ingesting particles from contaminated PPE.

C. Suicide

Although believed to be under-reported, suicide among firefighters (as well as other first responder groups) is believed now to exceed all other reported causes of "on duty" firefighter fatalities. According to the CDC, firefighters may be at an elevated risk for suicide because of the environments in which they work, compounded by the "suck it up buttercup" culture the profession is noted for. Stress plays a role here as it may be acute or chronic, caused by exposure to violent incidents (Post Traumatic Stress Disorder, or PTSD), pandemic illness, substance abuse, and the overall work schedule which can result in strained personal relationships. Without adequate intervention, feelings of hopelessness, depression, and anxiety often lead to suicide.

D. Roadway Incidents

There is an ever-growing trend of firefighters being struck on the highway during emergency response. In 2021, six of the sixteen firefighters who died in vehicle/traffic related incidents were struck by vehicles. Impaired driving due to being drowsy, drugged, drunk or distracted (the 4 D's) has led the Emergency Responder Safety Institute (ERSI), in collaboration with the National Volunteer Fire Council (NVFC), NFFF, NFPA, and law enforcement to focus on public awareness, apparatus visibility standards and training for first responders regarding this problem. Training is available through ERSI to establish minimum job performance requirements for traffic control, scene safety (creation of a temporary traffic control zone), and incident management.

Source: Sullivan, Jack. "Roadway Incident Safety for Fire and EMS." National Volunteer Fie Council https://www.nvfc.org/wp-content/uploads/2018/11/Roadway-Incident-Scene-Safety-for-Fire-and-EMS.pdf 2017

E. Active Shooter

Communities across the country have to deal increasingly with domestic violence. The active shooter incident has permeated communities both large and small and has forced a more coordinated response by the fire service and law enforcement (known as Rescue Task Force, or RTF). The two primary missions- neutralizing the shooter and

rapid patient extrication, now run concurrent versus in recent past where EMS waited outside until the building or area was cleared. Many lives have been lost due to large volume blood loss because of the extended time to initiate patient care. Now, thanks to funding availability for ballistic vests for the fire service and more aggressive exsanguination protocols, more lives may be saved. Apart from the physical danger associated with entry into a shooter's area, the effects on short and long-term mental health of first responders are at the forefront of recovery and survival intervention efforts. While no formal active shooter training program exists for TFPD, there exists a cooperative relationship with law enforcement from which to develop more formal training in this area. Of note, TFPD was recently provided a $50,000 donation for the purchase of ballistic vests. It is recommended that TFPD seek continual cooperation for joint training and RTF operations with law enforcement and TRMC.

TFPD has not ignored the issues associated with firefighter safety, health, and wellness. Rather, insufficient funding and personnel resources have limited the depth of programs which are contributing to the reduction of risk to firefighters. The following are recommendations to enhance TFPD's progress in these areas:

Recommendation
TFPD needs to increase their administrative and support staff to address the growing needs of the organization.

There is one Office Manager who is responsible to oversee the human resources and related staff functions, to include budgeting, grants administration, procurement, planning, staff development (career and volunteer), resource management, and safety and health administration. Additionally, the Fire Chief operates without administrative support and is required to dedicate time to these areas, which decreases the time available for direct oversight of the operational components of TFPD.

TFPD has addressed these gaps in part by maintaining a contract with Lexipol, Inc., for the development of many of its policies and procedures. This company is nationally recognized for assisting public safety organizations with the operational and legal challenges associated with program administration. Lexipol, Inc., not only creates policy, but they also assist with training for personnel.

Recommendation
It is recommended that TFPD continue to contract with Lexipol, Inc. as it builds an administrative and support structure to a level commensurate with its size and complexity.

Similar to incident command, administrative roles should be split/delegated according to the "span of control" principle, or based on a developed staffing ratio factor relative to field personnel. To exemplify this, during an emergency incident, the incident commander is able to effectively supervise an average of five functional areas. These could include tactical areas, such as fire attack, water supply, ventilation, search, rescue, and safety. If the incident grows to require additional resources or tactical functions, the incident commander will become unable to supervise these functions. At this point, additional layers of supervision must be created, and the workload divided. In this example, the incident commander should establish a group supervisor or branch director to share oversight of some or all of these tactical operations, restoring a manageable span of control for the incident commander. This delegation or splitting of roles is also necessary on the administrative side of the organization.

Recommendation
Because the Office Manager's span of control has been exceeded, TFPD should consider hiring an assistant in order to effectively manage current responsibilities.

This position could be phased in as funding is available, or the functions of the position could be combined with another support position, such as a daytime Operational Battalion Chief, or Administrative Assistant to the Fire Chief. In addition, obtaining an appropriately skilled volunteer member who wishes to give time to the organization in areas other than firefighting could be an additional consideration for this position.

Recommendation
It is recommended that TFPD provide additional support to the Battalion Chief of Training to assist with records management.

The Fire Chief has filled a vacancy for the Battalion Chief of Training, which has increased the morale of all TFPD personnel interviewed. While this position will improve the regularity and consistency of training, it will be challenged to maintain the tracking of programs and attendance. Training records management is vital in order to document that personnel are qualified to perform job functions. Some of these functions require regular re-certification which must be tracked. Accurate training records also protect the organization against malfeasance accusations for situations stemming from situations such as medical malpractice, harassment, and significant injury or a LODD.

Recommendation
It is also recommended that TFPD consider building out operational supervision as the district's workload and staffing grows through the hiring of: • One Assistant or Deputy Chief (Upgrade of existing Division Chief position) • Battalion Chief(s) • Additional Fire Inspectors (or Assistant Fire Marshals) and a Plans Reviewer

An Assistant or Deputy Chief would allow more direct oversight into the strategic issues within each discipline of field operations and would enhance the ability to expand to a senior level "on call" supervisor for nights and weekends. This would also provide the Fire Chief with a designated "second-in-command" as well as assisting with planning, budgeting, procurement, safety and health and grants administration. The addition of a Battalion Chief(s) would consolidate shift management to improve overall operational consistency, provide day-to-day tactical oversight and remove direct incident supervision from the engine company Captains, allowing them to focus on the task level operations and crew management during a structure fire or other large incident. The district could phase in these positions by having one, daytime, Battalion Chief first to oversee the station officers and assume other functional area responsibilities in logistics, etc. while assisting the Fire Chief and Deputy Chief with command officer response at night and on weekends. Battalion Chiefs could also be trained as Safety Officers, Paramedics or Hazardous Materials Technicians to add depth to operational supervision. Over time, as the district call load and supervisory positions increase, the Battalion Chief positions could become 24/7.

It is well-recognized that the expansion of senior-level, administrative and operational staff will increase pressure on both finances as well as physical space. Currently TFPD is not resourced with the space needed to hire all of these positions. They will have to be prioritized and phased in over time. However, it cannot be over-emphasized that the overall safety and health of TFPD requires additional operational and administrative support.

Recommendation
It is recommended that additional members, preferably non-supervisory personnel, be added to the Safety Committee to ensure a balanced approach to establishing priorities implementing programs.

TFPD has developed a Safety Committee consisting of the Fire Chief, Fire Operations Division Chief, EMS Operations Chief, and Battalion Chief for Training. This committee is designed to evaluate programs and practices, and to recommend training and other enhancements to reduce the risk to members, consistent with NFPA 1500, "Standard on Fire Department Occupational Safety, Health, and Wellness Program". Despite this, interviews with the rank-and-file personnel identified this as a challenge, again due to a lack of personnel resources to address the comprehensive needs of TFPD. In addition, membership in fire department safety-oriented organizations, such as the Fire Department Safety Officers Association (FDSOA), can provide

access to training and programs, as well as build important “peer-to-peer” relationships. While compliance with NFPA 1500 is important, it is a long-term challenge. More important is the need to initiate the effort, develop a realistic compliance plan, and follow the plan.

TFPD presently does not have a medical examination program which meets the comprehensive entry and maintenance requirements of NFPA 1582, “Standard on Comprehensive Occupational Medical Program for Fire Departments”. NFPA 1582 is considered the “gold standard” for addressing firefighter health issues and, like NFPA 1500, may require a phased in approach due to budget and accessibility issues.

Recommendation
At a minimum, TFPD should work to convert medical examinations to meet NFPA 1582.

An option is to see if TRMC can provide these services. There are also mobile providers available through contract as well. At a minimum, entry and maintenance medical examinations for all operational personnel should include screening for cardiovascular disease, cancer, lung disease, sleep disorders, and behavioral health.

Cardiovascular disease evaluation should include:

- Consideration of a person’s risk factors (age 45 years or older, smoking, hypertension, obesity/excess body fat, cholesterol, diabetes mellitus, prior diagnosis of coronary heart disease)
- Comprehensive lab work
- Screening for left ventricular hypertrophy, cardiac chamber enlargement, valvular abnormalities, diastolic/systolic dysfunction using echocardiography at age 40, or before age 40 in the presence of hypertension, obesity, Metabolic Syndrome, or sleep apnea

Cancer screening should include:

- Tracking PSA beginning at age 30
- Colorectal cancer screening beginning at age 40
- Comprehensive blood work
- Cervical cancer screening every 1-3 years based upon risk factors
- Annual mammograms beginning at age 40 (with instruction for self-examination)
- Annual testicular exam (with instruction for self-examination)

Annual head-to-toe skin examination and appropriate dermatology follow up

Urinalysis annually for microscopic hematuria

Ultrasound evaluation of hollow organs, to include thyroid

Lung disease screening should include:

Baseline chest x-ray, repeated as clinically indicated

Regular spirometry to include FEV1, FVC, and the absolute FEV1/FEV ratio if clinically indicated

Low dose CT in high-risk patients

Screening for behavioral health should include:

- Substance use/abuse
- Evidence of depression, PTSD, acute stress reactions and anxiety
- Evidence of suicidal thoughts or ideation

Screening for sleep apnea should include:

- Evidence of insomnia, narcolepsy, restless leg syndrome
- Follow up for sleep study if clinically indicated

Firefighters should have access to services which promote a healthy lifestyle. These include diet and exercise management programs, substance abuse/cessation programs, and mental health resources, such as the "Yellow Ribbon Report" from the IAFC Volunteer and Career Officers Section (VCOS). TFPD operational personnel have access through their health insurance program, Triad Healthcare, however a co-pay is required. Over time, these are services which should be provided without cost to the employee.

Recommendation
TFPD should immediately develop a plan to address occupational exposure to carcinogens.

This should start with the design and implementation of a district policy on "best practices" for cancer prevention. An excellent guide is the "Lavender Ribbon Report" which was produced through the IAFC/VCOS, and is consistent with procedures recommended in NFPA 1500, NFPA 1851, "Standard on Selection, Care, and Maintenance of Protective Ensembles for Structure Fires", and NFPA 1877, "Standard on Selection, Care, and Maintenance of Wildland Protective Clothing and Equipment". The plan should address:

On scene and post-fire decontamination of firefighters, to include a firefighting hood exchange program and requirements for showering and use of clean uniforms. TFPD is pursuing means to issue a second set of full turnout gear for all operational personnel. This is important as a second set of turnout gear ensures available protection of members when their primary set of turnout gear is being cleaned and dried. Even with the availability of Assistance to Firefighters Grants (AFG), this is a costly initiative. Given the low volume of fire calls within TFPD, an option would be to purchase several backup sets of turnout gear, using quantities and sizing representative of the overall workforce. This may be the most efficient option given the variable number of operational volunteer firefighters. Presently TFPD does maintain a backup stock of firefighting gloves and hoods and has a contract with a certified gear repair firm.

Recommendation
Expansion of the turnout gear cleaning program with the addition of two turnout gear extractor washing machines is also recommended.

Extractors are especially designed washers to remove embedded soot and other chemical solids from turnout gear. Presently TFPD possesses one extractor, located at Station 1. TFPD personnel from Stations 2 and 3 must transport their turnout gear to Station 1 when it is due for cleaning. This unnecessarily places response personnel from those stations out of their service district and creates a disincentive to regular gear cleaning. At a minimum, a second extractor should be purchased and located at Station 3 Placerville. Extractor washing machines and dryers both qualify under the AFG program. TFPD also has two additional washers with dryer at Station 1- one is for station wear and the other is for soiled EMS laundry.

Recommendation
TFPD should immediately address personnel and equipment exposure to apparatus exhaust.

Apparatus exhaust, especially diesel exhaust contains diesel particulate matter, or soot, and over forty known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and oxides of nitrogen (NOx). Without adequate ventilation and separation, exhaust can travel from apparatus areas to living areas of the station. **Section 9.1.6 of NFPA 1500 states: "The fire department shall prevent exposure to firefighters and contamination of living and sleeping areas by exhaust emissions."** Since 2007-2008, motor manufacturers have been required to meet air quality regulations administered by the Environmental Protection Agency (EPA). These regulations cover the quantity and quality aspects of exhaust as pertains to outdoor air. However, indoor air quality falls under standards developed by the American National Standards Institute (ANSI) which are more stringent than those of the EPA. Thus, when apparatus is marketed as "EPA Certified" it does not mean they are safe for indoor operation where fumes and soot are generated. Exhaust mitigation equipment (hose systems, apparatus mounted filtration) is geared to meeting NIOSH standards.

Source: California Air Resources Board "*Overview: Diesel Exhaust and Health*" {https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health} 2022

TFPD is planning to segregate stored turnout gear to areas remote from apparatus bays coincident with planned upgrades to Stations 1, 2, and 3. TFPD does utilize apparatus mounted exhaust filtration systems on two pumpers. It is recommended to expand this system (or convert to other technology) to all apparatus to minimize the discharge of cancerous exhaust in each station. Such systems qualify under the AFG program. TFPD should also evaluate all station living and working spaces to ensure they are properly ventilated to minimize exhaust contamination.

Recommendation
TFPD should consider the “clean cab” design concept when ordering new firefighting apparatus.

The clean cab concept employs several means to reduce accumulation of soot and other contaminants from the riding positions of apparatus. Components of this concept include full cab ventilation, use of smooth, flat, and non-porous interior surfaces and separate compartmentation for turnout gear and self-contained breathing apparatus (SCBA).

Apparatus Testing and Preventive Maintenance

Proper apparatus and equipment maintenance is a critical safety aspect. Apparatus and equipment are expected to operate effectively 100% of the time. When trucks are out of service or when equipment is broken, the quality of service to the public is affected and liability for the organization is increased. NFPA 1911, “Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles”, requires that pumpers and aerial apparatus undergo performance testing annually. TFPD identified that it is not able to meet the requirements of this standard, at this time, but is working toward that end.

TFPD operates with a single mechanic who is responsible for the maintenance and testing requirements of numerous front-line apparatus and equipment. This was identified as a weakness and there was evidence to demonstrate frustration with delays in restoring apparatus to service. Workload and facilities are the main challenge. The mechanic operates on a mobile basis without a dedicated maintenance facility. Stations have inadequate bay space to work, no lift equipment, and no centralized inventory for parts which would have workspace and equipment to lift vehicles and there is no ability to maintain a central inventory of parts.

Recommendation
To address the limitations of a single district mechanic, the hiring of as assistant mechanic is recommended. This position could start as a part-time position or again be from a non-firefighter volunteer support member with skills.

Recommendation
Building a dedicated fire department maintenance facility or consolidating basic apparatus maintenance with other local municipal repair and maintenance facilities will improve operations, parts accessibility, and inventory control.

