CENTER FOR PUBLIC SAFETY MANAGEMENT, LLC

Fire & EMS Operational and Administrative Analysis Report

Kalispell, Montana

Final Report: August 2023

CITY OF KALISPELL

CPSM®

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Exclusive Provider of Public Safety Technical Services for
International City/County Management Association

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The International City/County Management Association (ICMA) is a 109-year-old, non-profit professional association of local government administrators and managers, with approximately 13,000 members located in 32 countries.

Since its inception in 1914, ICMA has been dedicated to assisting local governments and their managers in providing services to their citizens in an efficient and effective manner. ICMA advances the knowledge of local government best practices with its website, www.icma.org, publications, research, professional development, and membership.

CENTER FOR PUBLIC SAFETY MANAGEMENT (CPSM)

The ICMA Center for Public Safety Management (ICMA/CPSM was launched by ICMA to provide support to local governments in the areas of police, fire, and Emergency Medical Services.

The Center also represents local governments at the federal level and has been involved in numerous projects with the Department of Justice and the Department of Homeland Security. In 2014, as part of a restructuring at ICMA, the Center for Public Safety Management (CPSM) spun out as a separate company and is now the exclusive provider of public safety technical assistance for ICMA. CPSM provides training and research for the Association's members and represents ICMA in its dealings with the federal government and other public safety professional associations such as CALEA, PERF, IACP, IFCA, IPMA-HR, DOJ, BJA, COPS, NFPA, etc.

The Center for Public Safety Management, LLC, maintains the same team of individuals performing the same level of service that it had for ICMA. CPSM's local government technical assistance experience includes workload and deployment analysis using our unique methodology and subject matter experts to examine department organizational structure and culture, identify workload and staffing needs, and identify industry best practices.

We have conducted more than 400 such studies in 46 states and provinces and more than 275 communities ranging in population size 3,300 (Lewes, DE) to 800,000 (Indianapolis, IN).

Thomas Wieczorek is the Director of the Center for Public Safety Management.
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SECTION 1. INTRODUCTION

The Center for Public Safety Management LLC (CPSM) contracted with the City of Kalispell to complete an operational and administrative analysis of the city's Fire Department.

The service demands and challenges generated by the community are numerous for the fire department and the EMS ground transport provider and includes fire, technical rescue, hazardous materials, building risk challenges; transportation emergencies; a vulnerable population that drives EMS demand; and other non-emergency responses typical of municipal fire departments and EMS providers.

A significant component of this report is the completion of a Community Risk Analysis. The All-Hazards Risk Assessment of the Community contemplates many factors that cause, create, facilitate, extend, and enhance risk in and to a community. The All-Hazards Risk Assessment of the Community is an important component of this report as it links directly to staffing and deploying fire and rescue assets in the community.

The response time and staffing components discussion of this report are designed to examine the current level of service provided by the Kalispell Fire Department (KFD) as a baseline and are compared to national best practices and standards. As well, these components provide incident data and relevant information to be utilized for future planning and self-review of service levels for continued improvement. This analysis and self-review are intended to help the department to continue to meet community expectations and mitigate emergencies effectively and efficiently.

Additional work includes an analysis of the current deployment of resources and the performance of these resources in terms of response times and the KFD fire management zones; a comprehensive review of the current ISO Public Protection Classification report; current staffing levels and patterns; department resiliency (ability to handle more than one incident); critical tasking elements for specific incident responses and assembling an effective response force; community risk reduction and training; fleet; alternatives the city may consider regarding station locations for future planning; and future organizational structures and deployment for fire and EMS services in the city.

The comprehensive risk assessment and review of deployable assets, which are critical aspects of a fire department's operation, will first assist the KFD in quantifying the risks that it faces. Second, the KFD will be better equipped to determine if the current response resources are sufficiently staffed, equipped, trained, and positioned. The factors that drive the service needs are examined and then link directly to discussions regarding the assembling of an effective response force and when contemplating the response capabilities needed to adequately address the existing risks, which encompasses the component of critical tasking.

Based upon CPSM's detailed assessment of the KFD, it is our conclusion that overall, the KFD provides quality fire, EMS, and rescue services. The fire staff are professional and dedicated to the mission of their agency, were transparent during our discussions, and were quite focused on creating a positive future for the city.

This report also contains a series of observations, planning objectives, and recommendations that are intended to help the city deliver services more efficiently and effectively. CPSM recognizes there may be recommendations and considerations offered that first must be budgeted and/or bargained, or for which processes must be developed prior to implementation.

RECOMMENDATIONS

Administrative and Programmatic Staffing

(See pp. 17-24.)

1. As a planning objective, the City of Kalispell and KFD should consider the creation of a full-time position of EMS Coordinator at the rank of Captain. This position should continue to have the requirement that the person holding it must be a currently certified paramedic and hold that certification for the duration of their time in the position.
2. As a planning objective, the current position of Assistant Fire Chief should be formally redefined as Assistant Chief for Operations: Second-in-command of the department ("executive officer") responsible for the direct supervision of the Captains, daily operational activities, personnel management, facilities, apparatus, and equipment. The Fire Chief should continue to delegate significant management responsibility and authority to the Assistant Fire Chief.
3. As a planning objective, the City of Kalispell should create a full-time position of Training and Safety Officer for the KFD, at the rank of Captain, to oversee, coordinate, and conduct all fire and EMS training for department personnel. The position of Training Officer should be separated from the Assistant Fire Chief position. The Training and Safety Officer should report directly to the Assistant Fire Chief.
4. Long-term, if the above positions are created, the City of Kalispell will need to consider the addition of an additional administrative assistant to the KFD administrative support staff.
5. CPSM recommends the KFD develop and implement a comprehensive strategic plan that incorporates measurable and obtainable administrative, operational, fiscal, and programmatic goals and objectives. CPSM further recommends this strategic planning document cover the near-, mid-, and long-term, and be updated as appropriate at the end of the mid-term period.

General Staffing

(See pp. 24-29.)

6. The City of Kalispell should review the current staffing model and collective bargaining agreement while simultaneously exploring other staffing and shift schedule models/options to seek alternatives to the current allotment of 20 Kelly Days. The goal of this review is to be able to work toward increasing daily on-duty staffing levels.

Organizational Policies and Guidelines

(See pp. 30-37.)

7. Rules and regulations establish expected levels of conduct and general obligations of department members, identify prohibited activities, and provide for the good order and discipline necessary for the credible operation of a quasi-military emergency services organization. The KFD should form a management-labor committee to develop a comprehensive rules and regulations document that identifies anticipated, acceptable/ permitted, and prohibited behaviors. This document should be distributed to and signed by each member of the department. It will also provide important guidance to new employees.
8. The KFD should continue to make the revamping of the department's policies, procedures, and guidelines a high priority. In addition to the documents already completed and/or in development, attention should be given to mission-critical procedures such as, but not limited to, basic engine company and truck company operations, dwelling fires, commercial structures, mid-rise buildings, industrial incidents, personnel accountability, hazardous

materials incidents, vehicle extrication operations, thermal imaging camera and automatic external defibrillator use, and mass-casualty incidents. The addition of numerous other procedures covering additional operational, routine administrative, and training procedures should then follow.

9. In order for its materials to not be confused with city policies, the KFD should consider not utilizing the term "policy" in its documents. This should be changed to either "Procedure" or "Guideline" for all documents. AS well, all documents should be combined into a single manual with appropriate sections.
10. The general format and organization of the SOP/SOG manual is a very important consideration and the department must ensure that the manual/system is easy to utilize, with cross-referencing of the necessary procedures. If personnel are going to be required to learn and adhere to the department's procedures, then the format, organization, and filing of them must be user-friendly, otherwise they will sit on a shelf, or on a computer drive, unused.
11. The KFD is strongly encouraged to carry through with the plan to establish a committee to review and assist with revisions to the SOG manual in the future. The committee should be comprised of members of each rank and include specific representation by a senior officer of the collective bargaining unit.
12. The KFD should institute a process for issuing General Orders, Training Bulletins, Safety Bulletins, and Informational Bulletins. A numbering system should be implemented to keep track of these documents for indexing and future reference purposes.

Community Risk Reduction

(See pp. 37-45.)