Of note, this concept was well received by the local government leaders who were interviewed.

Recommendation
TFPD should strive to see that the existing mechanic attain Emergency Vehicle Technician (EVT) certification.

Training

The ability to deliver a quality training program is paramount to the effectiveness of fire and EMS operations, as well as the safety of personnel. A good training program begins at the recruit level and progresses through each rank and specialty level and is reinforced at regular intervals to ensure proficiency in all performance areas. Training must also include "soft skill" programs to build and foster effective relationships among personnel who live and work together for extended periods of time, and who are subject to the unique stresses of the job.

TFPD utilizes national training standards as the basis of its program, to include those developed by NFPA, National Registry of Emergency Medical Technicians (NREMT), and the State of Colorado (EMT) and the Colorado Division of Fire Prevention and Control (CDFPC). Firefighter training is certified through the International Fire Service Accreditation Congress (IFSAC). Wildfire training (RT-130) is certified through the National Wildland Coordinating Group.

In general, classes are taught by Captains, Division Chiefs, Fire Chief, and firefighters or EMS personnel with specific specialties. All TFPD personnel must attend annual harassment and bias training with the Employers Council.

Other Specialty Training:

- Since TFPD has no dedicated structural fire training building, it relies on the state's mobile fire training trailer or the Montrose fire training tower
- Vehicle extrication training is done annually and as vehicles are available
- Specialty rescue ropes is done annually, usually before the winter season arrives
- Water rescue
- Hazardous materials

With the hiring of the Battalion Chief of Training, additional special risk training will cover high rise operation and parking garages.

Training Records Management:

Training records are maintained via Image Trend Elite along with job performance requirements (JPRs) and EMS specific requirements. The Captains and Battalion Chief Training are responsible for inputting records.

Affiliate organizations and conference attendance:

TFPD maintains membership in several training organizations. These include the Colorado Fire Training Officers Association, Four Corners Fire Training Officers, Western Regional EMS, and Trauma Advisory Council (WRETAC), Professional EMS Education (EMS Training Center), American Safety and Health Institute (ASHI)

As scheduling and funding allow, TFPD sends members to area conferences. These include the Colorado Fire Fighters conference (CFFA), the Colorado State Fire Chief's (CSFC) Fire Leadership conference, Emergency Medical Services Association of Colorado (EMSAC) conference, the Fire Marshals Association conference, and the International Association of Arson Investigators (IAAI), Colorado Chapter conference. It is the intent to send the Battalion Chief Training to the Fire Department Instructor's (FDIC) conference.

For training deemed necessary, TFPD will support member expenses related to registration, travel, per diem, and room and board.

Recommendation
TFPD should develop a plan to require Fire Officer I for the new EMS Administrative position.

Recommendation
TFPD should develop a plan to require Incident Command certified (IC Type 3) for the Deputy Chief and any new Battalion Chiefs.

Recommendation
TFPD should continue building its volunteer training program. The program is being re-designed as the Battalion Chief Training is now on-board. Flexibility to allow for night and weekend attendance must be a part of that program.

Recommendation
TFPD should consider hiring or recruiting a volunteer to serve as a training assistant for records management. This will alleviate records entry responsibility from officer-level personnel, allowing them to focus on training delivery and other responsibilities.

Recommendation
TFPD should begin a search for a suitable location for a training tower and a structural fire training facility.

This was a resounding need from all operational personnel interviewed. Given land and zoning constraints, an option may be to co-locate these facilities at an existing industrial-type location. Grants are available through FEMA's the Assistance to Firefighters (AFG) program.

Recommendation
TFPD should develop a plan to meet, at a minimum, the fire training requirements from the Insurance Services Office (ISO) grading schedule. This is in addition to required training for EMS, and includes: a. Company Training: Sixteen hours per month (192 hours per year) b. Hazardous Materials Training: Six hours per year per member c. Driver Training: Twelve hours per year per member d. New Driver Training: Sixty hours per year e. Officer Training: 12 hours per year per Officer f. Recruit Training: 240 hours per Recruit g. Facility Training (Drill tower and live fire training): 18 hours per year per member h. Pre-Planning: One review per year

Staffing: Effective Firefighting Force (Structural)

Firefighting remains one of the most dangerous occupations. It is a task-oriented, labor-intensive team operation requiring continual training, physical stamina, and an understanding of buildings and fire behavior.

The effectiveness of structural firefighting operations is dependent upon the number of qualified firefighters, their arrival sequence, and their coordination in performing the many tasks needed to manage an incident successfully and safely. The following is a listing of major tasks required by an effective firefighting force:

- Safe arrival to the scene
- Tactical placement of apparatus
- Establishment of incident command with situation-based priorities (360-degree size-up, situation report, and development of initial priorities, notably victim rescue, protection of exposed properties, confinement, and extinguishment of fire)
- Establishment of an uninterrupted sustained water supply
- Utility control
- Tactical ventilation of the building
- Tactical deployment of firefighting hose lines
- Tactical deployment of ladders
- Victim rescue and EMS
- Medical evaluation for firefighters
- Preservation of unburned private property
- Safe overhaul of the building to ensure fire is out
- Incident de-escalation and return to quarters

These initial tasks of firefighting must be coordinated and performed in rapid sequence. When fewer firefighters arrive or arrival is delayed, these tasks will require more time to complete. The more time required, the longer the building will burn, resulting in increased firefighters and trapped civilians. This may be in the form of both thermal assault and building collapse.

The concept of “safe staffing” for structural firefighting has developed over the last thirty years. Much of this development has been the result of significant incidents across the country which have often killed firefighters and civilians. Through the formal reviews of these incidents, common themes have emerged, and recommendations have been attained on best practices for fire departments when dealing with these incidents.

The NFPA has developed consensus-based standards which provide guidance the proper complement of response units and their staffing levels:

- NPFA 1500, Section A.8.5.1.1 recommends that “a minimum acceptable fire company staffing level should be four members responding on or arriving with each engine and each ladder responding to any type of fire.”

- 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", describes the tasks the initial response assignment should be able to complete, using a two-thousand square foot, wood frame dwelling, without a basement or exposures. While it does not define the composition of the initial alarm assignment, it does require:
  a. Four-person staffing on all engines, ladders, rescue squads, quints, or other specialty vehicles (excludes command-type vehicles and EMS units)
  b. Arrival of the first engine company, staffed with four personnel, within 240 seconds or less of driving time, ninety percent of the time
  c. Arrival of the second engine, ladder, rescue squad, quint, or other specialty vehicle (excludes command-type vehicles and EMS units), staffed with four personnel, within 360 seconds, ninety percent of the time
  d. Arrival of the first alarm assignment in 480 seconds, ninety percent of the time
  e. A minimum of seventeen members (sixteen if no ladder is dispatched), to include four members to perform as a rescue intervention team (RIT)

  For garden apartment-type units and strip-mall type buildings, the total staffing required is twenty-eight members. For high-rise buildings, the total staffing required is forty-three members.

  The recommended staffing response and functions performed at various type incidents as recommended by NFPA 1710 are indicated below:

Table 3.4 NFPA 1710 – Recommended Staffing for First Alarm Structural Assignment Capability

Task	Single Family Dwelling (2000 sq. ft.)	Apartment (1200 sq. ft. apartment in a 3-story building)	Open- Air Strip Shopping Center (13,000 sq. ft. to 196,000 sq. ft.)
Incident Command	1	2	2
Establishing a water supply	1	2	2
Fire flow application with hose lines	4	6	6
Support for hose lines	2	3	3
Search and rescue team	2	4	4
Ventilation and raising ladders	2	4	4
Aerial ladder operator (If needed)	1	1	1
Rapid Intervention Crew	4	4	4
Initial Medical Care		2	2
Total Effective Response Force Needed	**16-17 personnel**	**27-28 personnel**	**27-28 personnel**

Source- 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"

Even for non-structural incidents, a need for adequate numbers of personnel to respond to mitigate the incident is necessary. Below is a representative chart showing the typical number of needed personnel on non-structural emergency incidents.

Table 3.5 NFPA 1710 Guidelines for Minimum Staffing for Typical Non-Structural Response Incidents

Task	Vehicle Accident with person entrapment	Advanced Life Support Non-Trauma Medical Call	Brush Fire (Less than 1 acre and accessible)
Incident Command	1	1	1
Fire Unit Driver/Operator	1	1	2
Hose line operator	2		4
Rescue Tool Operator	2		
Hand Tool Operator			2
Patient Care	2	2	
Total	**8**	**4**	**9**

- NFPA 1720, "Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments", uses the same baseline two-thousand square foot, wood frame dwelling, without a basement or exposures. However, it does not recommend minimum staffing levels. Instead, it allows the local authority having jurisdiction (AHJ) to establish specific unit staffing levels and response times to meet the needs of the department. NFPA 1720 does allow an authority to identify different "demand" zones and to establish requirements to meet those needs. NFPA 1720 requires firefighting operations to begin within two minutes of arrival, with all of the equipment needed to fight the fire, ninety percent of the time.

  The recommended staffing and response time parameters included in NFPA 1720 are indicated in the following chart.

Table 3.6 NFPA Guidelines for Staffing and Response Time

NFPA 1720 Staffing and Response Time

Demand Zone (a)	Demographics	Minimum Staff to Respond (b)	Response Time (minutes) (c)	Meets Objective (%)
Urban area	> 1000 people /sq. mi.	15	9	90
Suburban area	500-1000 people / sq. mi.	10	10	80
Rural area	< 500 people / sq. mi.	6	14	80
Remote area	Travel distance greater than or equal to 8 miles	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

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

Source – 2020 Edition of NFPA 1720 – "Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments"

Standards are also in place to govern operations at a structure fire.

- The Occupational Safety and Health Administration (OHSA) has developed regulations for operating in a hazardous atmosphere (Immediately Dangerous to Life and Health, or IDLH). OSHA 1910.134 (g)(4) requires at least two members to enter IDLH atmosphere (such as a structure fire) and remain in contact with each other through visual, audible, or physical means, and that at least two members remain outside (Initial Rapid Intervention Crew, IRIC) to monitor the inside crew as well as conditions and be available for immediate rescue should the situation warrant. This is commonly known as the "two in two out" regulation.

- Similarly, NFPA 1500, Sections 8.6.4, 8.6.5, 8.6.6, and 8.6.7, cover crew management requirements during an emergency incident. These provisions require teams of at least two personnel, who must be in visual, audible, or physical means when operating in hazardous areas. Further, there must be two members on the outside to act as an initial rescue team, subject to immediate deployment.

- NFPA 1710 and 1720 require upgrade of the Initial Rapid Intervention Crew (IRIC) to a Rapid Intervention Crew (RIC), consisting of four members, in full personal protective equipment (PPE) when the incident escalates to present significant risk to firefighters.

Staffing for Fire Responses

In November 2019, TFPD underwent a formal staffing study by an outside consultant. The study conducted an analysis of staffing levels, based upon NFPA 1710 and NFPA 1720. At the time of the study, TFPD did not employ career members to operate out of stations, thus the organization fell into the NFPA 1720 category, based upon its reliance upon volunteer personnel. However, in 2021, TFPA began staffing Station 1 and 2 with career personnel. There were two main reasons for this:

- Volunteer fire personnel were not available in sufficient numbers at Stations 1 and 2 to address timely response needs, and
- Volunteer EMS volunteers from Telluride Emergency Medical Association (TEMTA), were not available for medical calls, especially inter-facility transfers from TRMC.

The response to a structure fire in TFPD generates what is described as a "general alarm" meaning Stations 1, 2, and 3 are on the initial dispatch. Response from Station 3 is provided solely by volunteer members who generally provide out of station or "from home" response.

The 2020 edition of NFPA 1710 clarifies that if fifty percent or greater of the response to an initial alarm assignment is done using career personnel, the organization is considered to fall under the NFPA 1710 designation.

Source: Varone, Curt. "2020 Edition of NFPA 1710 Released." Fire Law Blog, 5 June 2019, https://www.firelawblog.com/2019/06/05/2020-edition-of-nfpa-1710-released/

This interpretation is problematic for TFPD because it is not adequately resourced to meet the requirements of NFPA 1710. Similarly, TFPD is only marginally able to meet the requirements of NFPA 1720. The following explains this reasoning:

- NFPA 1720 allows for the use of multiple "demand zones," to include urban, suburban, rural, and remote zones, as well as classification of properties as special risk. A structure fire in the commerce districts of Telluride and Mountain Village would be considered a response to a suburban zone (based upon population density). For this demand zone, NFPA 1720 requires a minimum of ten personnel to respond and arrive within 10 minutes of response eighty per cent of the time. In this scenario and using the assumption that station staffing is not compromised by EMS activity, response from Station 1 would provide three personnel who would arrive within the ten-minute fractional parameter. Station 2 would respond with three personnel who would arrive within the ten-minute fractional parameter. Station 3, however, would require time to assemble a volunteer response crew. For the purpose of illustration, this could take an average of five minutes. Once assembled, the response must cover in excess of a ten-mile distance to Telluride or

Mountain Village, which would require more than five minutes driving time. **Thus, TFPD would only have six personnel available within the ten-minute fractional requirement and would be out of compliance with NFPA 1720.**

- A structure fire in Station 3's area (or Station 4) would fall under the rural or remote fractional parameters of NFPA 1720, again based upon population density. Rural response would require six personnel to arrive within fourteen minutes of response eighty percent of the time. Remote response would require four personnel to arrive according to the travel distance needed. Using the same response scenario and assumptions, **TFPD would be able to meet this requirement of NFPA 1720.**

- The NFPA 1710 scenario is quite different and makes it clear that TFPD is significantly understaffed to meet this standard (TPFD's current structural capabilities are listed in bold)

  a. Four-person staffing on all engines, ladders, rescue squads, quints, or other specialty vehicles (excludes command-type vehicles and EMS units): **Career staffed engines from Stations 1 and 2 are staffed with three personnel. The ladders at Stations 1 and 2 are only staffed when volunteers are available. There is no four-person staffing minimum requirement for ladders.**

  b. Arrival of the first engine company staffed with four personnel, within 240 seconds or less of driving time, ninety percent of the time: **Station 1 and 2 can meet the fractional time requirement but cannot meet the four-person staffing requirement. Station 3 cannot guarantee either due to volunteer availability.**

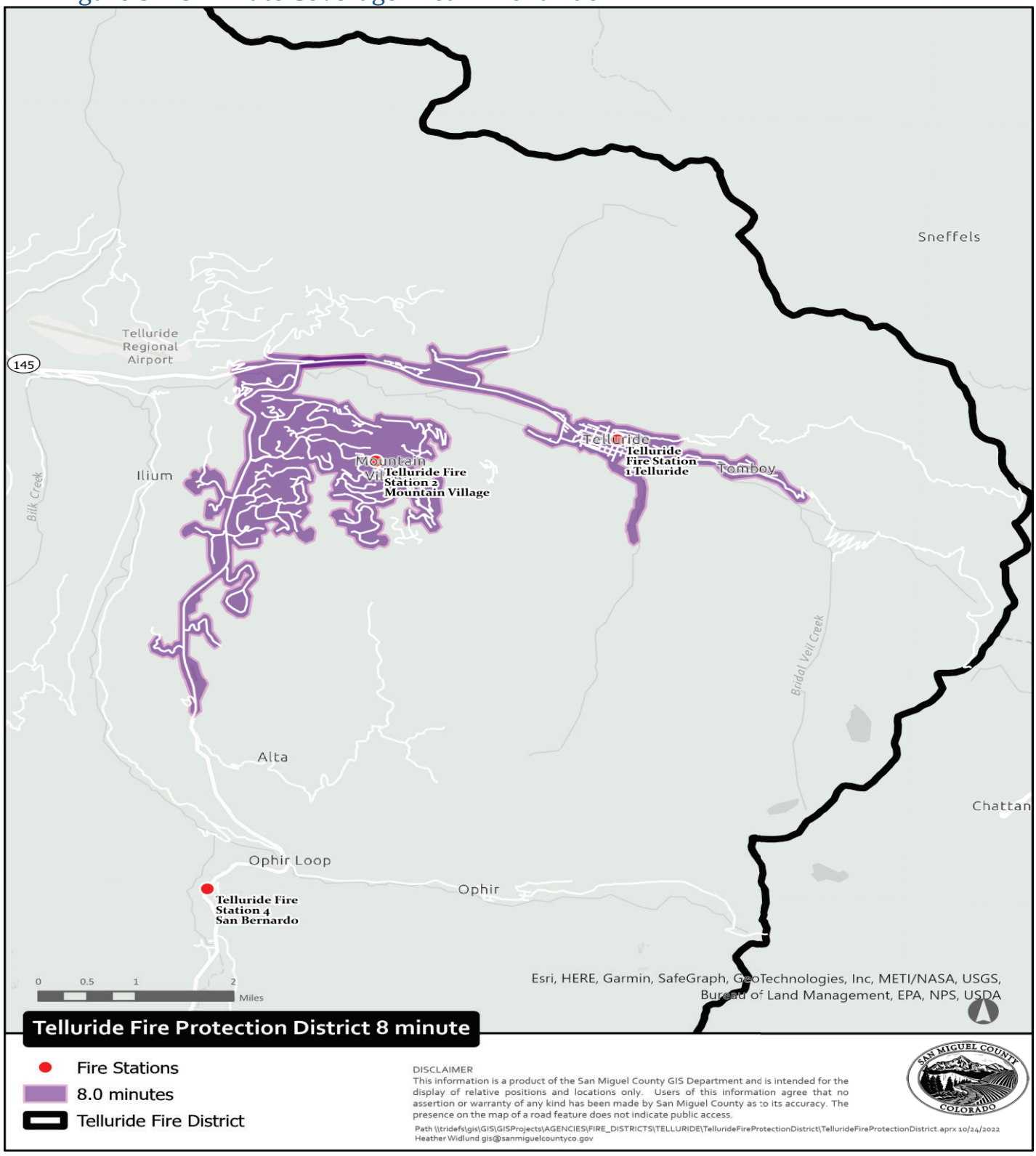
  c. Arrival of the second engine, ladder, rescue squad, quint, or other specialty vehicle (excludes command-type vehicles and EMS units), staffed with four personnel, within 360 seconds, ninety percent of the time: **Stations 1, 2, and 3 cannot meet the fractional time requirement due to travel distances. Staffing is subject to the same limitations noted for the arrival of the first engine.**

  d. Arrival of the first alarm assignment in 480 seconds, ninety percent of the time: **TFPD cannot meet this fractional requirement due to travel distances.**

  e. A minimum of seventeen members (sixteen if no ladder is dispatched), to include four members to perform as a rapid intervention team (RIT): **Given the limitation of six personnel from Stations 1 and 2, the only way to meet this requirement would be for ten/eleven additional personnel to arrive, and this would be subject to the 480 second arrival parameter. Based upon data, this is not likely to occur.**

The current 8-minute response coverage area from Stations 1 and 2 is indicated below. The coverage area includes all of the Town of Telluride and most of the Town of Mountain Village.

Figure 3.2 8-Minute Coverage Area in Telluride



In addition to this dilemma presented by both NFPA standards, TFPD is further challenged by several factors:

- The use of three-person engine staffing compromises TFPD's compliance with OSHA 1910.134(g) which mandates the two in-two out regulation described above. While Colorado is under Federal OSHA jurisdiction and covers only private workers in the state, OSHA 1910.134(g) is a nationally recognized regulation for firefighter safety. Coupled with NFPA 1500, Sections 8.6.4, 8.6.5, 8.6.6, and 8.6.7, failure to follow these components can pose great civil liability for an organization. **TFPD attempts to follow this standard.** The value of two in-two out, and relevance to TFPD, can be best illustrated by reviewing the NIOSH LODD report from Keokuk, Iowa. This fire on December 22, 1999, claimed the lives of three Keokuk firefighters and three civilians. Six personnel were dispatched to this structure fire (three firefighters, the Fire Chief, an Assistant Chief, and a Lieutenant). The response of the Chief and one firefighter were delayed due to return from a prior incident. The first three arriving personnel (Assistant Chief and two firefighters) initiated outside rescue of two victims from the roof. They then made entry into the building to search for a third victim, which is permitted under OSHA 1910.134(g) as there was a known rescue situation. However, without any outside crew available (two out), the fire situation changed dramatically due to a flashover, trapping, and killing the three firefighters, as well as the third civilian**. TFPD could easily face a similar response situation**.

  Source: NIOSH Report (https://www.cdc.gov/niosh/fire/reports/face200004.html)

- The use of three-person staffing does not allow the regular response of a ladder truck. A ladder truck is typically a component of a structure fire dispatch, especially when a commercial or multi-family building is involved. The availability of ladders to affect occupant rescue is paramount. Ladder trucks carry 85-115 feet of ground ladders, to include straight and extension ladders, as well as the aerial ladder itself (usually 100 feet in length average). An engine typically carries a minimum of two ladders, one straight and one extension. During a rescue situation, the ability to place ground ladders (or use the aerial ladder), for rescue must be done at the same time firefighting operations are underway. With only a crew of three personnel on TFPD's engines, they must prioritize the placing of ladders or advancing hose lines into the building. This dilemma often causes firefighters to try to do both, resulting in independent operation, risking their safety as well as that of the occupants. **TFPD faces this possibility every day.**

- The use of three-person staffing is often compromised by EMS "9-1-1" calls and inter-facility transports. The vast majority of calls for TFPD are EMS related and require two of the on-duty career members to regularly respond, reducing the engine staff to a single person. TFPD has adapted response policies to best maintain area coverage for either fire

or EMS response. Crews evaluate certain incidents, mostly low hazard types, the location, and potential service time demand when considering which apparatus to respond in. An observed situation involved a fire alarm call in Station 2's district. A single member responded in a command style vehicle, ahead of the engine staffed by the other two shift members. This allowed a more rapid situation assessment as a "non-emergency" event and resulted in the quick return to the station by the engine crew in case an EMS call was received. Had they taken all three members on the engine, and an EMS call received, response would likely have been delayed. Similarly, crews are dangerously split when inter-facility transport is needed. It is not uncommon for two of the three career staff in a station to be unavailable for up to four hours (or more) on these incidents. **TFPD experiences this situation every day.**

Staffing for EMS Responses

NFPA 1710 and NFPA 1720 do not provide specific staffing levels for EMS delivery. Instead, they submit that units are to be staffed and equipped in accordance with the level of care provided. That said, TFPD strives to provide no less than two personnel, with one at the Lieutenant/Paramedic level, to most "9-1-1" emergency calls.

TFPD's EMS response is challenged by the same general factors as fire response. Medical call response is subject to the same level of discernment as to which vehicles to take and whether to split crews to maintain as much "in service" capability as possible. A two person EMS crew may respond in a "9-1-1" ambulance or, in the case of a fire call the Lieutenant/Paramedic may respond in an EMS Squad so as to be available should an EMS call be dispatched.

Similar to a single person fire response, a single person EMS response can increase the risk of injury or death, especially when dealing with a violent scene or roadway incident. The hierarchy of emergency response priorities is places scene safety first.

As previously noted, the response to inter-facility transports places a strain on staffing for EMS, especially given the potential for multiple EMS calls during the peak vacation seasons. Likewise, the roadway configuration throughout the district can result in multi-casualty vehicle accidents, requiring multiple EMS transport vehicles. TFPD does possess EMS air transport capability; however, this is subject to seasonal weather conditions.

Additional concerning aspects of inter-facility transports is the exposure to many miles of hazardous road conditions and the general fatigue factor imposed on personnel.

Volunteer Staffing

TFPD has a rich heritage of volunteer fire and EMS providers. The Telluride Volunteer Fire Department traces its origin to the late 1870's. The Telluride Emergency Medical Technician Association (TEMTA) began in 1973 and the Placerville Volunteer Fire Department was formed in 1976. Each of these organizations operated as independent 501©3 organizations. Together they provided critical services to TFPD through contract until these contracts were abolished in 2013.

Today these organizations exist as fraternal, non-operational organizations, and volunteer operations fall under the authority of TFPD.

During the 2019 Staffing Needs Assessment, it was noted that volunteer firefighters were responsible for covering shifts, one week at a time, with two weeks off on a three-week rotation. In 2018, volunteers worked approximately ninety percent of the total available shifts.

The TFPD EMS District Volunteer program evolved from TEMTA. As with the volunteer firefighter program, volunteer EMS providers have long delivered high quality emergency medical services.

TFPD has expended significant resources to plan for effective service delivery for the district's service population. A Service Plan was developed in 2013 and was updated with a Strategic Plan in 2015. In both of these documents, volunteerism was touted as an attribute in the Mission statement. Further, volunteerism was identified as both a strength and a challenge, the latter referring to the difficulties with recruiting and retaining volunteers, in particular EMS volunteers. Uniformly, increasing training requirements and a lack of affordable housing to support living in the community have been cited as volunteer disincentives.

The difficulties with volunteer recruitment and retention (R & R) are not unique to TFPD. In the 2019 Staffing Needs Assessment it was cited from the National Volunteer Fire Council (NVFC) that **"the number of volunteer firefighters in the U.S. reached a low in 2011. While there has been a slow increase since then, the growth isn't enough to meet the steady increase in call volume, which has tripled in the last thirty years due in large part to the increase in emergency medical calls. Major factors contributing to recruitment challenges include increased time demands, more rigorous training requirements, and the proliferation of two-income families, whose members do not have time to volunteer. Fire Departments today are also expected to provide a wide range of services and multi-hazard response, creating further challenges for resource-constrained departments."** The same challenges exist for the recruitment and retention of EMS volunteers.

TFPD has explored various options to attract and retain fire and EMS volunteers, to include an annual stipend program, based upon participation levels and degree of responsibility. Despite these efforts, it has been determined that relying solely on volunteer fire and EMS volunteers is no longer a viable service delivery model.

In 2020, at the request of the volunteer fire personnel, the district moved to hire career personnel for Station 1 and Station 2. A total of eighteen career staff provides three shifts of three personnel at both of these stations. Effective November 30, 2022, TFPD eliminated the volunteer EMS program.

The loss of volunteers represents much more than simply the substitution with career staff. Volunteer pride is a community attribute and contributes to its quality of life, owing to the sense of good will derived from "neighbor helping neighbors." The loss of volunteers also affects the greater organization as it represents fewer overall resources during a large emergency, where

minimal career staffing is required to perform multiple tasks as opposed to implementing an effective division of labor. This can affect the safety and morale of career staff

Fortunately, despite recent changes within the volunteer fire and EMS program, TFPD leadership has committed to the continued development of its volunteer forces. The Fire Chief recently met with representatives of the volunteer service and, despite a degree of expressed loss of trust, is working to repair relationships and build their confidence as a needed and desired emergency response component.

The following are recommendations for TFPD's on-going refinement of its volunteer force:

Recommendation
TFPD should commit to a formal Recruitment & Retention (R & R) campaign.

Beyond the typical outreach through occasional flyers, news articles, and attendance at community events, TFPD should develop a formal R & R plan. This plan would be structured with measurable goals, objectives, and timelines, and would involve marketing strategies geared toward the TFPD community. TFPD should also explore networking opportunities which exist to provide support and information exchange on R & R programs. Numerous national resources are available to assist TFPD in this effort. These include:

a. A "Recruitment and Retention Coordinator" (RRC) certification course available through the Volunteer Workforce Solutions division of the IAFC. This sixteen-hour program, funded through the Federal Staffing for Adequate Fire and Emergency Response (SAFER) grant, covers the "best practices" for Volunteer R & R and requires students to develop an individual written R & R plan for their organization. Once completed, students are added to a national email network known as "RRCNet" (rrc@googlegroups.com)

b. A "Building a Collaborative Team" course, also available through the Volunteer Workforce Solutions division of the IAFC. This sixteen-hour SAFER-funded program focuses establishing strong relationships between career and volunteer members at the station level

c. Organizational participation in national organizations that provide training to support volunteer and combined fire and EMS systems, such as the NVFC and the IAFC's Volunteer and Combination Officers Section (VCOS)

d. A grant writing course is available through the NVFC to support R & R programs. This course is accessible at the following link:

   https://virtualclassroom.nvfc.org/products/grant-writing-for-the-fire-and-emergency-services#tab-product_tab_overview

e. Examples of successful websites and social media programs from other organizations, such as the Oregon Fire Recruitment Network https://www.oregonfirerecruitmentnetwork.com and the Firefighters Association of New York (FASNY) website for R &R (www.fireinyou.org)

f. Examples of local YouTube or other social media platform marketing created at the local level

g. "For-hire" companies who specialize in volunteer R & R marketing campaign development.

Recommendation
TFPD should continue efforts to re-establish a volunteer participation policy which provides for the meaningful participation at the operational level.

The policy should outline minimum training requirements and shift responsibilities, as well as access to incentives which encourage volunteerism. The training program must be versatile to accommodate volunteer availability and work shifts should capitalize on volunteer availability as a rigid schedule may not be possible until a sufficient number of qualified volunteers are able to be rostered. Incentives can range from enhancing the stipend program, to local merchant discounts or free access to community services. One area noted was the need for training on TFPD's aerial apparatus. Given the limited career staffing, response of the aerial apparatus is almost exclusively dependent upon volunteer response. Feedback received indicated volunteers were not prepared to operate the apparatus in a safe and efficient manner.

Recommendation
TFPD should develop a program to attract non-operational volunteers.

Non-operational, or administrative, volunteers can provide many needed support-level services for an organization. An aggressive canvass of a community often results in residents who have specific talents (financial, marketing, fund-raising, IT, etc.,) who are willing to volunteer in fire and EMS organizations. This category of volunteer is often prominent in the community's social strata (bankers, educators, salespersons, and politicians) and, once educated, are able to communicate the benefits and needs of the organization, using channels not always accessible at the rank-and-file level.

Recommendation
TFPD should use all means available to pursue affordable housing opportunities for volunteers.

Traditional volunteerism involves members serving the communities in which they reside. Providing adequate housing should be viewed as an investment in the quality of life of a community. This initiative must include educating local government as to the value of volunteers. The "public benefit" is the relatively cost-free augmentation of critical emergency services for the citizens of TFPD.

Operations Staffing Recommendations

As has been discussed, the TFPD model for fire and EMS operations is representative of both NFPA 1710 and NFPA 1720. The geographic and population characteristics present diverse staffing challenges which, regardless of the model settled upon, require additional career resources, supplemented by volunteer resources.