13. As a long-term planning objective, the City of Kalispell should consider re-establishing a full-service Fire Prevention Bureau within the KFD. This bureau should be staffed, at a minimum, with a Fire Marshal (rank of Captain) and one fire inspector (Fire Marshal and inspector should also be certified to perform fire investigations). The focus of their activities should be on post-occupancy fire prevention inspections, code enforcement, and education of business and building owners.
14. The KFD should implement an in-service company inspection program at residential, medical, manufacturing, and retail business establishments throughout the city.
15. To fund the KFD's fire prevention and safety activities the City of Kalispell should consider the adoption of registration, inspection, and/or permit fees to help offset the actual costs of providing these services throughout the city. These fees should include inspections conducted by in-service fire companies.
16. The KFD should develop a compelling public education program that includes discussing the significant life-saving benefits of installing residential fire sprinklers in all new one- and two-family dwellings.
17. The City of Kalispell should explore possible funding opportunities to encourage businesses to install smoke alarms and sprinkler systems.
18. If the City of Kalispell authorizes the formation of a full-service Fire Prevention Bureau within the KFD, the KFD should explore the feasibility of utilizing Remote Video Inspections (RIV) to assist with managing the inspection workload.
19. The KFD should encourage—and if possible, expand—the voluntary home inspection and assistance program. This is a ***Best Practice***. The program should continue to include the distribution of smoke detectors to the community.

20. The KFD should provide an inventory of smoke alarms for fire apparatus and ambulances to take on all calls for installation in residential structures. This recommendation includes a program where companies conduct free smoke alarm checks on all calls when possible.
21. The KFD should provide training on basic fire cause and origin determination to all officers. This will assist with ensuring the cause of every fire that causes damage or injury is determined while easing the workload for the Fire Chief and Assistant Fire Chief.

Education and Training

(See pp. 45-51.)

22. The KFD should make it a priority to implement daily in-station training lasting one to two hours each duty day.
23. The KFD should continue to develop and budget for its company fire officer training and development program. To further enhance the program the department should consider components that are competency-based on National Fire Protection Association (NFPA), International Association of Fire Chiefs (IAFC), and International Fire Service Training Association (IFSTA) standards, and that focus on contemporary fire service issues including community fire protection and emergency services delivery approaches, fire prevention practices, firefighter safety and risk management, and labor/staff relations; reviewing, approving, or preparing technical documents and specifications, departmental policies, standard operating procedures and other formal internal communications; improving organizational performance through process improvement and best practices initiatives; and having a working knowledge of information management and technology systems.
24. The KFD should consider increasing the requirements for further step advancements at the Captain level.
25. The KFD should develop task books for firefighter, Engineer, and each Captain step. For ranks other than probationary firefighter, all personnel aspiring for promotion to a higher rank should successfully complete all elements of that rank's task book to be eligible to participate in the formal promotional testing process.
26. The KFD should develop a plan—including providing appropriate funding—to provide all companies and personnel with mandatory, off-duty, high-intensity training on various subjects, including periodic live fire training on at least a semi-annual basis, with quarterly being preferred.
27. The KFD should institute written and practical skills testing and proficiency evaluations (non-punitive) as part of the department's comprehensive fire training program.
28. The City of Kalispell in consultation with the KFD should consider providing funding for the KFD to procure an appropriate training facility where the department can safety perform NFPA 1403-compliant live fire training and other basic and advanced/complex evolutions for all personnel on at least a semi-annual (quarterly preferred) basis. Consideration should also be given to approaching this project as a county-wide or regional endeavor.
29. The KFD should make a concerted effort to send as many officers as possible to the National Fire Academy (NFA). This should include the Assistant Chief (or future dedicated Training Officer) for various training-related classes, and the Fire Marshal (if the city re-establishes a dedicated fire prevention bureau within the Fire Department) for fire prevention and community risk reduction classes. Any officers who meet the admissions criteria should be encouraged to enroll in the Academy's Executive Fire Officer Program.
30. The KFD should look for opportunities to provide periodic joint training between the department and various agencies that provide automatic/mutual aid to the city, including

in the evening and on weekends. Consideration should also be given to hosting large-scale exercises to test and evaluate regional interoperability.

31. CPSM recommends new apparatus (including the recently ordered pumper and ambulance) and staff/command vehicles be designed with clean cab concepts.

32. CPSM recommends that after the new ladder scheduled for purchase in FY 2028 is delivered, that the existing quint apparatus be retained as a reserve ladder. This will also help the city's ISO rating and more importantly not leave the city without an aerial when the primary ladder is out of service for any reason, or committed to mutual aid, training, etc.

All-Hazards Risk Assessment

(See pp. 52-119.)

33. KFD should address the wildland threat from surrounding WUI areas. This should include working with the county on evacuation systems (zones, maps, notifications, evacuation centers, etc.), staffing policies for high fire periods (Red Flag weather), review of mutual and automatic aid agreements, etc.

34. KFD should conduct regional mutual aid agency drills that address issues such as mass shootings.

35. CPSM recommends fire staff attend and participate in Move the 2040 committee and be an active voice on street improvement initiatives.

36. CPSM recommends the city consider pre-emption emergency vehicle right-of-way street light technology.

Fire Operations

(See pp. 126-128.)

37. The KFD should build at least a portion of its training regimens and tactical strategies around the exterior or transitional attack for when the fire scenario and the number of available units/responding personnel warrants this approach.

38. In acknowledgement of the fact that the KFD operates in a minimal staffing mode and recognizing the potential for rapid fire spread, particularly in the more densely developed areas of the city, the KFD should equip all its apparatus with the appropriate appliances and hose and develop standardized tactical operations that will enable arriving crews to quickly deploy high-volume fire flows of 1,200 to 1,500 gallons per minute (if the water supply will permit this), utilizing multiple hose lines, appliances, and master stream devices. This flow should be able to be developed within four to five minutes after the arrival of an apparatus staffed with three personnel.

Wildland-Urban Interface

(See pp. 128-130.)

39. The KFD should address the wildland threat from surrounding WUI areas. This should include working with the county on evacuation systems (zones, maps, notifications, evacuation centers, etc.), staffing policies for high fire periods (Red Flag weather), review of mutual and automatic aid agreements, etc.

40. The City of Kalispell should consider becoming a fire-adapted community (FAC) collaborating to identify its wildfire risk and working collectively on actionable steps to reduce its risk of loss. Part of this process should include the creation of a written assessment of risks using a Community Wildfire Protection Plan (CWPP) or Natural Hazard Mitigation Plan.

Fire Preplanning

(See pp. 130-132.)

41. CPSM recommends that as a planning objective, the KFD should continue to make pre-fire/incident plan development a high priority until such time as plans have been developed for all high- and medium-hazard occupancies located in the city, placing a high priority on those identified structures that are not protected by automatic sprinkler systems. In addition, pre-plans should be uploaded onto computers/tablets and the CAD system so they will be more readily available to personnel on the incident scene.

42. The KFD should compile an inventory of the locations of vacant and unsafe structures throughout the city and mark them accordingly with regard to offensive or defensive-only fire suppression operations.

Response Metrics and Response Times

(See pp. 152-161.)

43. The KFD should work with the Flathead County Emergency Communications leadership to identify and attempt to correct the reasons for the extended dispatch times shown in the study year data.

44. The KFD should aggressively take whatever steps are necessary to significantly improve turnout times for both fire and EMS incidents. This will serve to reduce and improve overall response times to emergency incidents.

EMS Service Delivery

(See pp. 170-177.)

45. The KFD should work with its medical director and other community stakeholders to determine the role that an MIH/CP program could play in working with high utilizers and other patients within Kalispell who would benefit from this type of service model.

Logan Health EMS Response Zone

(See pp. 177-184.)

46. The KFD should work with Logan Health to identify the reasons for the elongated dispatch, turnout, and travel times for the Logan Health EMS response zone. Once deficiencies have been identified, appropriate actions should be taken to mitigate these issues.

47. Logan Health EMS should only be dispatched alone and/or as the first due ambulance to medical calls that originate from within the Logan Health medical complex such as doctors' offices, diagnostic facilities, etc. EMS calls that occur in the neighborhoods adjacent to the Logan Health complex should be handled by the KFD utilizing normal response protocol.

Mutual/Automatic Aid

(See pp. 184-189.)

48. The KFD should formalize, in writing, its automatic and mutual aid agreements with all its neighboring departments. Written agreements codify an understanding between two or more entities to provide support in a given context. The primary purpose is to support each other's response efforts in an emergency.

49. The City of Kalispell and KFD should require that personnel who staff fire and rescue organizations that respond into the city on mutual aid possess the same minimum levels of training (Firefighter I and II) that Kalispell personnel are required to maintain.

50. The City of Kalispell and KFD mutual aid agreements with surrounding fire departments should stipulate the minimum required training standards for personnel who may respond

into the city to assist. The agreements should also stipulate that the ranking officer of each entity must certify in writing on an annual basis that his/her personnel comply with the standards.

Planning Recommendations and Considerations

(See pp. 192-208.)

51. CPSM recommends that as a planning objective that over the next three fiscal years the city enhance KFD staffing levels as shown here.

    - Year 1 – Increase minimum on-duty staffing to 8 personnel.
        - Hire one additional firefighter and reassign current D Platoon firefighters to A, B, and C Platoons to increase maximum shift staffing to 11 personnel.
        - Separate the training and safety functions from the Assistant Fire Chief position and create and fill a position of Training and Safety Officer at the rank of Captain.
        - Upgrade the position of EMS Coordinator from a part-time to a full time position at the rank of Captain.
        - Total additional positions = three (3).
    - Year 2 – Add one additional firefighter per shift (three total positions) and increase minimum on-duty staffing to nine personnel at all times. The maximum shift staffing would be 12 personnel.
    - Year 3 – Add one additional firefighter per shift (three total positions) and increase minimum on-duty staffing to 10 personnel at all times. This will allow the city to staff two ambulances and two fire suppression units 24/7. Having the ability to staff two EMS units 24/7 will eliminate the need for most EMS mutual aid into the city, which will reduce potential revenue loss. The maximum shift staffing would be 13 personnel.

52. As a planning objective, CPSM recommends that the City of Kalispell consider options for the next CBA negotiations with the goal of aligning Kelly Day hours with the FLSA work period as outlined in 29 U.S.C 207(k) and utilize this alignment to help increase on-duty staffing.

53. As a planning objective, CPSM further recommends the city review all options for increasing EMS revenues. This should include the continual review of in-house EMS billing to ensure collection of revenues is maximized to the fullest extent allowable by law, with a focus on closing the gap between billed services and collected revenues; consideration of service fees with areas outside of the city boundaries that the KFD provides EMS transport to; and reconsideration of the city EMS tax levy at a rate sufficient to offset general fund transfers needed to sustain the ambulance fund.

54. As a planning objective, CPSM recommends that the City of Kalispell proceed with plans for the construction of Fire Station 63 in its proposed location at Farm to Market Drive and Mountain Vista Drive.

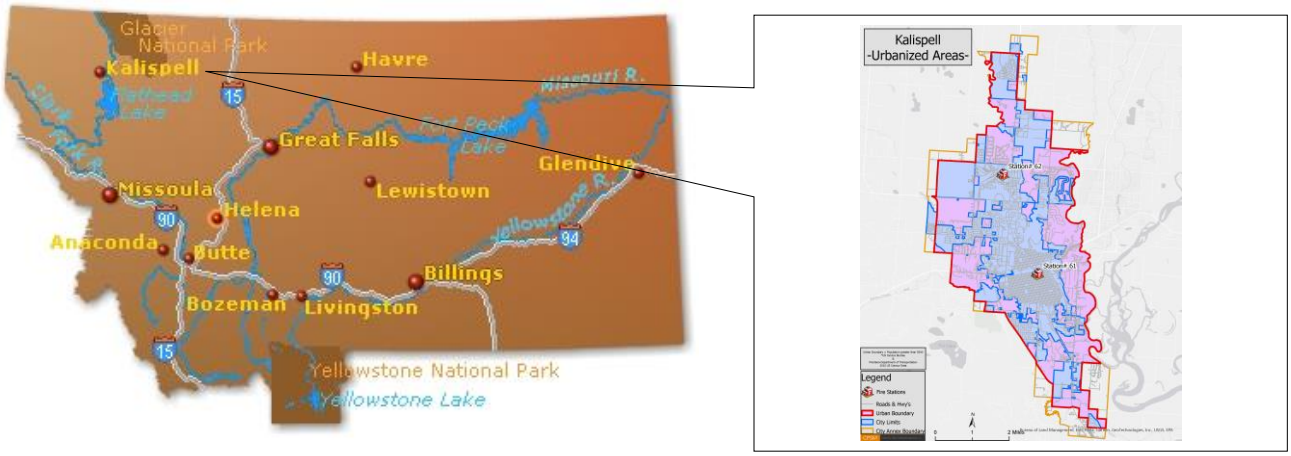
55. The City of Kalispell leadership, both city and fire department, should lobby their local legislators to seek passage of House Bill 813 that would allow the creation of regional fire authorities.

56. As a planning objective, CPSM recommends that with the opening of Station 63, the City of Kalispell should create a position of Shift Commander (three additional positions) who would serve as the on-duty shift commander and respond in a command vehicle to incidents.

SECTION 2. AGENCY REVIEW AND CHARACTERISTICS

The City of Kalispell is in Flathead County, which is in the northwestern portion of Montana and is contiguous with Canada on its northern border. Kalispell was incorporated in 1892; it is in the south-central portion of Flathead County. Kalispell serves as the county seat of the county and is the gateway to Glacier National Park.

FIGURE 2-1: City of Kalispell



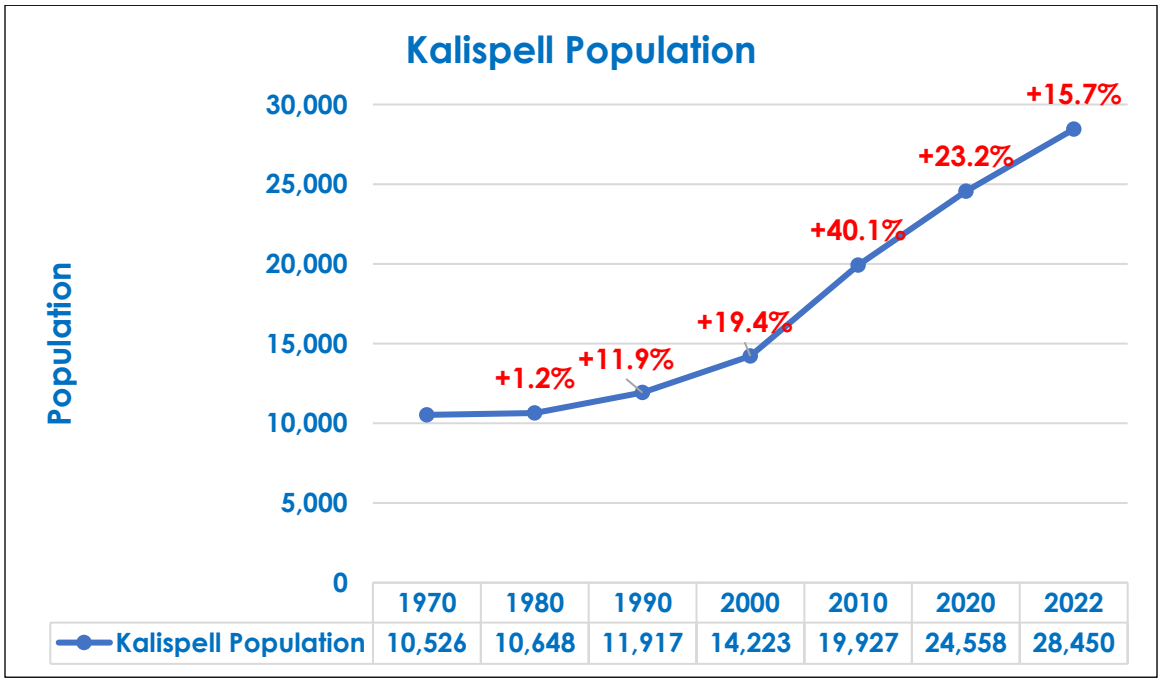
The city encompasses an area of 12.43 square miles and has a mix of commercial, industrial, residential, recreation, and rural areas.[1] The 2020 area of the city was 0.79 of a square mile (+6.8 percent) larger than the 11.64 square miles at the 2010 census.[2]

The official 2020 census population was 24,558 which represents a 23.2 percent increase over the 2020 population of 19,927.[3] According to the U.S Census Bureau the estimated 2022 population was 28,450 which is an additional 15.7 percent in just those two years.[4] The estimated 2023 population increased again to 29,409.[5] The city's population has doubled since 2000. Since 2020, the Kalispell region has been Montana's fastest growing area. Kalispell is the fastest growing micropolitan area in the United States.[6] A 2017 document prepared by the city titled *City of Kalispell Growth Policy Plan It 2035* projects the need for 3,000 additional housing units by 2035.[7]

Based upon the growth experienced in the past several years, it is likely that projection will be low. The next figure shows the city's population and percentage increase for each census from 1970 through 2020 plus estimates since the 2020 census.

1. https://www.census.gov/quickfacts/fact/table/kalispellcitymontana/INC110221
2. ibid
3. ibid
4. ibid
5. https://worldpopulationreview.com/us-cities/kalispell-mt-population
6. https://www.kalispell.com/ArchiveCenter/ViewFile/Item/206
7. https://www.kalispell.com/DocumentCenter/View/465/Kalispell-Growth-Policy-Plan-It-2035-PDF

FIGURE 2-2: Kalispell Population Growth, 1970–2022



The city's largest employer is Logan Health Medical Center and its supporting operations, which together employ more than 1,000 people. Weyerhaeuser (formerly Plum Creek Manufacturing) employs more than 500 people.