MissionCIT has evaluated data on call volumes and response times across the district. The main considerations, aside from timely and competent service delivery, revolve around the safety of personnel and return on investment.

It is recommended that TFPD employ a hybrid service profile, using measures of both NFPA 1710 and NFPA 1720. This will be a costly endeavor and will involve capital improvements to facilities. For this reason, phasing of improvements is recommended, as follows:

Immediate Needs

Recommendation
TFPD should increase career staffing at Stations 1 and 2 from three members per shift to 4 members per shift.

As discussed, attempting to perform two primary services (fire and EMS) with three personnel jeopardizes personnel safety due to having to split a crew, often resulting in a one-person response when a second call is received. A three-person fire crew is incapable of adhering to the "two in two out" rule when entering an IDLH atmosphere and is incapable of effective incident command and timely task completion during a dynamic incident requiring occupant rescue and fire suppression. As was noted in the 2019 Staffing Needs Assessment, the National Institute of Standards and Technology (NIST) published a study in 2010 which found that a four-person firefighting crew was able to accomplish essential firefighting and rescue tasks twenty five percent faster than a three-person crew. A four-person crew would allow TFPD to meet certain requirements of NFPA 1710 in terms of the staffing for the first and second arriving engines, and it would also allow the immediate deployment of the aerial apparatus on the initial dispatch. Although this would involve splitting the crew, i.e., three on the engine and one on the aerial, all four members would arrive to assemble a four-person team and would have the equipment on hand to initiate firefighting and rescue tasks in a much safer manner. A four-person crew would also be able to function in a safer manner should two members be unavailable for an EMS call. Two personnel on an engine can perform minimal Basic Life Support (BLS) and can initiate a defensive (outside) initial fire attack much more safely and efficiently than a single person response.

Recommendation
TFPD must better integrate its fire volunteers at Station 3 into the TFPD command structure and provide the necessary training to ensure rank competency throughout.

It was communicated during our SWOC sessions that responders from Station 1 and 2, in particular EMS personnel, sometimes respond into Station 3's area to encounter volunteer personnel acting independently without regard to direction from personnel having higher levels of training and responsibility. This serves only to disrupt the continuity of effective and safe operation. Because Station 3 operates in a more rural setting, it may function for the foreseeable future within the NFPA 1720 model. However, because Station 3 is included in the "general alarm" for a TFPD structure fire dispatch, it must be capable of response with a minimum of a four-person crew. Ideally, this crew, or at least two members, would respond from the station to ensure a sixty second response time, as other shift volunteers may respond directly to the scene.

Recommendation
TFPD must continue to develop EMS staffing capacity to address "9-1-1" and inter-facility transports.

As noted, the disruption of crew integrity when two personnel are unavailable due to an EMS call is tantamount to "gambling" that a large-scale incident will not happen until the crew is back together. TFPD has taken steps to address this issue by utilizing a three-person wildland crew who, when not assigned to wildland mitigation activities, or assigned regionally to provide wildland suppression assistance, will be assigned, one to each work shift, to become drivers for inter-facility transfers. These members will be assigned to Station 3 where they may be used to supplement volunteer fire response. The district is also planning to hire three additional wildland personnel to further bolster response. Finally, TFPD is working to create a full-time equivalent (FTE) position which will be staffed with qualified volunteer providers, previously affiliated with the EMS volunteer program.

Recommendation
Work towards having the existing wildland crew personnel obtain structural firefighting certification and EMS certification and consider having them supplement staffing for response to incidents in Station 3's response area when they are not deployed out of the district.

Recommendation
TFPD must continue to work with TRMC to place conditions on the demand for inter-facility transfers.

Presently TFPD is comfortable with a single inter-facility transfer at a time. However, it was observed that three inter-facility transfers were needed during a single overnight period. This placed crews well below minimum and safe staffing levels for emergency response.

Recommendation
The governing bodies within TFPD must acknowledge the need for facility expansion (for staffing as well as other safety and health reasons) and provide the funds in an expedient manner.

TFPD is marginally able to accommodate one additional career member per shift at Stations 1 and 2. However, the lack of space generally negates having volunteers as additional staffing in quarters. Leaders must also create flexibility to allow temporary deviations to existing building and zoning requirements where they would otherwise be prohibited or encounter extensive bureaucracy. The "public benefit" is obvious, in that it is instrumental to core government service of delivering fire and EMS services.

Mid-Range (Eighteen months to Two Years) Needs

As the population of TFPD increases, the demand for services will increase, most likely in the area of EMS delivery. The current demand for both "9-1-1" and inter-facility EMS response has been demonstrated to have a negative effect upon fire response crews as they are drawn down to marginal safe staffing levels. TFPD must continue to build staffing to ensure that the dispatch of one discipline does not compromise the delivery of the other service. The following are recommendations to be pursued over the next eighteen-to-twenty-four-month period:

Recommendation
TFPD should increase career staffing by two per shift at Stations 1 and 2 in order to provide minimum staffing of six each day for both fire and EMS response when appropriate fire station modifications have been made.

These additional members would be certified with at least half at the firefighter/paramedic levels. Doing this would retain four members on the engine to ensure compliance with two in two out when an EMS call is being handled. The engine would also be able to provide effective BLS response, to include patient extrication and central nervous system (CNS) stabilization until the arrival of an EMS transport vehicle. The current plan to use additional wildland personnel and part-time EMS personnel for inter-facility transfers will largely negate the need to have "9-1-1" crews handle these transports, resulting in their availability on a more consistent basis. Having two additional career staff per shift will also create the occasional opportunity to have the aerial apparatus respond to a structure fire without compromising the engine crew staffing. Two members on the aerial is not ideal, however two members assigned to search and rescue, ladder deployment, or utility control can greatly improve the efficiency of a fire operation and allows the engine crew to better fulfill its responsibilities of fire suppression.

Recommendation
TFPD should expand the crew quarters at Station 3 to be able to accommodate a minimum of six personnel.

This will create space for a total of four responders dedicated to the engine and two for EMS response. This recommendation seeks to create an incentive for volunteers to become more active in TFPD. It also builds capacity to support additional career staffing if needed.

Again, the governing bodies within TFPD must acknowledge the need for facility expansion (for staffing as well as other safety and health reasons) and provide the funds in an expedient manner.

Long Range (Three to Five years) Needs

Should all of the previous recommendations be achieved, TFPD will be operating with an effective fire and EMS response force. However, the increase in career staffing also increases the amount of vacation and leave time employees are entitled to. Likewise, personnel must occasionally travel out of jurisdiction for training or other departmental business. It is widely accepted that recreational time away from the job is essential to the overall wellness of the employee. Likewise, it is a reality that all employees are subject to occasional injury or illness. In order for TFPD to be resilient when employees use personal vacation or sick leave, or are otherwise absent from an assigned work period, it must configure overall staffing such that absence does not compromise minimum staffing capability. If it does not do this, employees become subject to mandatory extension of work periods which can affect the safety of the employee and lessen morale.

Recommendation
It is recommended that TFPD adopt a "staffing factor" to ensure substitute coverage when personnel are on leave.

A staffing factor represents the hiring of a percentage of an FTE. In order to establish the correct staffing factor, the average number of predictable hours of absence must be calculated. As an example, if the data points to a twenty percent leave usage, or authorized absence per member, the staffing factor is 1.2, meaning that for every five employees hired, there should be one additional person hired to cover the time off (.2 times five equals 1.0). TFPD must carefully track and evaluate its work experience to determine a responsible staffing factor.

An option to the actual hiring of additional full-time personnel is to hire part-time personnel to be used to cover shifts, or to allow qualified volunteers to fill work shifts, either non-compensated or given a per-shift stipend.

TFPD should also be in a position, at that time, to evaluate the progress of its volunteer force, as well as the success of its use of wildland employees and part-time EMS personnel. A deficit in any of these areas could be justification in hiring at least two and up to four career per shift staff for Station 3. The fire district should develop trigger metrics that would determine when it might be necessary to deploy career EMS personnel or career fire apparatus staffing at Station 3. Example metrics to monitor could include:

- The number of volunteer personnel on average responding to incidents from Station 3. If this measure regularly is less than 3, that might indicate a need for career fire unit staffing.
- The number of incidents that Station 3 receives in a year. If that number increases to more than 1 call a day, on average, it may be time to deploy career staffing.

- A final measure might be the number of EMS related incidents in the response area of the station. If that number increases, then an alternative plan might be to deploy career staffing for a medic unit only.

Likewise, TFPD should also be in a position to assess the need for additional minimum staffing for either or both aerial apparatuses.

Operational Benchmarks

Currently, the Telluride Fire Protection District does not have any performance benchmarks in place regarding response or an effective response force. Based on the evaluation and analysis by the MissionCIT team of the current TFPD structure and response, the following operational performance benchmarks are recommended for the district. These measures should be evaluated annually as part of the district's assessment process and adjusted as needed based on call volume, staffing or other impactors.

Urban/Suburban Areas

The Telluride Fire Protection District will have a turnout time (Dispatch to first unit enroute) within 60 seconds for EMS incidents and 80 seconds for fire incidents 90% of the time.

The Telluride Fire Protection District will respond (Dispatch to arrival of the first arriving unit) within the identified urban/suburban areas (Town of Telluride and Mountain Village) within 8 minutes 90% of the time

The Telluride Fire Protection District will assemble an effective response force in the urban/suburban areas of at least 13 fire suppression personnel for structure fire incidents within 15 minutes from the time of dispatch

Rural/Remote Areas

The Telluride Fire Protection District will respond (Dispatch to arrival of the first arriving unit) within the identified rural and remote areas (All areas outside of the Town of Telluride and Mountain Village) within 14 minutes 80% of the time

The Telluride Fire Protection District will assemble an effective response force in the rural/remote areas of at least 4 fire suppression personnel for structure fire incidents within 20 minutes from the time of dispatch

Estimated Costs

The recommended addition of personnel; staff and line, and the identified health, safety and wellness initiatives all have additional costs associated with them for the district. Listed below are most of the estimated improvement costs for the district with the anticipated, estimated costs. These estimates do not take into account the time frame for implementation and the effects of inflation and price increases on those items.

Table 3.7 Estimated Cost for Personnel

Personnel Recommendations (5 Years)	Number of Positions	Pay Grade Classification (Estimated)	Current Mid-Point Salary	Total Estimated Annual Cost (Assumes 30% benefit costs)
Deputy Fire Chief (Position Upgrade)	1	9	$123,685	$19,500
Battalion Chief	1	7	$102,219	$132,885
Firefighter/Paramedics	12	4	$76,799	$1,198,065
Firefighter/EMT's	12	3	$69,817	$1,089,145
Assistant Office Manager	1	1	$57,700	$75,010
Fire Inspector	1	2	$63,470	$82,511
Mechanic (Part time)	1	1	$57,700	$35,000 (No benefits)

Table 3.8 Estimated Cost for Equipment

Equipment Recommendations (5 Years)	Number Needed	Current Estimated Cost	Total Estimated One Time Costs
PPE/Uniforms for all new hires	26	$5,000 per person	$130,000
Vehicles for new Staff positions	3	$50,000 per person	$150,000
PPE Extractors for stations	2 sets	$5,000 per station	$10,000
Apparatus Exhaust Systems	4 stations	$15,000 per unit	$240,000
Second set of PPE for all personnel	82 (career and volunteers)	$4,000	$328,000

Table 3.9 Estimated Cost for Services

Services Recommendations (5 Years)	Number Needed Annually	Current Estimated Cost	Total Estimated Annual Costs
Annual NFPA 1582 Physicals	82 (career and volunteers)	$500 each	$41,000

Table 3.10 Estimated Cost for Capital Improvements

Construction Improvements (Estimates provided by TFPD Staff)	Estimated Cost
Remodel Station 1	$3 million
Remodel Station 2	$3 million
Remodel Station 3	$1.5 million
Remodel Station 4	$1 million
Training Facility	$600,000
Personnel Housing Complex	$10 million

Appendix A - Results of Strength, Weakness, Opportunities, and Challenges (SWOC) Sessions

SWOC - TFPD - Local Government Leaders

Strengths	Weaknesses

- Competent Chief
- Well-funded
- Excellent reputation
- High level of service
- Legacy organization in Telluride
- Volunteer base
	- Availability of housing
	- Internal division – Treatment of personnel
	- Training
	  ○ No dedicated facility
	  ○ Travel to Montrose and other areas
	  ○ Staff limitations

Opportunities	**Challenges**

- Virginia Placer 2-A (Housing)
- Multi-agency housing code
- Internal culture
- Alternate apparatus design – European approach
- Centralized maintenance facility
- New hospital
	- Volunteer organization – In transition
	- Mitigation – Community buy-in
	- Housing – Homes and Bunkrooms
	- No centralized housing advocate
	- Aging water infrastructure
	- Deferred forest thinning
	- Not involved as much in community events
	- Climate change
	  ○ Water supply
	  ○ Wildfires
	- Coordination with US Forest Service
	- Dual dispatch – WestCO vs. Sheriff's Office

SWOC - TFPD - Citizens

Strengths	Weaknesses
- Community support - Personnel - Shift to focused role of service delivery (career) - Training - Upgraded equipment - Affluence – Resources and donations - Great mutual aid relationships - Inter-governmental relationships	- "Effective" communications with the public - Transition to combined system ○ Community – resident - Communications with past volunteers - Water supply – All but Telluride, Mountain Village, Ski ranches by two rivers rely on static sources
Opportunities	**Challenges**
- Public assistance - Codes, standards ○ Local regulations - Affordable housing - Partnerships – Volunteers and hospital workers	- Community access – One way in, one way out - Volunteers – Many hats - Affluence - Inter-facility transfers - Facilities – expansion - Volunteer housing - Transition to combination system - Situational awareness - Communication with the public - Public involvement - Zoning – FD access - Demand for amenities - Engage in volunteer recruitment and retention

SWOC - TFPD – Public Works-Parks and Recreation

Strengths	Weaknesses
- Agency cooperation - Response - Program/Festival coordination - Staffing/ Paid staff	- Infrastructure - Priority maintenance
Opportunities	**Challenges**
- Agency coordination - Joint training - Fire protection system coordination - Essential worker housing - Infrastructure - Priorities - EOC Training/ Worst case-Most likely - Further partner with town - Hydrant visibility / Snow removal	- Staffing - Resources - Housing - Staffing Parks and Recreation events - Hydrant visibility / Snow removal

SWOC - TFPD – Emergency Services Partners

Strengths	Weaknesses
- Response time – Telluride and Law Enforcement - Combination department - Training program - Fire/EMS Resources - Interaction with other agencies - Generous - Ideas/Technology – Open to them - Available outside resource request - Budget - Radio MAC channels	- Infrastructure - Housing - Recruitment - Response times/distance - Generational changes
Opportunities	**Challenges**

- Career resources – agency assist
- Additional tower locations
- Improving fiber network in Station 3 and 4's districts
- Continued volunteer engagement
- GIS improvements
- Recruitment
  ○ Location
  ○ Target recruiting
  ○ Family
  ○ Time
- Technology
	- Combination department
	- Applicant pool
	- Staffing
	- Housing
	- Topography
	- Facilities improvement
	- Replacement apparatus/supply chain
	- Resources – availability and distance
	- Additional tower locations
	- Urban wildland interface
	  ○ Access into fire areas