In the walkable downtown and surrounding areas, one can find museums (Conrad Mansion Museum, Northwest Montana History Museum, Hockaday Museum of Art, Montana Modern Fine Art), performing arts venues, art galleries, restaurants, and other businesses and events. Kalispell Parks and Recreation maintains 445 acres of parkland and natural open space that ranges from large urban and community parks to mini parks. Nearby are two of Montana's Tribal Nations—the Blackfeet Nation and the Flathead Nation, Home to the Confederated Salish and Kootenai Tribes.

Kalispell also serves as a base for people engaging in year-round outdoor activities including hiking, biking, hunting, skiing, etc. The city is just a short drive to both Glacier National Park and Flathead Lake, which is the largest freshwater lake west of the Mississippi River.

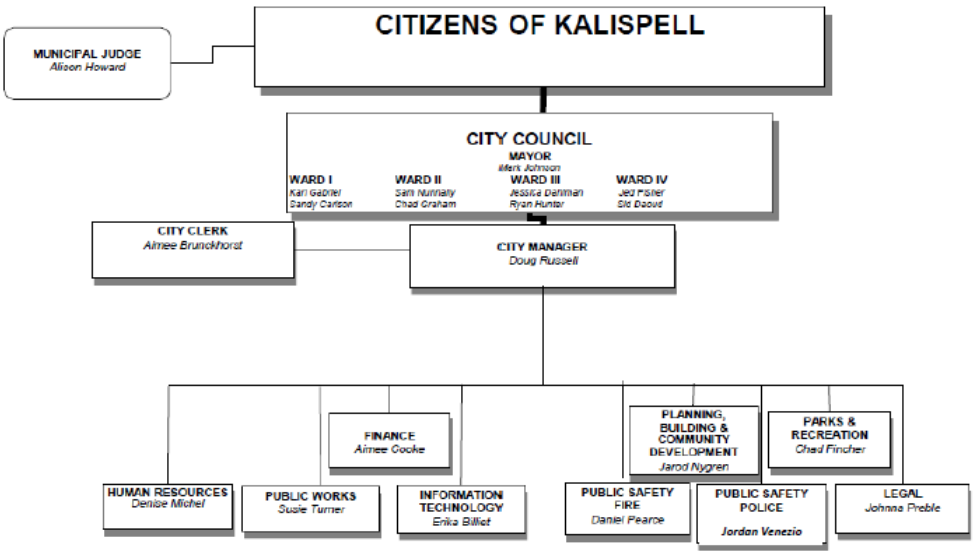
Kalispell was founded by Charles Edward Conrad, a businessperson and banker from Fort Benton, Montana, who formed the Kalispell Townsite Company with three other men and began selling lots in the Spring of 1891. Kalispell was officially incorporated as a city in 1892.

GOVERNANCE AND FINANCE

The city operates under a council-manager form of government. The City Council is comprised of a Mayor and eight council members, all of whom are elected on a nonpartisan basis. The Mayor is elected for a four-year term, while council members are elected by district to staggered four-year terms, with four council members elected every two years. The City Council appoints the City Manager to carry out the governing policies and ordinances established by the council, and to oversee the day-to-day operations of the city.

Kalispell operates under a traditional organizational chart. The City Manager reports directly to the City Council, with major functional offices and departments reporting to the City Manager. The major departments and offices reporting to the City Manager include Police, Fire, Public Works, Finance, Human Resources, Building Official, Planning, Building, Community Development, Parks and Recreation, Information Technology, City Clerk, and the City Attorney. The organization chart for the city is shown in the following figure.

FIGURE 2-3: Kalispell Organizational Chart

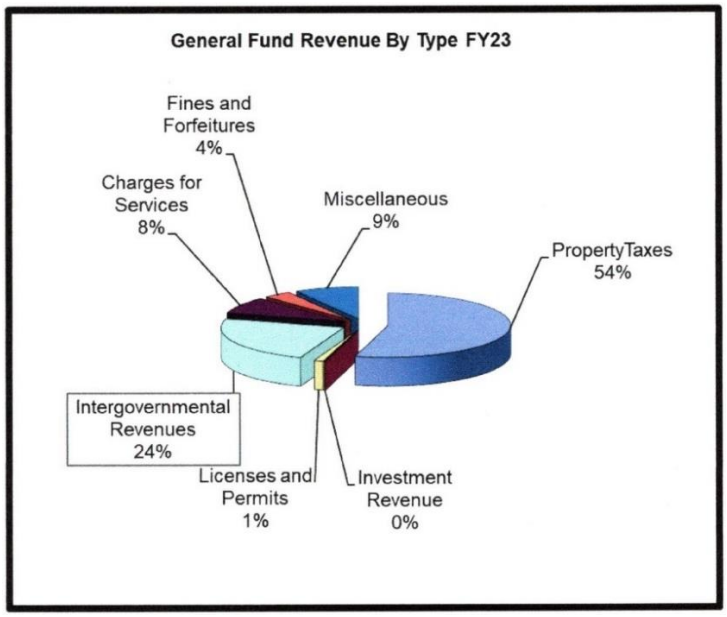


A Finance Director handles all budget, accounting, payroll, and accounts payable for the city and reports directly to the City Manager. The Finance Director oversees the Assistant Finance Director, City Treasurer, Assessment Coordinator, Accounts Payable, and Utility Billing. The annual budgeting process begins in January and concludes with the adoption of the budget in June for implementation on July 1.

The property tax rate in Montana is referred to as millage; the basic unit is 1 mill. One mill is equal to 1/1,000 of a dollar. Or, more simply, at a tax rate of 1 mill, for every $1,000 in taxable value a property owner will pay $1 in property tax. The City of Kalispell General Fund is used to account for all resources and expenditures not specifically accounted for in other funds such as the Ambulance Fund, which is a special revenue fund. The FY 2022-2033 budget was adopted in June 2022 with authorized total general fund expenditures of $14,176,069, which was about $550,000 less than the FY 2021-2022 budget.[8]

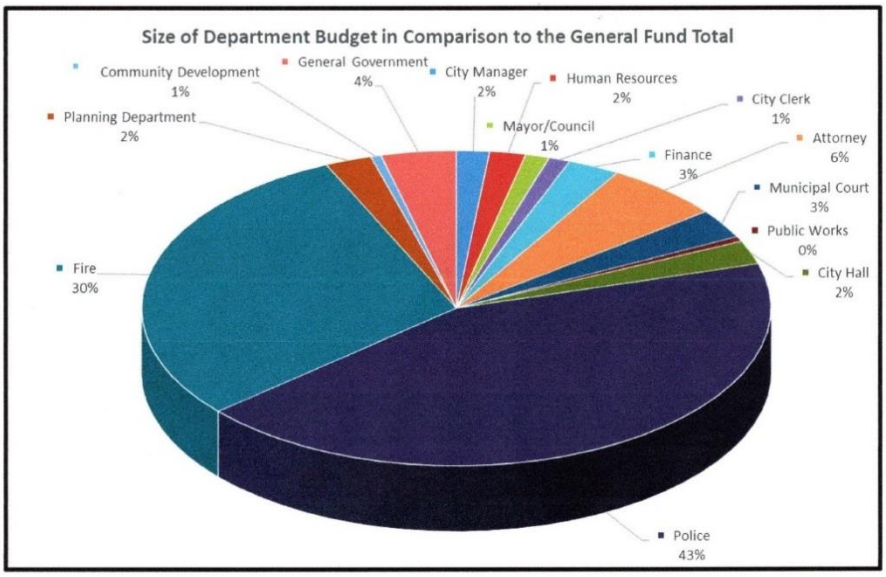
8. City of Kalispell FY 2022-2023 Budget

FIGURE 2-4: City of Kalispell Funding



In the current budget, $4,188,272 is allocated for fire and rescue services, an increase of 8.38 percent over the previous year. The fire and rescue budget accounts for 30.8 percent of general fund expenditures.[9]

FIGURE 2-5: City of Kalispell Spending Allocations



The Ambulance Fund was created by City of Kalispell Ordinance #439 on April 18, 1932. The purpose of the Ambulance Fund is to receive and deposit all funds generated for the use and operation of the city's ambulance, and in turn pay out expenditures from this fund for the maintenance and operation of the city's ambulance. Pursuant to the ordinance, no money may be paid out of the Ambulance Fund, except by order of the City Council. The Ambulance

9. City of Kalispell FY 2022-2023 Budget

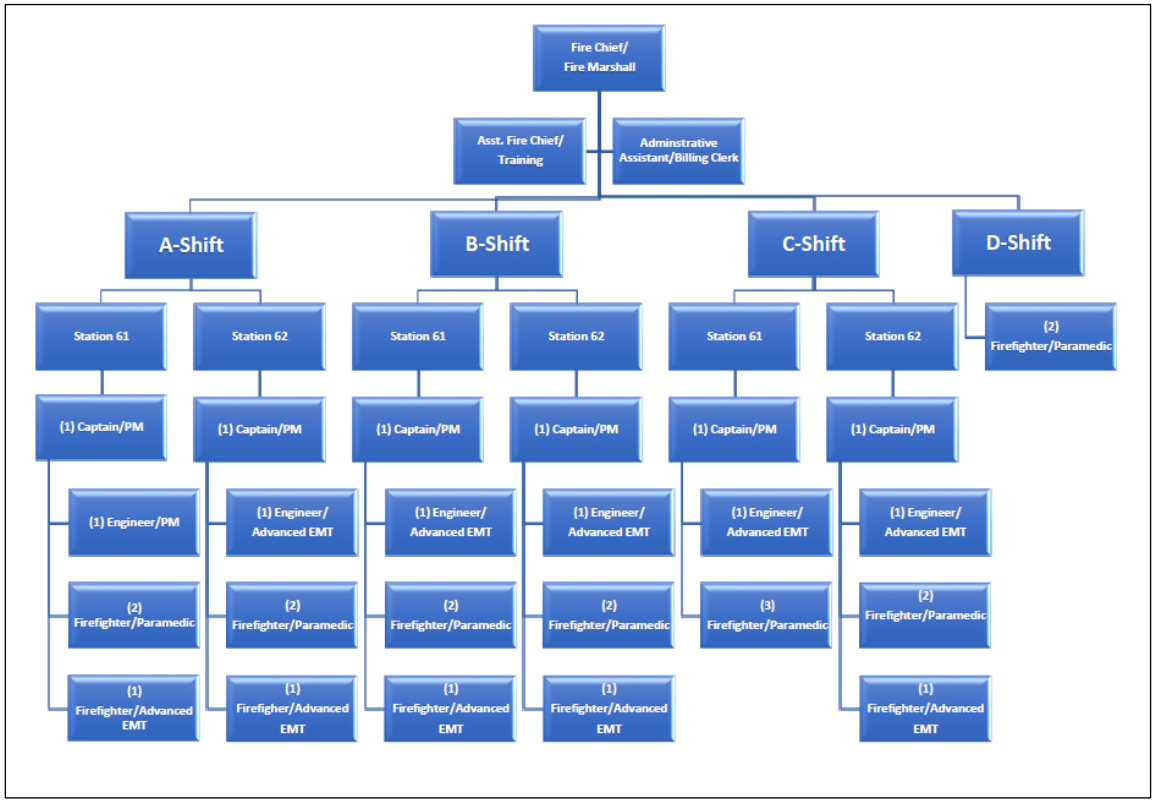
Fund was converted to a Special Fund during the FY 2007/2008 budget process by the then Finance Director.

KALISPELL FIRE DEPARTMENT

The Kalispell Fire Department was formed on May 17, 1892, after several significant fires had occurred in the community. In 1934, the department became a fully career department. Chapter 9, Article 1, subsection 9-1 of the Kalispell Municipal Code establishes the Fire Department of the city. Additional subsections of Chapter 9 provide for qualifications of firefighters, certain disciplinary actions and appeal rights of collective bargaining unit members, the powers and duties of the Fire Chief and Assistant Fire Chief, as well as operational matters of the fire department and certain unlawful acts affecting fire department service delivery. Subsection 9-7-1 establishes false alarm fees for both the fire and police departments. The delivery of Emergency Medical Services at both the first response and transport levels is operated out of and managed by the Fire Department.

Today The Kalispell Fire Department (KFD) is a full-service, career public safety organization. The department's total authorized strength is 35 personnel of which 34 are sworn firefighters. Of these, 30 are assigned to the department's three operational shifts, and two are assigned to a day work schedule from 7:00 a.m. to 7:00 p.m. As a Montana Class 1 city with a population greater than 10,000, Kalispell is required by state law to have a fully career fire department. The use of call or volunteer personnel is not permitted. The following figure illustrates the organizational chart of the KFD.

FIGURE 2-6: KFD Table of Organization

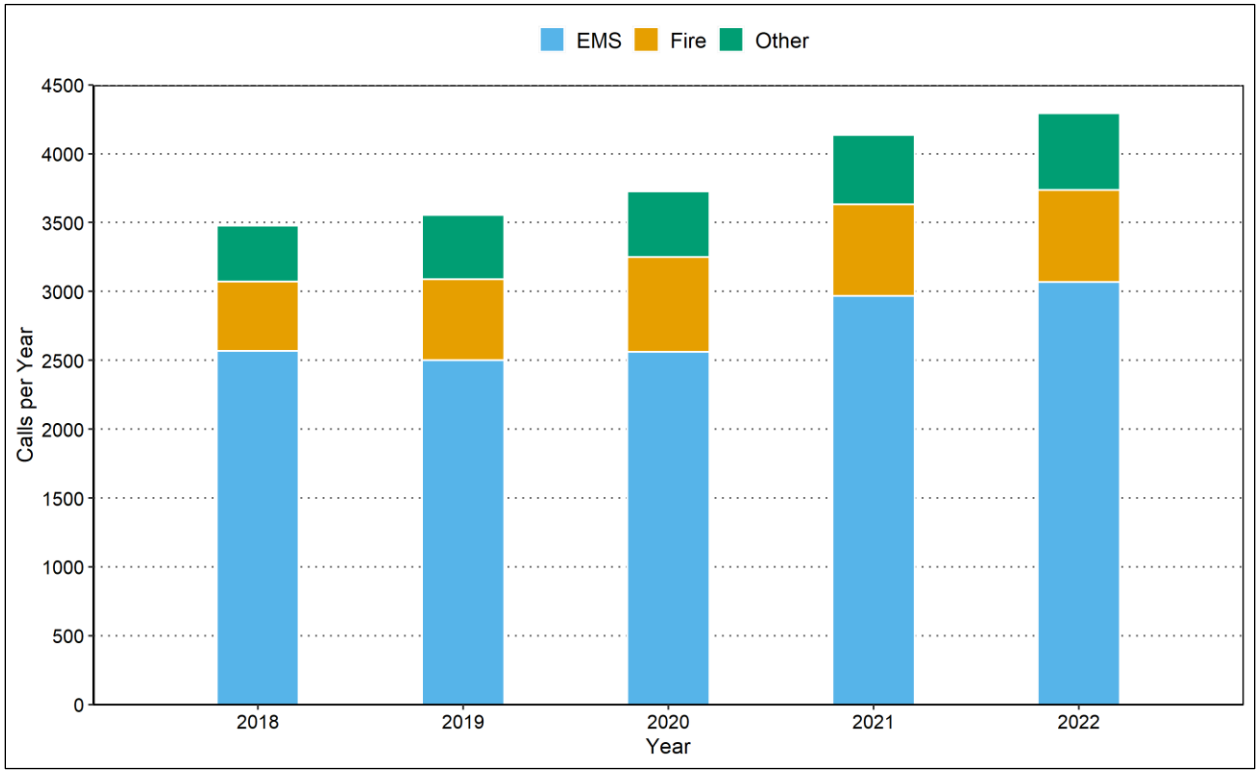


As the population of the city has increased, so have the calls for emergency services provided by the KFD. The next table and figure illustrate the increase in calls for service over the five-year period of 2018 through 2022.

TABLE 2-1: Calls by Type and Year

Year	EMS	Fire	Other	Total
2018	2,567	506	404	**3,477**
2019	2,502	586	468	**3,556**
2020	2,561	688	477	**3,726**
2021	2,966	666	504	**4,136**
2022	3,067	670	556	**4,293**

FIGURE 2-7: Calls by Type and Year



During this five-year time period:

- Total call volume increased **23 percent** from 3,477 in 2018 to 4,293 in 2022.
- EMS calls increased **19 percent** from 2,567 in 2018 to 3,067 in 2022.
- Fire calls increased **32 percent** from 506 in 2018 to 670 in 2022.
- Other calls (canceled and mutual aid combined) increased **38 percent** from 404 in 2018 to 556 in 2022.

The KFD has established a mission statement. When truly accurate, the mission statement should provide the very foundation for the organization, its operations, and why it exists. The mission statement should be providing that broad direction that everything else that the organization does is going to be built upon.

KFD Mission Statement:

Protecting our community with the highest level of professionalism, which is accomplished through highly trained firefighters, a focus on community education, and nationally recognized emergency medical skills.

Services of the department include:

- Fire protection and suppression.
- Emergency medical services (EMS), first responder, and transport at the Advanced Life Support (ALS) level.