SWOC - TFPD – Board of Directors

Strengths	Weaknesses

- Well trained personnel
- Built in suppression – Residential occupancies greater than 3600 ft2
- Apparatus
- Personnel
- Community support
- Stability in department
- Culture is strong
- Fire volunteers
- Community presence – visibility
- Municipal water supply
	- Housing for staff – career and volunteer
	  ○ Residential
	  ○ Staff support
	- Area coverage – New stations
	- No headquarters station
	- Lack of definitive care capacity
	- Pressure from inter-facility transports

Opportunities	**Challenges**

- Community risk assessment
- Recruitment and retention of volunteers
- Revenue increases
- More TSG involvement
- Enhanced radio communication system
- Improved situational awareness
  ○ PANO.AI
- Wildfire mitigation
  ○ WUI Code
  ○ Ready, set, go
- Strengthen building codes
  ○ Wildland
  ○ Structural – sprinklers
	- Increased call load
	- Value of volunteers
	  ○ Stress
	  ○ Needed asset
	- Keeping up with training requirements
	- Recruitment and retention of volunteers
	- Rural water supply
	- Managing the transition to a combination system

SWOC - TFPD – Administrative Staff

Strengths	Weaknesses

- Equipment is suited to the task
- Personnel
  ○ Attitudes
  ○ Commitment
  ○ Community focused
- Ease of communication
- Educational opportunities – Fire Marshal, EVT
- Revenue is good
	- Executive communications
	  ○ Methods
	  ○ Deliveries
	- Facilities – space and equipment
	- Cancer prevention – "clean"
	- Span of control – Possible middle management
	- No automatic cost of living increases
	- No step plan

Opportunities	**Challenges**

- Volunteer integration
- Training facility
- Facility upgrades/replacement
- Master station at "Society Turn"
- Span of control
- 457 Plan match
- Review other potential fire apparatus vendors
- Expanding wildland staff – Increased revenue from deployments
- Increased sick leave accrual cap – rollover
	- "Change" - "Traditions"
	- Educational opportunities
	  ○ Equal access – Career and volunteer
	- Workload for specialty jobs
	  ○ Mechanic with lots of equipment
	  ○ Fire Marshal – Inspections
	  ○ HR Staff
	- Minimum staffing – Time off for deployments
	- Cost and availability of housing

SWOC - TFPD – A Shift

Strengths	Weaknesses

- Adapting – Staffing and weather
- Balance of experience
- Funding
- "We know the system"
- Community support
- Inter-agency cooperation
- Staff buy-in
	- Training – Availability and consistency
	- Transports – Draw down shift staffing
	- Connection with fire volunteers
	- No accountability of volunteers
	- Communications
	- Apparatus maintenance
	  ○ Volume of equipment
	  ○ Tech is learning equipment
	  ○ Marking units OOS
	  ○ Accountability
	- Operating with broken equipment
	- Organizational chart vs. reality
	- Active911 reliability
	- Decline of volunteer backfill

Opportunities	**Challenges**

- Health and Safety
  ○ Exhaust systems
  ○ Cancer prevention
  ○ Gear storage
  ○ Physicals
- Training facility
- Recycling in fire stations
- SOG's – More defined procedures
  ○ Consistency
- More employees = More opportunities = More housing issues
- Organization can create its future
- MDC's in apparatus
- Bring Station 3 into the system
  ○ Operational procedures
  ○ Volunteer officers
	- Growing pains – Loss of EMS volunteers
	- Inter-facility transfers
	- Inconsistent operations by shift and position
	- Internal communications
	  ○ Conflicting messages
	  ○ "Massive" communication inconsistencies
	  ○ Different modes of communication, i.e. Groups, methods
	  ○ Delays in message delivery
	- Staffing for community events
	- Volunteer management roles, responsibilities, training
	- No integrated chain of command
	- Non-integrated executive communications

SWOC - TFPD – B & C Shift

Strengths	Weaknesses

- Strong budget
- "Brad be good"
- Resources
  ○ Equipment
  ○ Funding
  ○ Apparatus
- Personnel – Trained and motivated
- Good HR Staff
- Crew integrity – good communications
	- Health, safety, wellness
	  ○ Apparatus exhaust exposure
	  ○ OSHA fit testing
	  ○ No NFPA 1582
	  ○ Isolate gear
	- Volunteer accountability
	- Career development plan
	- Communication system
	  ○ Limits of Active911
	- Compensation/benefits
	  ○ No step plan

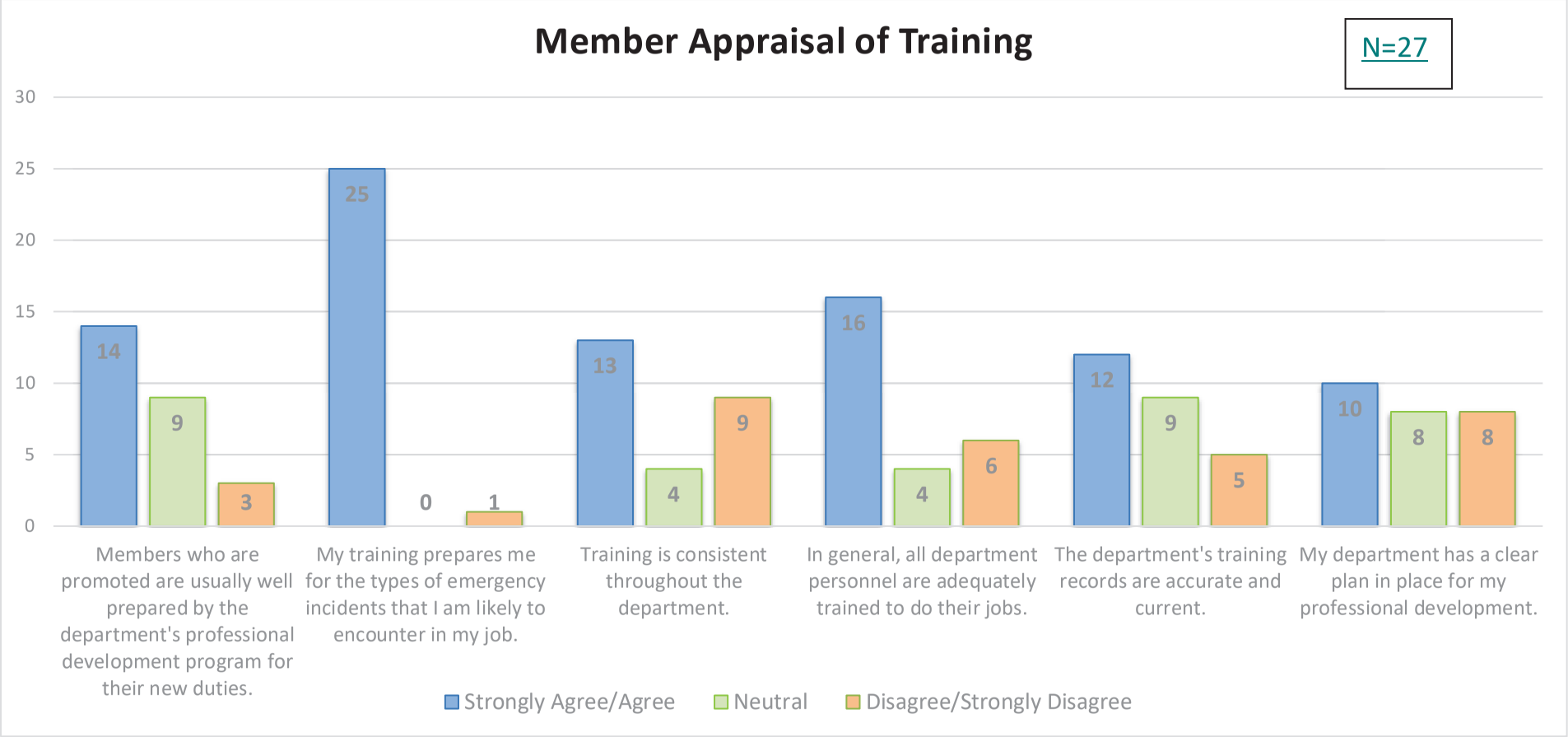
Opportunities	**Challenges**
- Continued community involvement - On-going training opportunities - Replace TEMTA activities - Other outreach - Active shooter training - Cross training of volunteers - Review Haz Mat response status - Renewed recruitment and retention - Training facilities	- Consistent communications ○ With/from Admin staff - Dual hierarchy - Multiple communication methods - Complete "top down" communications - "Google chat" - Roles/responsibilities – clarification - Long term effects of inter-facility transports

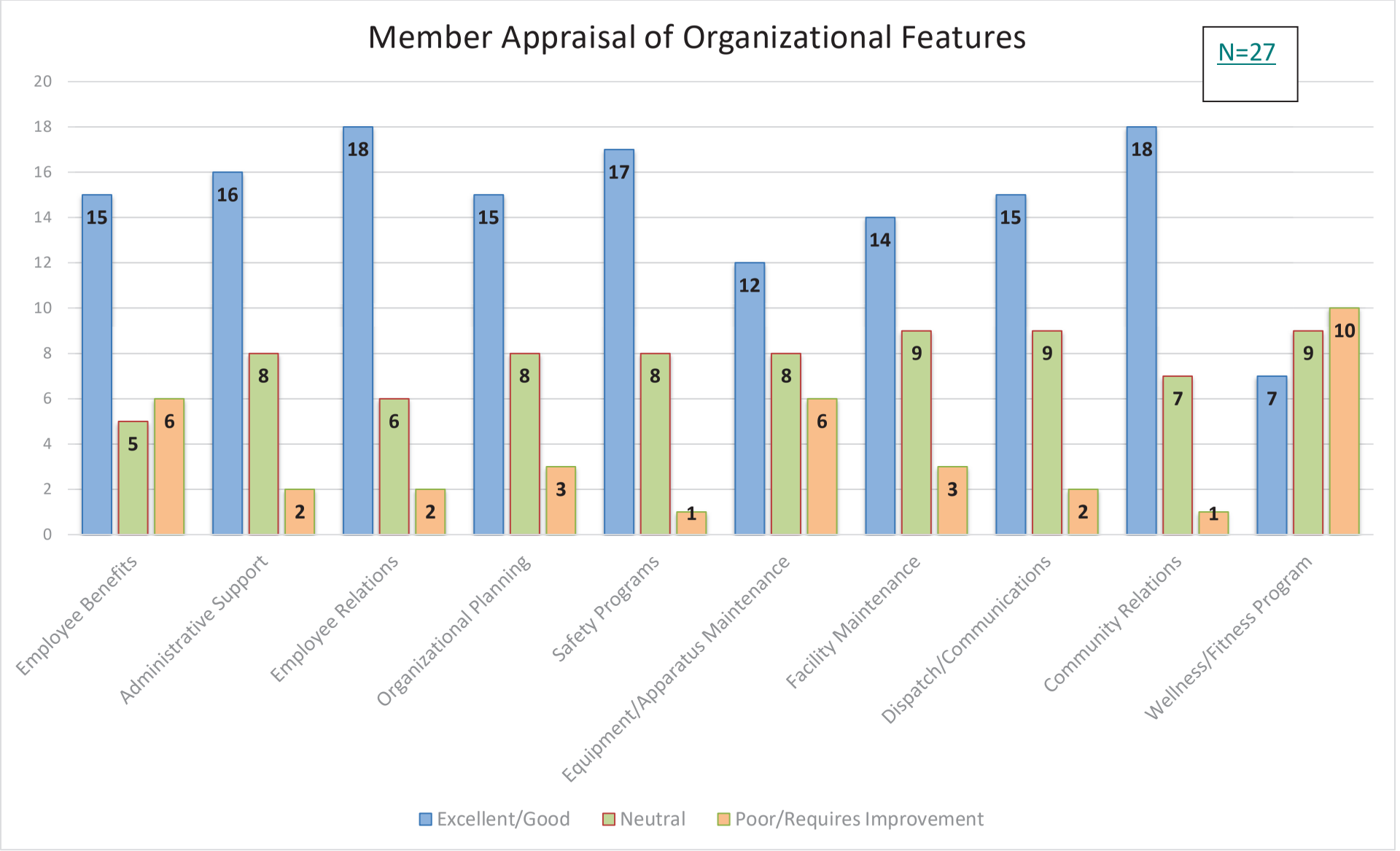
SWOC - TFPD – Volunteer Firefighters

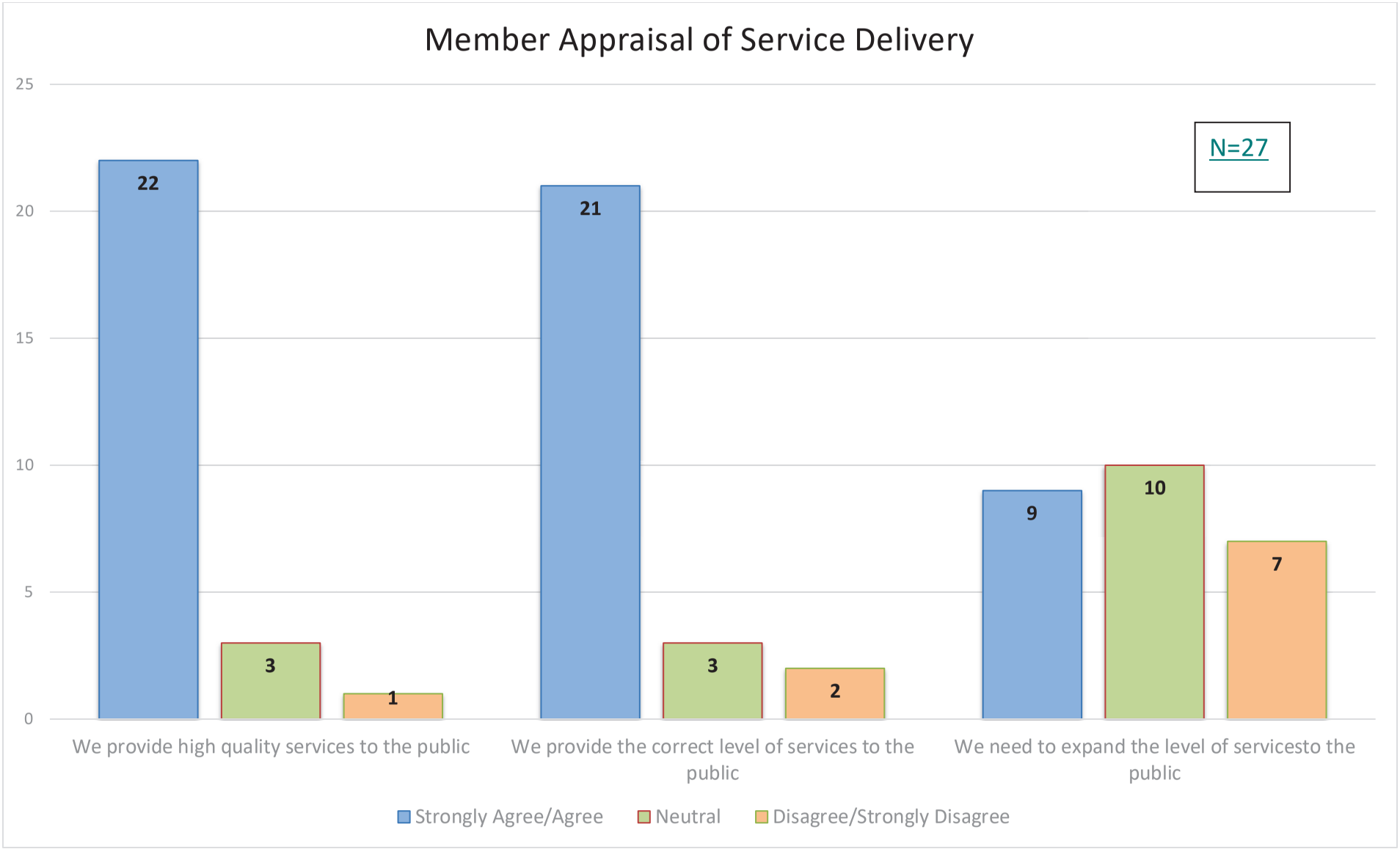
Strengths	Weaknesses
- Communication from Operations Captains	- Communications on training from shift officer - Leadership – Chief/Division Chief - SOP's for Volunteer Response - No current defined volunteer role - No volunteer job description
Opportunities	**Challenges**
- Develop a consistent training schedule - Establish SOP's - Retention = Recruitment	- Communications – Little to none from leadership - Organizational structure - Time of training - New training officer support - Volunteer on-call schedule