- Fire company fire inspections (limited).
- Pre-fire/incident planning.
- All-hazards public education.
- Fire cause and origin investigation.
- Fire hydrant inspections (limited).
- Multidisciplinary technical rescue.
- Ice rescue.
- Hazardous materials response and mitigation (leak and spill/operations response) as host of the Northwest Hazardous Materials Response Team.
- Support to the Kalispell Police Special Response Team.
- Automatic/mutual aid to neighboring jurisdictions.

The KFD is led by a Fire Chief who is aided by an Assistant Fire Chief in the day-to-day leadership and administration of the department. Based on our observations, we found the Chief and Assistant Chief form a cohesive leadership team. The chiefs were passionate about their agency and the community. The Fire Chief and Assistant Fire Chief are assisted by a civilian Administrative Assistant who performs a wide range of support duties including handling EMS third-party billing.

The Fire Chief simultaneously holds the title of Fire Marshal, which in Kalispell has limited duties and responsibilities primarily related to the determination of fire cause and origin. Most of the technical services linked to community risk reduction, which includes fire prevention code enforcement, fire and life safety elements of building plans review, new construction inspections, etc., are handled by the Planning, Building, and Community Development Department. The KFD has no formal Fire Prevention Division or unit as do most fire departments.

The Assistant Fire Chief also simultaneously serves as the department's training officer responsible for maintaining and providing compliance records for state, local, and federal training mandates. The Chief does not deliver a lot of training personally but does have a cadre of instructors available to assist.

Ancillary assignments such as health and safety, community outreach and education, information technology, radios, shift scheduling, employee conduct, fleet and facility management, and EMS coordination and oversite (continuing education, quality improvement as examples) are distributed among the department's officers. Managing these and other items are typically done via individual positions (EMS Coordinator oversees the wide ranging facets of the EMS delivery system.) or assigned to administrative positions (Assistant Chief provides shift scheduling assignments, as an example).

Our team also noted the impact on the officers performing these duties while still maintaining focus on operations, crew safety, and productivity. All the officers we interacted with appear to be high-functioning and very professional despite their workload, which is quite substantial. During our station visits crews were very welcoming, professional, forthcoming, and were supportive of the Chief and Assistant Chief's efforts and skills. They did express concerns about staffing and the increasing call volume coupled with the city's rapid growth. These issues will be discussed later in this report. The KFD crew members we interacted with also appeared to be passionate about the department and the community. The CPSM team was fortunate to be able to spend a good amount of time with KFD personnel and visiting the stations.

The department staffs two fire stations, 24 hours a day, 7 days a week, with a minimum of seven personnel on duty during the day, and six overnight. Station 61, which also serves as the department's administrative headquarters, is located at 312 1st Avenue, East, in downtown Kalispell. Engine 631, Reserve Engine 633, Medic 621, Haz Mat truck 673, and trailer 670 along with several administrative, support, and command vehicles, are housed there. Station 61 staffs Engine 631 with a minimum of three personnel at all times. The medic unit is not staffed at this station unless the city-wide on-duty staffing is at least eight personnel.

Station 62 is located at 255 Old Reserve Dr. in the northern part of the city. It houses Ladder 642, Medics 622 and 624, Brush 681 (Type 6/wildland), and Utility 673. Station 62 normally cross-staffs Ladder 642 and Medic 622. When staffing is at seven personnel, which the KFD attempts to maintain daily from 7:00 a.m. to 7:00 p.m., this station is staffed with four personnel and medic 624 can be staffed. This crew also staffs the other units on an as-needed basis. The unit or units that respond are based upon the nature of the incident.

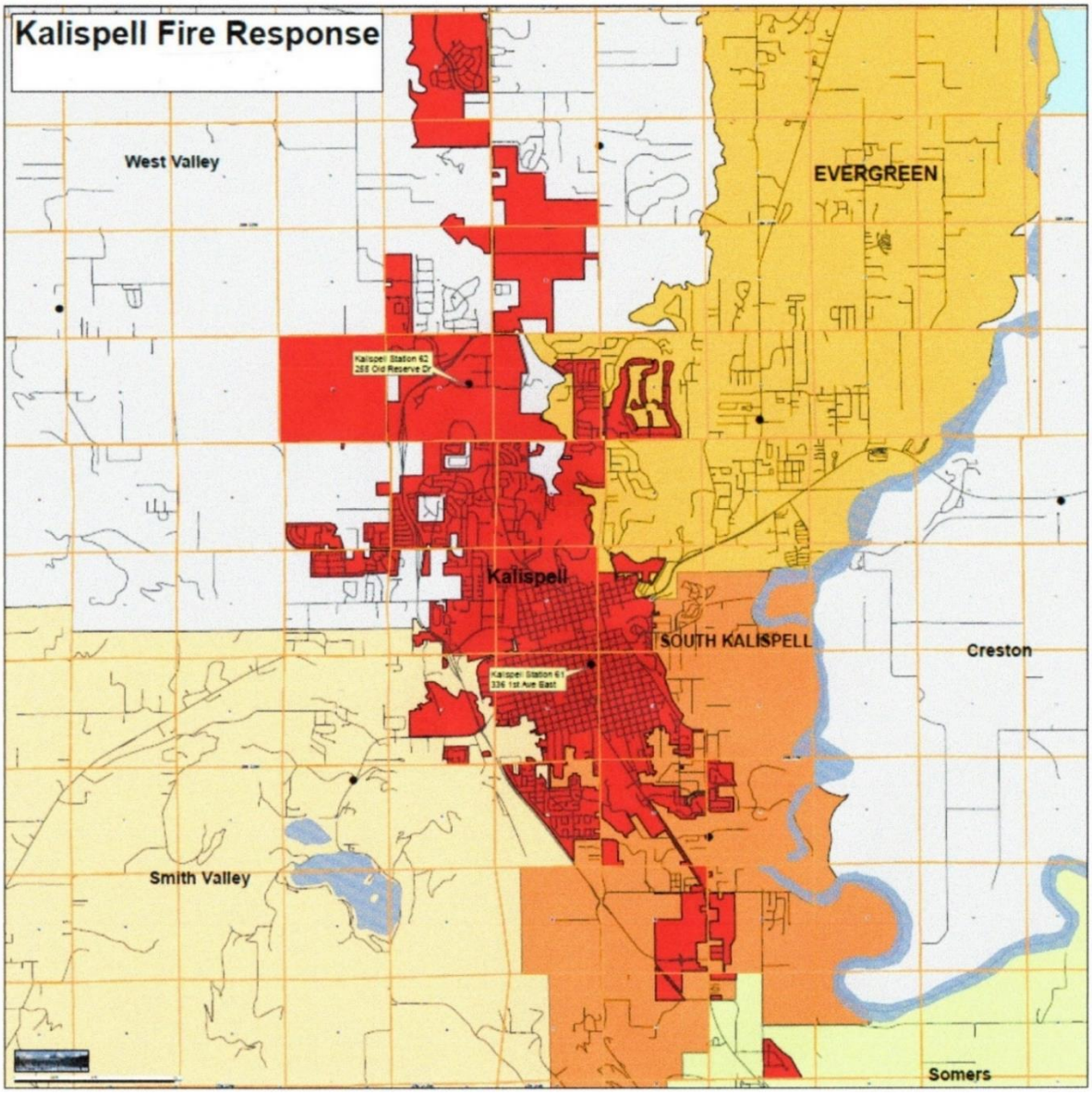
Emergency medical services (EMS) for the City of Kalispell are provided at the advanced life support (ALS)/paramedic level by the KFD. The department has provided EMS since 1932, long before most fire departments expanded their missions to include this service. It was the first formal EMS service in the area, and originally provided service throughout Flathead County. In 1994, the KFD implemented the current ALS service with a goal of improving patient outcomes, particularly for critical, life-threatening emergencies.

Advanced life support or ALS-level care refers to prehospital interventions that can be brought into the field by paramedics. Typically, this service level includes the ability to bring much of the emergency room capability to the patient. Paramedics can administer intravenous fluids, manage a patient's airway, provide drug therapy, utilize the full capabilities of a 12-lead cardiac monitor, and provide a vital communication link to the medical control physician who can provide specific medical direction based on the situation.

Prior to the implementation of the ALS service, when the fire department received a call for a serious medical emergency, the ambulance, or another public safety responder would respond to the hospital emergency room to pick up a nurse who could provide advanced care during on-scene treatment and transport. When the ALS service was first initiated the KFD provided the service to much of Flathead County. In the intervening years, as more areas have initiated their own service at the paramedic level, the department's primary response area has been reduced significantly.