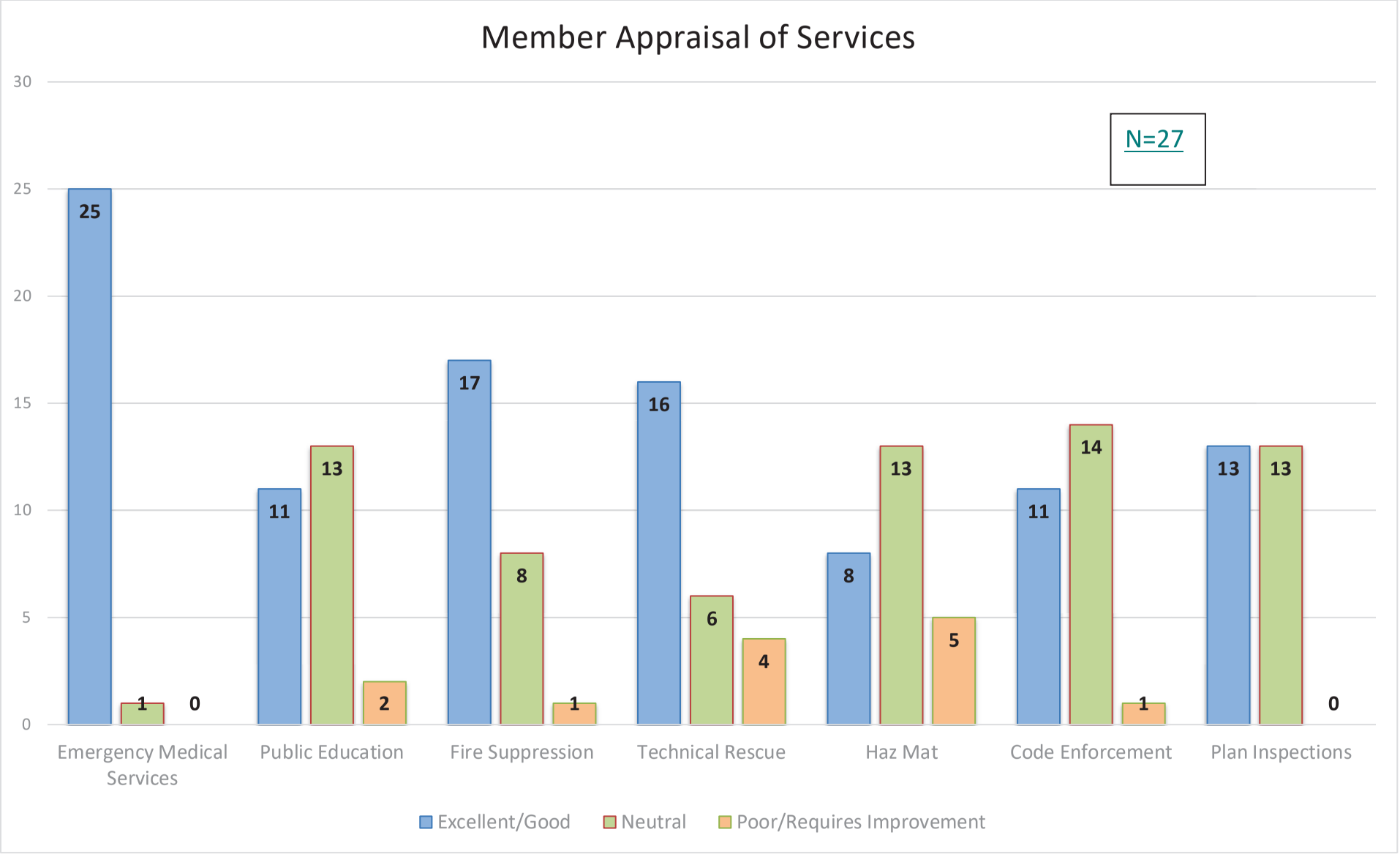
Appendix B Organizational Survey Results

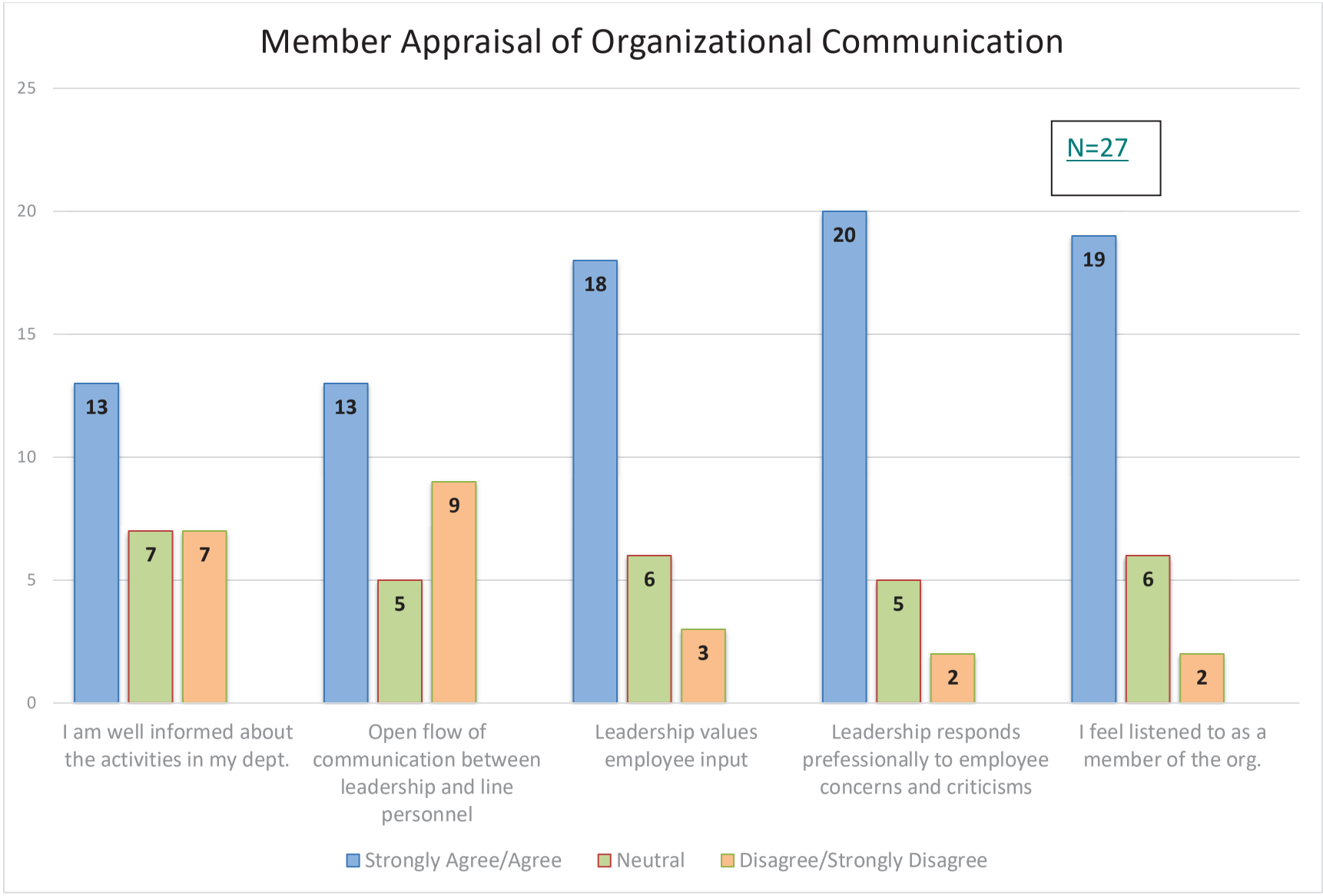
Internal Member Responses

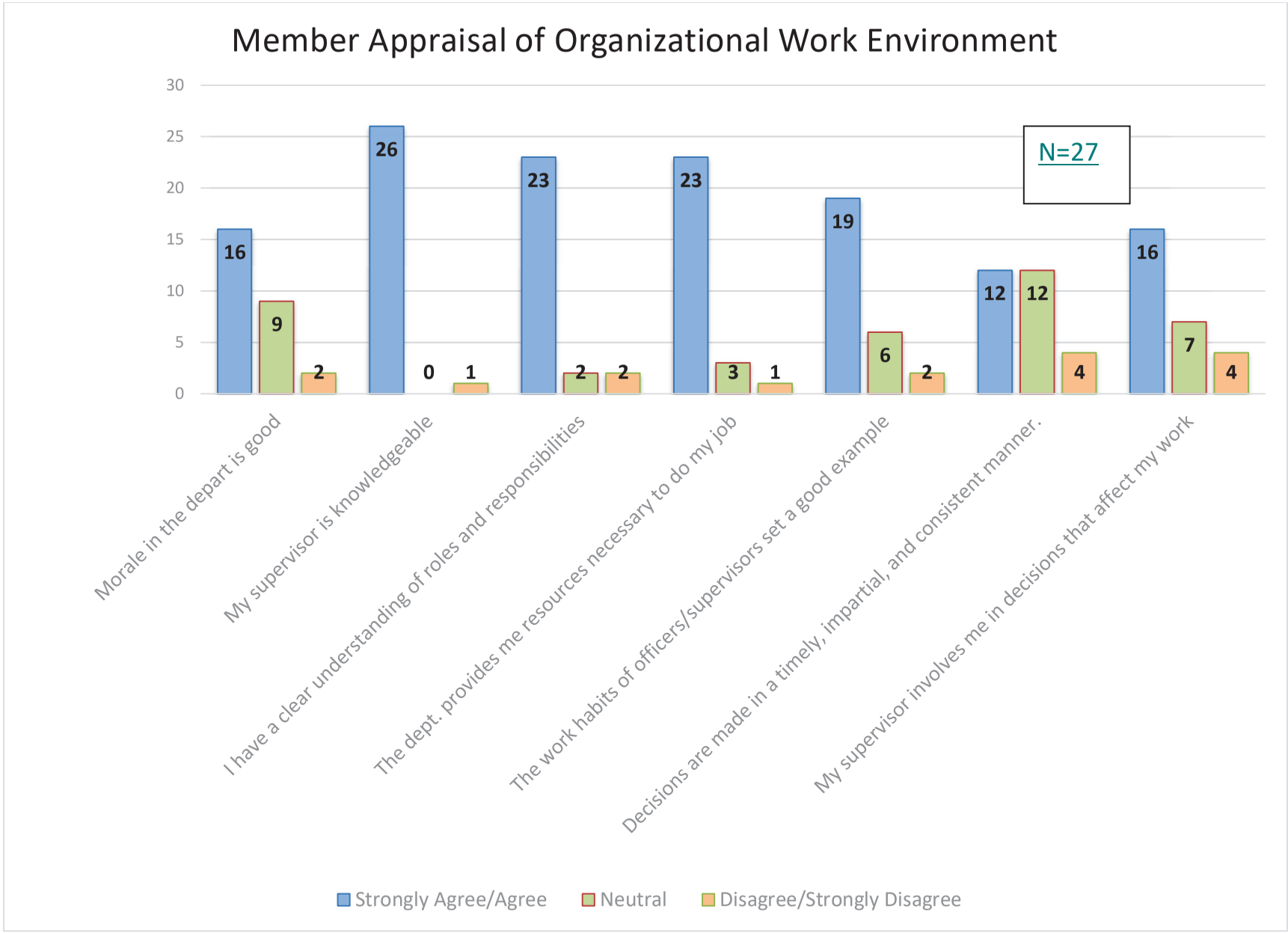


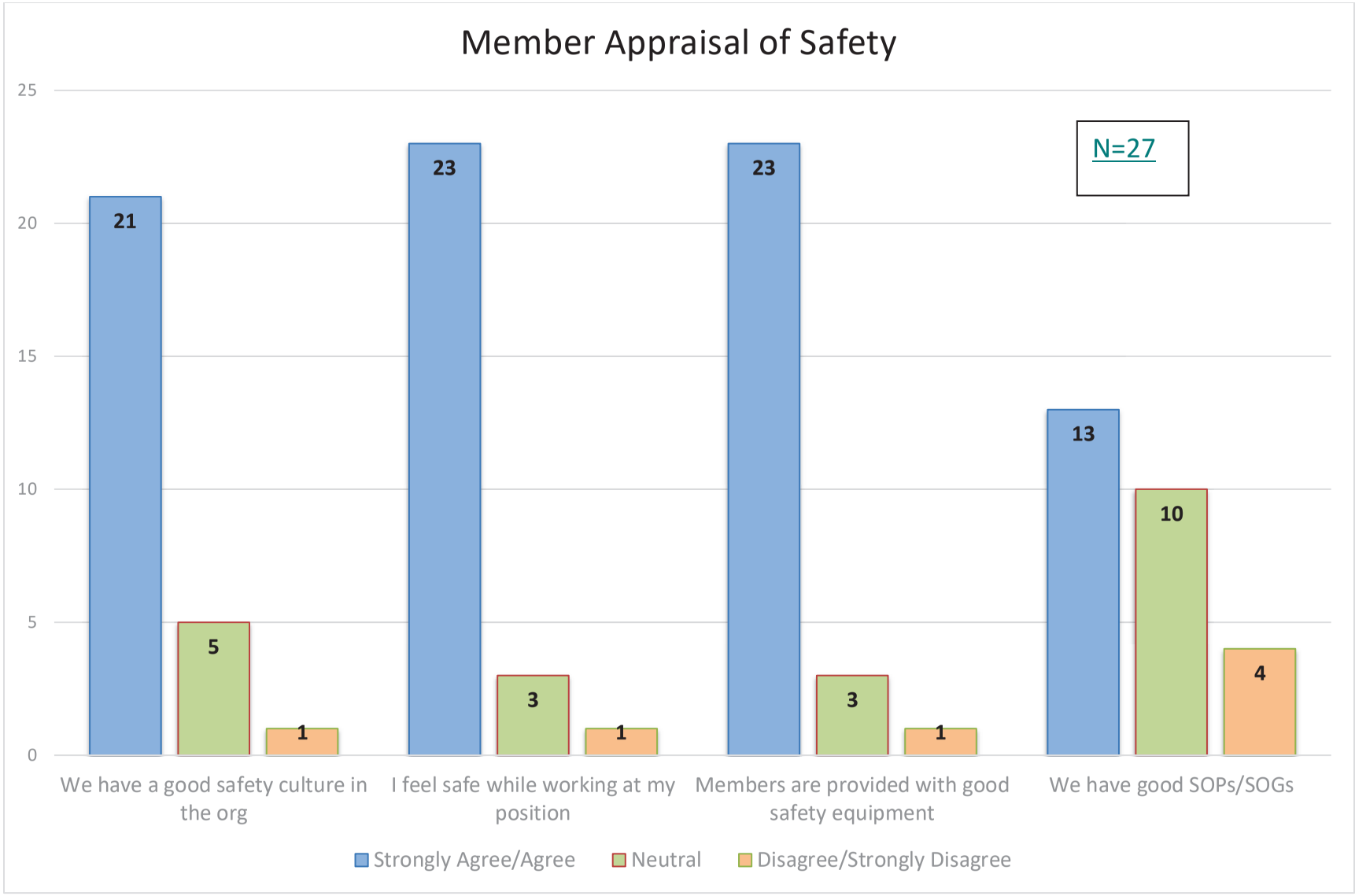

Member Appraisal of Organizational Features
N=27
20
18
16
14
12
10
8
6
4
2
0
15
5
6
16
8
2
18
6
2
15
8
3
17
8
1
12
8
6
14
9
3
15
9
2
18
7
1
7
9
10
Employee Benefits
Administrative Support
Employee Relations
Organizational Planning
Safety Programs
Equipment/Apparatus Maintenance
Facility Maintenance
Dispatch/Communications
Community Relations
Wellness/Fitness Program
Excellent/Good
Neutral
Poor/Requires Improvement

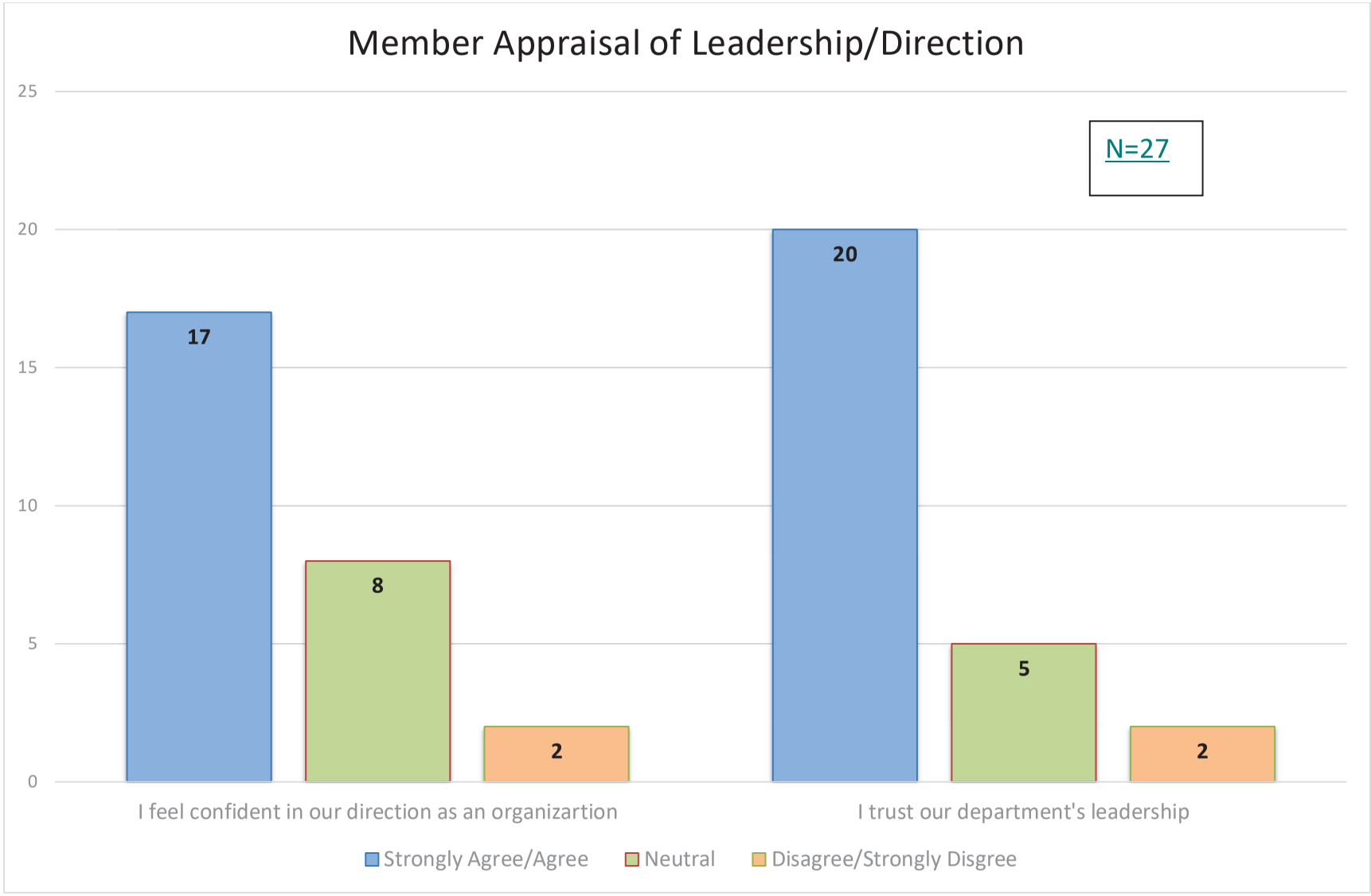

Member Appraisal of Service Delivery
25
20
15
10
5
0
N=27
22
3
1
21
3
2
9
10
7
We provide high quality services to the public
We provide the correct level of services to the public
We need to expand the level of servicesto the public
Strongly Agree/Agree
Neutral
Disagree/Strongly Disagree

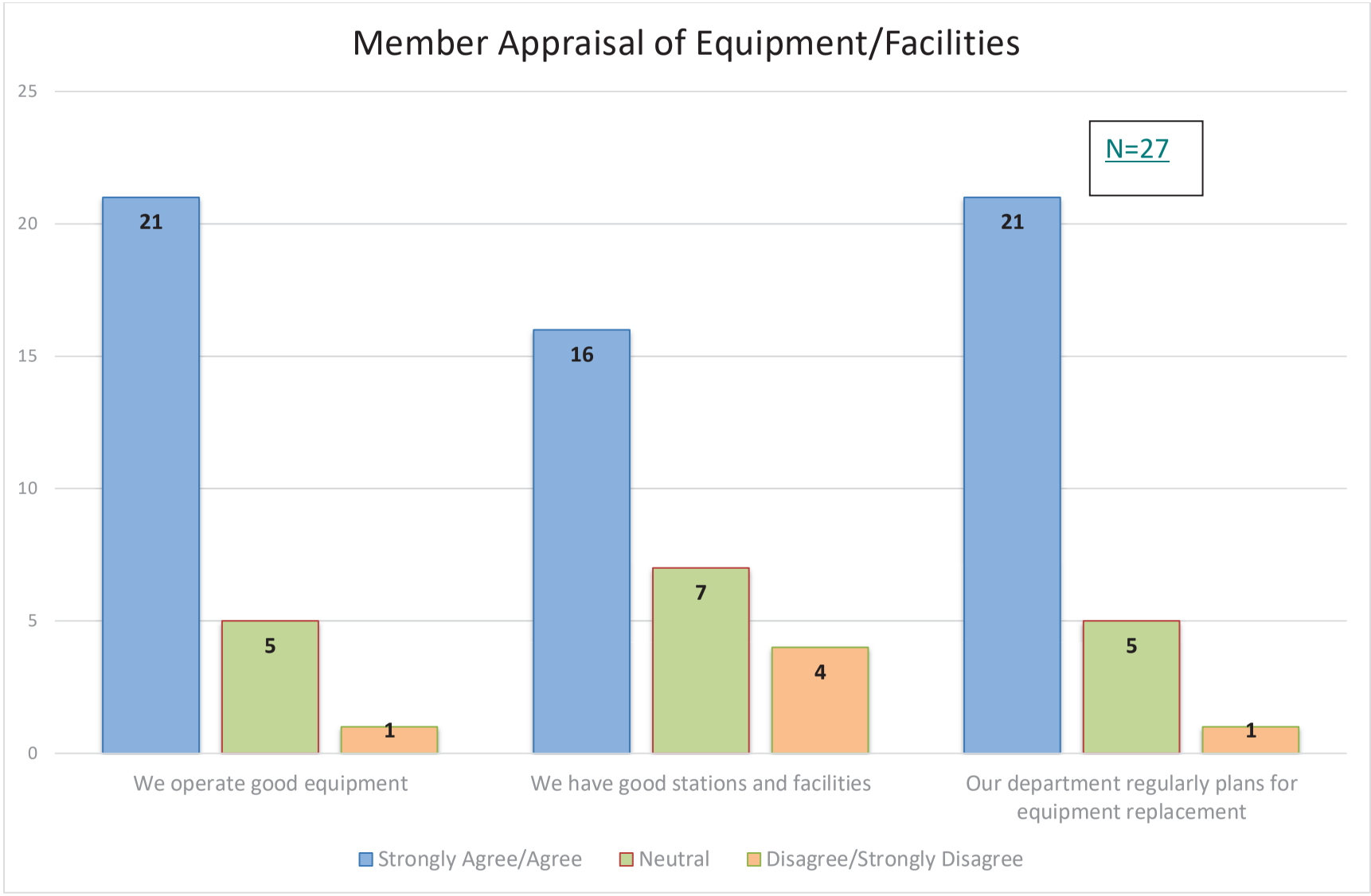

Member Appraisal of Services
N=27
30
25
20
15
10
5
0
25
1
0
11
13
2
17
8
1
16
6
4
8
13
5
11
14
1
13
13
0
Emergency Medical Services
Public Education
Fire Suppression
Technical Rescue
Haz Mat
Code Enforcement
Plan Inspections
Excellent/Good
Neutral
Poor/Requires Improvement


Member Appraisal of Organizational Communication
N=27
25
20
15
10
5
0
13
7
7
13
5
9
18
6
3
20
5
2
19
6
2
I am well informed about the activities in my dept.
Open flow of communication between leadership and line personnel
Leadership values employee input
Leadership responds prefessionally to employee concerns and criticisms
I feel listened to as a member of the org.
Strongly Agree/Agree
Neutral
Disagree/Strongly Disagree

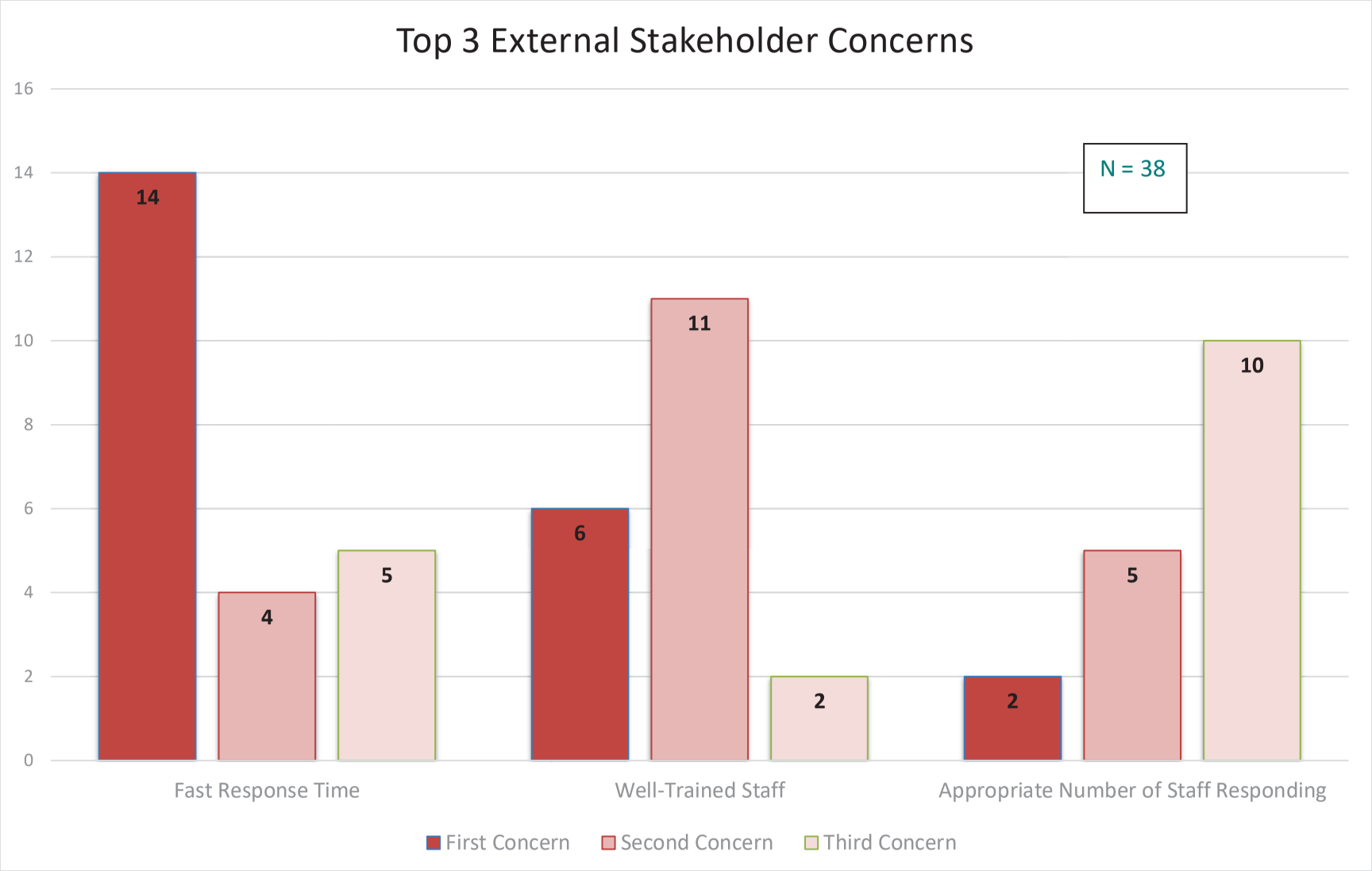

Member Appraisal of Organizational Work Environment
N=27
30
25
20
15
10
5
0
16
9
2
26
0
1
23
2
2
23
3
1
19
6
2
12
12
4
16
7
4
Morale in the depart is good
My supervisor is knowledgeable
I have a clear understanding of roles and responsibilities
The dept. provides me resources necessary to do my job
The work habits of officers/supervisors set a good example
Decisions are made in a timely, impartial, and consistent manner.
My supervisor involves me in decisions that affect my work
Strongly Agree/Agree
Neutral
Disagree/Strongly Disagree