The next figure illustrates the Kalispell Fire Department's response area for fires (in red). Due to annexation of unincorporated county areas into the city there are areas that are part of the city that are not contiguous to it or are connected by just the center line of the highway. The challenges of operating with limited staffing levels have prompted the creation of a robust automatic and mutual aid response system that includes several other communities surrounding the City of Kalispell. Surrounding communities that provide automatic or mutual aid into the city, when necessary, include Evergreen (dark yellow), Smith Valley (light yellow), South Kalispell (orange), and West Valley (light gray). The black pin dots indicate the location of fire stations.

FIGURE 2-8: Kalispell Fire Department Response Area (in Red)



Administrative and Programmatic Staffing Review

The organizational structure of any organization or entity, whether public or private, establishes and illustrates the important hierarchical relationships between various people, supervisors/ subordinates, levels, divisions, and bureaus within the organization that allow it to function properly, operate effectively and efficiently in its daily operations, or the pursuit of its mission. It also helps to clearly define the organizational chain of command from top to bottom, an especially important consideration in a quasi-military public safety organization such as the fire department where everyone from the highest rank to the lowest is subject to receiving orders, and, except for the lowest rank also issues them. Effective communications in any organization, but especially public safety agencies, are essential and a cohesive chain of command allows everyone to know exactly who they report to, and/or who reports to them.

When discussing the organizational structure of fire departments, the normal perspective is to focus on the operational aspects of the department. However, in order for a fire department to be able to perform its key mission(s)—response to and mitigation of a wide range of emergency incidents—there needs to be a sufficient support system in place. The size and complexity of this support system should be dictated by the size and complexity of the community and its fire department.

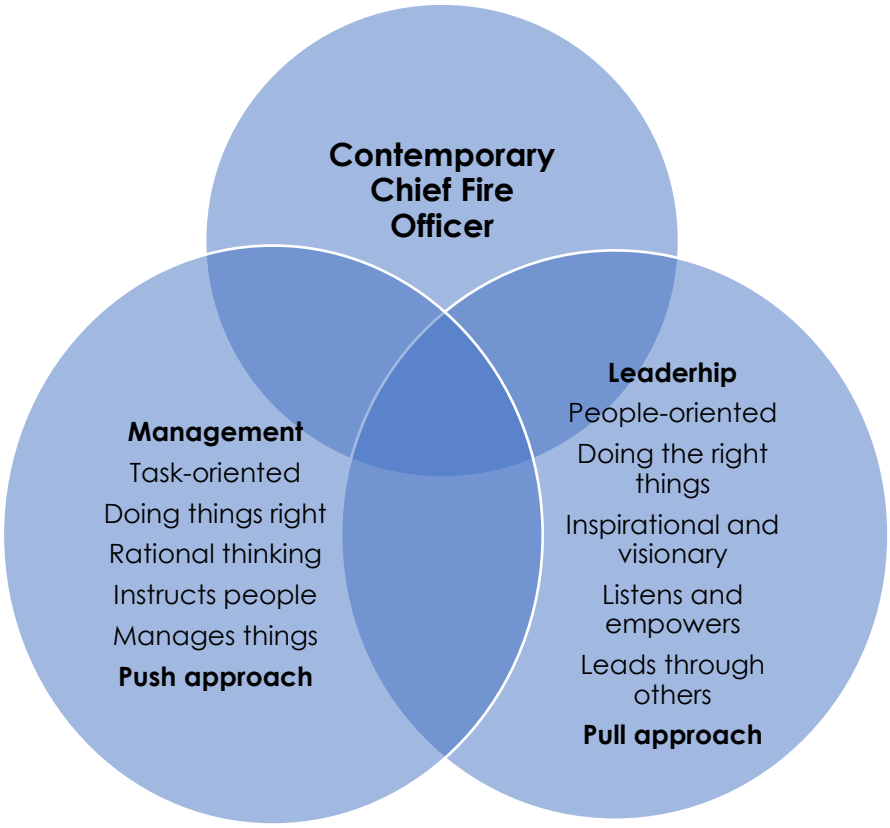
Fire Administration is the administrative and management branch of the department where the day-to-day operations of the department are coordinated and managed. This includes fiscal (including billing for EMS transports), human resources, planning, records management, fire prevention, training, and intergovernmental liaison functions.

The organizational structure of the Kalispell Fire Department is currently limited, which is not unusual in smaller departments. As currently configured, the KFD is headed by a Fire Chief who is the department's highest-ranking officer and serves as the administrative and operational head of the department. The chief is appointed by the City Manager. The Chief appears to be an effective advocate for the organization, and who is trying to bring the department to a higher level of service and effectiveness. He works a straight day work schedule, Monday through Friday.

The Chief is assisted by an Assistant Fire Chief who also works a daytime schedule and serves as the second in command of the department. The Assistant Chief serves as both the Department's Operations Chief and Training Officer and assumes the Chief's duties in his absence. Both the Chief and the Assistant Chief are considered management and are not a part of the collective bargaining unit. As a management team, they share responsibilities for confidential personnel matters, supervision, handling grievances or potential grievances, administering the collective bargaining agreement, overseeing budgetary expenditures, assisting with the development of policies and procedures, and the myriad of administrative and management tasks that are associated with running a significant sized, modern, full-service emergency services provider. They also appear to form a capable, well respected, and effective command team. Overall, the department appears to work diligently to meet the needs of the community. The City of Kalispell is to be commended for supporting this strong management team, which is guiding the department forward.

The modern fire chief (and in the case of the KFD, the Assistant Chief also) is not only a leader, providing vision for the department's direction, they also oversee all administrative, management, and emergency incident operations and roles with the department. They are also expected to work effectively with other city leadership and department heads, members of the public, and others to create a safer community. The KFD's chief officers perform a wide variety of leadership, technical, administrative, management, and supervisory work in planning, organizing, directing, and implementing fire prevention, fire suppression, and emergency medical services operations to prevent or minimize the loss of life and property by fire and emergency medical conditions. Highly successful contemporary chief officers *manage* things and *lead* people.

FIGURE 2-9: Contemporary Chief Officer Roles



The chief officer's job is dynamic. The chiefs are responsible for carrying out the day-to-day tasks of running a firefighting organization. Their main responsibilities largely depend upon the size of the fire department. Such tasks include supervising other officers and firefighters at an emergency scene and recruiting, training, and equipping them for their respective duties. In smaller departments such as Kalispell, the chiefs are often more hands-on and must take on multiple tasks and responsibilities themselves or do without certain programs. Regardless of size of the department, the chief officer typically has two core duties:

- Lead and manage day-to-day operations and ensure their department is fully operationally prepared for its core mission(s).
- Ensure the most possible successful outcome to emergency incidents they are called upon to mitigate.

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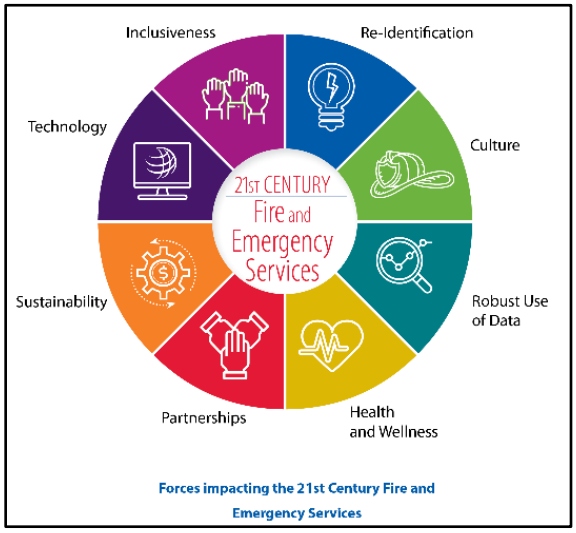
FIGURE 2-10: Forces Impacting the 21ST Century Fire and Emergency Services



Depending upon local needs and organization, the chief may also be involved in fire prevention, fire inspection, disaster preparedness, emergency medical services, and related disciplines, as well as administrative duties such as budgets and personnel issues, research into safety and regulations, and liaison with other agencies. While many of the fire chief's duties and responsibilities are similar to those of their predecessors, the issues today are much different, more complex, and ever-evolving. These new challenges often take the chiefs into unfamiliar territory as they try to navigate the changing dynamics of the world and their department.

The KFD has a single Administrative Assistant who provides a wide range of support to the Fire Chief, Assistant Fire Chief, and the department as whole. Included in her portfolio is handling EMS third-party billing, which is itself a time-consuming endeavor.

Officers and various members of the department have assumed responsibility for ancillary duties to assist with the management, oversight, and/or coordination of activities or program areas. These are in addition to their normal emergency response duties. Many of these duties, particularly those that involve training or program coordination, require additional training and/or certifications. These ancillary duties include:

- Radios/repair/communications.
- EMS Coordinator (refresher, QA, 222's, EMS committee meeting).
- Ice rescue.
- Hazmat team leader.
- Confined space team leader.
- SCBA maintenance and air compressor.
- SCBA annual FIT testing.
- EMS cot repair and maintenance.
- Quartermaster.
- Life Pak AED problems and maintenance.
- CISM.
- Gas monitor calibration.
- Car seat technicians.
- Mass shooter training and equipment issues.
- Station 62 housekeeper.