Member Appraisal of Safety
N=27
25
20
15
10
5
0
21
5
1
23
3
1
23
3
1
13
10
4
We have a good safety culture in the org
I feel safe while working at my position
Members are provided with good safety equipment
We have good SOPs/SOGs
Strongly Agree/Agree
Neutral
Disagree/Strongly Disagree


Member Appraisal of Leadership/Direction
N=27
25
20
15
10
5
0
17
8
2
20
5
2
I feel confident in our direction as an organizartion
I trust our department's leadership
Strongly Agree/Agree
Neutral
Disagree/Strongly Disgree


Member Appraisal of Equipment/Facilities
N=27
25
20
15
10
5
0
21
5
1
16
7
4
21
5
1
We operate good equipment
We have good stations and facilities
Our department regularly plans for equipment replacement
Strongly Agree/Agree
Neutral
Disagree/Strongly Disagree

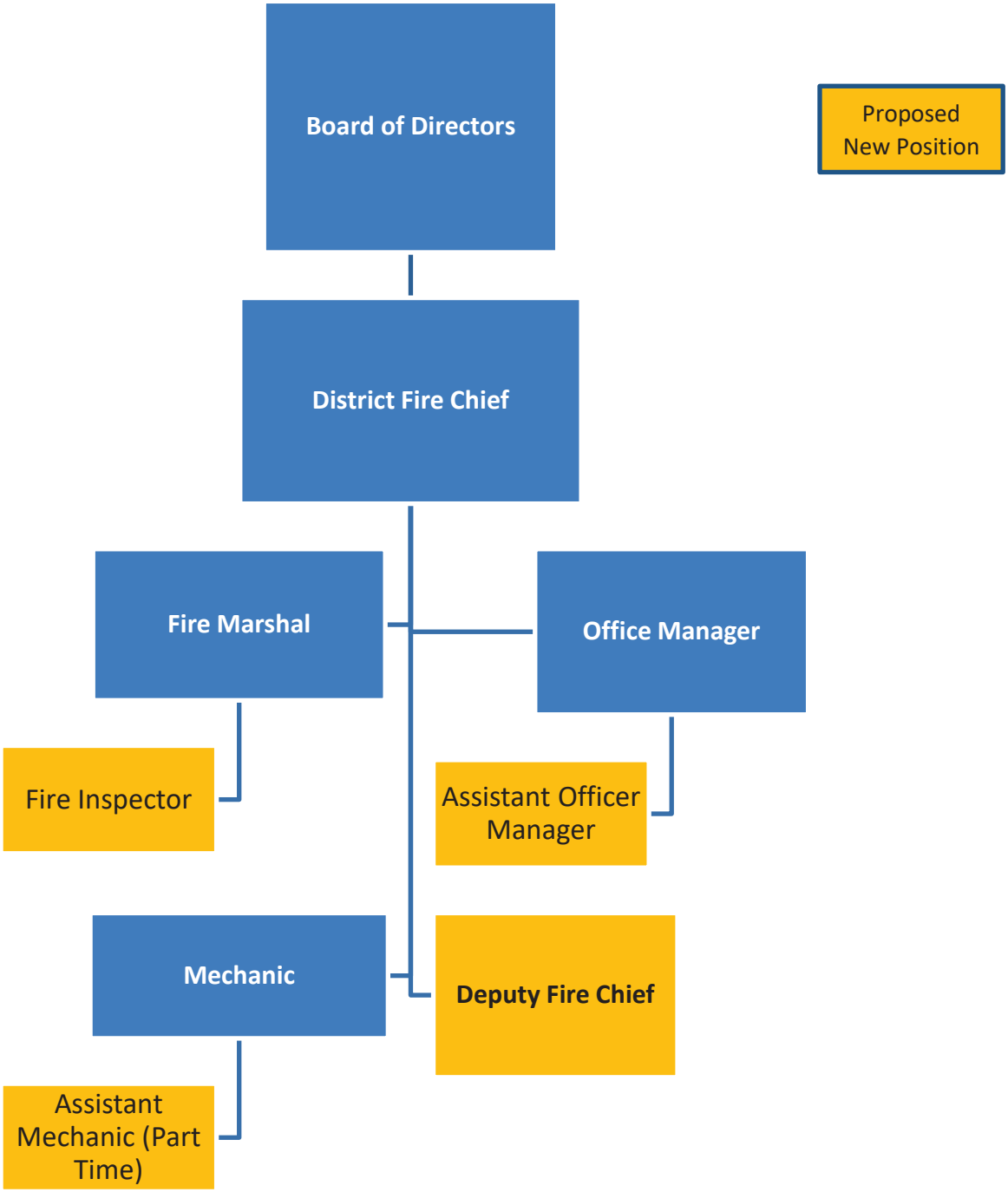
External Stakeholder Responses


Top 3 External Stakeholder Concerns
16
14
12
10
8
6
4
2
0
N = 38
14
4
5
6
11
2
2
5
10
Fast Response Time
Well-Trained Staff
Appropriate Number of Staff Responding
First Concern
Second Concern
Third Concern

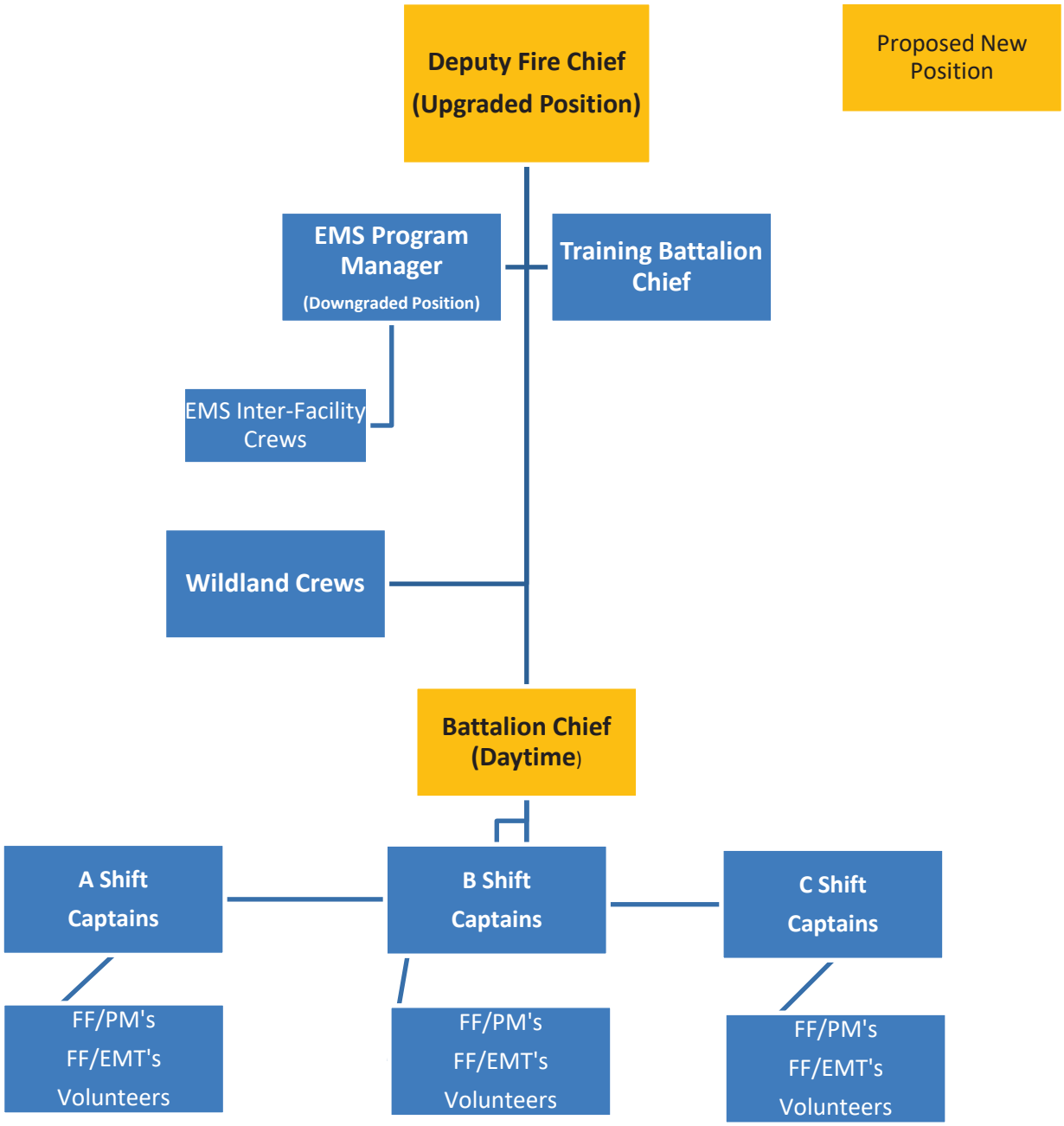

Top 5 Stakeholder Priorities
30
25
20
15
10
5
0
25
23
11
9
4
N = 38
Emergency Medical Services
Fire Suppression Response
All Hazards Disaster Response
Fire Prevention
Technical Rescue Response
First Priority
Second Priority
Third Priority
Fourth Priority
Fifth Priority

Appendix C – Suggested Organizational Charts

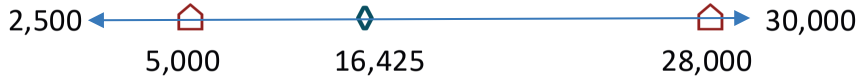
Fire Chief Staff

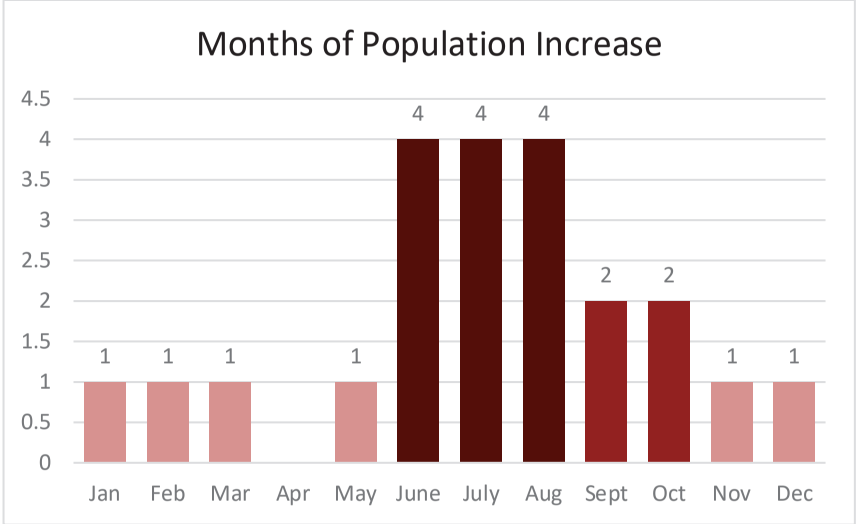
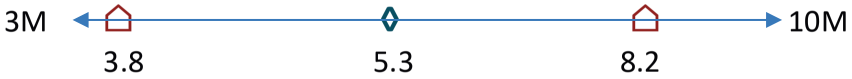


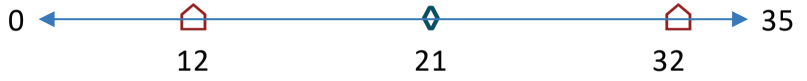
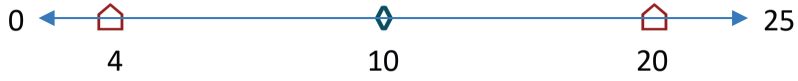
Field Operations

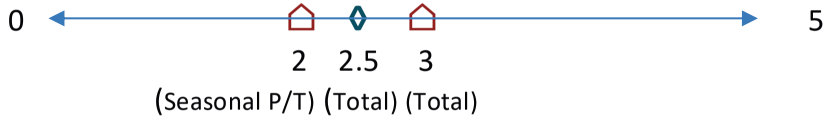
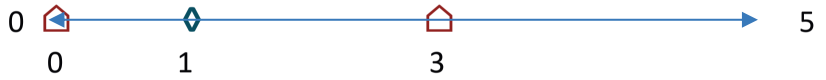


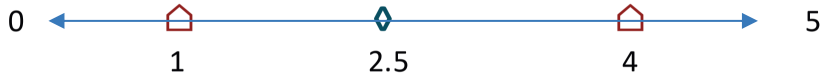
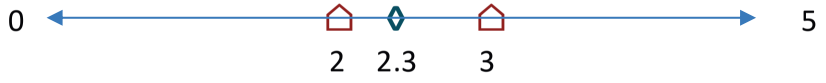
Appendix D – Benchmark Survey Results

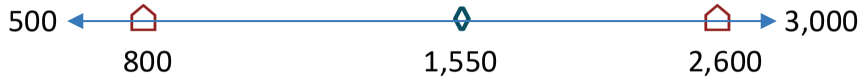
	⌂ Highest and lowest in group ◊ Group Average
What is your service area in square miles?	
If your service area is different for fire and EMS, please specify each	Service area for fire and EMS are the same for all respondents.
What is the **total population** served by your organization?	
What is the **total population served at the height of the tourist season** by your organization?	

Please list the months of population influx.	
What is your total **Operational Budget** for 2022?	
What is your total **Capital Budget** for 2022?	
What is your **current millage rate** to fund the department?	
What services does your organization provide?	All responding fire organizations provide fire response, transport EMS, fire prevention, fire investigation, community risk reduction, and emergency management. Three of the four responding fire organizations provide non-transport EMS, Haz Mat, and technical rescue.

	Two of the responding fire organizations provide emergency management. One responding fire organization provides public Health Vaccines and Monoclonals
How many **fire stations** are there in your organization?	
How many of your **fire stations are staffed** in your organization?	
What is the total number of **full-time** operational fire/EMS personnel in your organization?	
What is the total number of **part-time** operational fire/EMS personnel in your organization?	
What is the total number of **volunteer** fire/EMS personnel in your organization?	
What is the total number of **administrative/support** personnel in your organization?	

Do you utilize full-time and/or part-time wildland crews?	Only half of respondents utilize full-time and/or part-time wildland crews.
If so, how many?	
Please indicate the **number of engine companies** in your organization.	
Please indicate the **number of <u>staffed</u> engines** in your organization.	
Please indicate the **number of ladder companies** in your organization.	
Please indicate the **number of <u>staffed</u> ladders** in your organization.	
Please indicate the **number of ambulances** in your organization.	
Please indicate the **number of <u>staffed</u> ambulances** in your organization.	

Please indicate the **number of ambulances staffed at BLS** in your organization.	
Please indicate the **number of ambulances staffed at ALS** in your organization.	
What is the normal unit staffing for **engines**?	
What is the normal unit staffing for **ladders**?	
What is the normal unit staffing for **ambulances**?	
What is your organization's **fire response time** goals/standards?	Three of the four responding fire organizations referenced adherence to NFPA 1720. One fire organization noted “none”.
What is your organization's **EMS response time** goals/standards?	Three of the four responding fire organizations referenced adherence to NFPA 1720. One fire organization noted “none”.
What is your organization's **effective response force** goals/standards?	Three of the four responding fire organizations referenced adherence to NFPA 1720. One fire organization noted “none”.

In 2021, what were the **total number of calls** for your organization?	
In 2021, how many of your organization's calls were **structure fires**?	
In 2021, how many of your organization's calls were **EMS calls**?	
In 2021, how many of your organization's calls were **other/outside calls**?