- Station 61 housekeeper.
- Peer support.
- EVOC trainer.
- FSTS proctor for apparatus training.
- Field Training Officers (3).
- Small engine maintenance and repair.
- Prevention.
- Hand tools/wildland.
- Quarterly training.

Some of the personnel who fill these positions receive stipends to perform them. The stipends range from 2 percent to 5 percent of Firefighter I base pay.

Overall, the CPSM project team was very impressed with the management of the KFD. The city and the department both appear to have more than adequate administrative and financial procedures and processes in place regarding the management and day-to-day operations of their respective functions. Information that was requested by the project team was received from all entities in a timely manner, and generally provided the necessary data and statistics.

During interviews with various stakeholders within the KFD there was a general sense that the department's current organizational structure, which has been in place for a number of years, is no longer robust enough to keep up with the challenges the department is facing with the current and forecasted levels of development that the city is experiencing. Most communities, even those where growth is flat, are experiencing increased requests for services. These requests are amplified in communities with significant growth, or that host (or are in close proximity to) major tourist destinations. As the number of 911 calls increases, personnel who have been performing important administrative or support duties that are ancillary to their primary emergency response duties find they have less and less time to accomplish them. Over time these duties begin to suffer from neglect, which can negatively impact overall department operations.

Throughout this report, CPSM will make a number of strategic recommendations regarding the department's organizational structure and staffing. It is important to stress that these recommendations primarily focus on the level of resources and staffing provided, which CPSM believes will be necessary for the department to continue to keep up the high service level expectations of a growing community. To that end, as the City of Kalispell continues to grow and develop, KFD will also need to grow and evolve to keep pace with the increased numbers and diversity of the calls for service. This includes the long-term need to expand the department's administrative and operational support staffing and functions. The City of Kalispell should evaluate the organizational structure of the KFD in an ongoing manner to ensure that it meets the needs of the community it services, the expectations of the community, and the department itself.

Two areas where CPSM believes that the department will need to enhance its administrative staffing to meet the needs of the department with full-time positions dedicated to these programs are EMS Coordinator and Training/Safety Officer.

The EMS component of the emergency services delivery system is more heavily regulated than the fire side. In addition to National Fire Protection Association (NFPA) 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (2020 edition), NFPA 450 *Guidelines for Emergency Medical Services (EMS) and Systems*, (2009 edition), provides a template for local stakeholders to evaluate an EMS system and to make improvements based on that evaluation. The Commission on Accreditation of Ambulance Services (CAAS)[10] also establishes benchmarks for EMS operations, however, its focus is primarily on ambulance response times, which is not a component of this analysis. Montana regulates EMS agencies, and certain federal Medicare regulations are also applicable.

The current part-time position of EMS Coordinator is held by one of the captains who receives a 5 percent stipend to perform these duties. This position should evolve into a full-time position. The EMS Officer or coordinator will handle the day-to-day oversight of the department's EMS functions including QA, personnel training and certification, infection control, managing inventory and drugs, attending meetings, and serving on various state EMS committees. CPSM believes making this operational change will result in more effective and efficient emergency medical service delivery by the department.

It is our view that this position would be best designated as a Captain's position within the KFD, reporting directly to the Assistant Fire Chief. Doing this would help to emphasis the importance of the department's EMS mission, allow the EMS Coordinator to have an equal peer relationship with the other Captains, and allow for the implementation of more department-wide continuity of EMS operations. The EMS Officer will work a daytime schedule, which would also provide an additional member available for response during the day.

Mobile Integrated Health Care and Community Paramedic (MIH/CP) is a concept that will be developed later in the section of this report on EMS Operations. Mobile Integrated Healthcare is defined by the National Association of EMTs (NAEMT) as "the provision of healthcare using patient-centered, mobile resources in the out-of-hospital environment." Although CPSM was informed this concept has not gained a lot of traction in Montana, this could be another potential duty for the EMS Officer to undertake.

Because so much depends upon the ability of the emergency responder to effectively deal with an emergency, education and training must have a prominent position within an emergency responder's schedule of activities when on duty and must be an important position in the department's priorities. Education and training programs also help to create the character of a fire service organization. Agencies that place a real emphasis on their training tend to be more proficient in performing day-to-day duties. The prioritization of training also fosters an image of professionalism and instills pride in the organization.

The training function in the KFD is currently headed by the Assistant Fire Chief who has been in her position for about two years. At the time of this assessment the Assistant Chief was the only person formally assigned to training and she had to split her duties related to training with her myriad other duties. She was attempting to get the training program back on track after the COVID-19 pandemic. The Assistant Chief handles most of the scheduling of training and the maintaining of certifications; however, she does not directly deliver much of the training herself. Instead, she utilizes the abilities of other department members and brings in outside instructors. The overall training function is discussed in much greater detail later in this section of the report.

10. The Commission on Accreditation of Ambulance Services (CAAS) is an independent commission that has established a comprehensive series of standards for the ambulance service industry.

It was reported that at one time the KFD had a dedicated training officer before those duties were combined with the Assistant Chief's other duties and responsibilities. However, it did appear that the training program is headed in the right direction. There seems to be a dedicated effort—and desire by the members of the department, led by the Assistant Chief—to focus training on a wide array of training activities. However, as the department increases in size and its missions grow more complex, attempting to manage the wide-ranging training function along with her diverse and extensive portfolio of other duties will eventually overwhelm the Assistant Chief. This is not meant to be negative in any way, the reality is that at some point fatigue will likely set in.

As a result, CPSM believes that within the next several years the two roles should be separated into two separate positions with the creation of a full-time position of Training and Safety Officer at the rank of Captain. The Training and Safety Officer would handle all the KFD's training and safety functions. The Training and Safety Officer would work a daytime schedule, thus providing an additional member available for response during the day. They would report directly to the Assistant Fire Chief.

The training function of the department has no dedicated administrative support staff to handle training records, recertifications, assist with class scheduling, etc.

As the KFD's administrative and support functions develop and expand, there will likely be a need to expand the administrative support to these personnel with the addition of an additional Administrative Assistant. If, and when, this occurs will be dictated by the need generated if the recommended positions contained in this report are created/filled.

A Fire and EMS Department Strategic Plan provides encompasses both a baseline gap analysis of the organization and a "road map" to develop and achieve a planned response to specific factors which will or potentially will affect the organization's mission, or in the case of a public safety agency, service deliverables. A Fire and EMS Strategic or Master Plan identifies the purpose of an organization, what the organization will do, and how it will perform though goals and measurable objectives. It specifies baseline capabilities, real or potential constraints that may exist or be placed on the organization and delivers a set of goals and requirements to achieve identified objectives and desired outcomes.

Defining clear goals and objectives for any organization through a formal strategic planning document establishes a resource that any member of the organization, or those external to the organization, can view and determine in what direction the organization is heading, and as well how the organization is planning to get there.

In a strategic plan, it is essential that clear and achievable goals and objectives for each program area and service deliverable are developed. Each program area must then (1) define its goals; (2) translate the goals into measurable indicators of goal achievement; (3) collect data on the indicators from those who have utilized the program; and (4) compare the data from program participants and controls in terms of goal criteria.[11] Objectives should be SMART (specific,

11. Starling, *Managing the Public Sector*, 287.

measurable, ambitious/attainable, realistic, and time-bound). Additionally, these goals should link back to the city's fiscal planning goals and the council's strategic goals and initiatives.

Administrative and Programmatic Staffing Recommendations:

- As a planning objective, the City of Kalispell and KFD should consider the creation of a full-time position of EMS Coordinator at the rank of Captain. This position should continue to have the requirement that the person holding it must be a currently certified paramedic and hold that certification for the duration of their time in the position. (Recommendation No. 1.)
- As a planning objective, the current position of Assistant Fire Chief should be formally redefined as Assistant Chief for Operations: Second-in-command of the department ("executive officer") responsible for the direct supervision of the Captains, daily operational activities, personnel management, facilities, apparatus, and equipment. The Fire Chief should continue to delegate significant management responsibility and authority to the Assistant Fire Chief. (Recommendation No. 2.)
- As a planning objective, the City of Kalispell should create a full-time position of Training and Safety Officer for the KFD, at the rank of Captain, to oversee, coordinate, and conduct all fire and EMS training for department personnel. The position of Training Officer should be separated from the Assistant Fire Chief position. The Training and Safety Officer should report directly to the Assistant Fire Chief. (Recommendation No. 3.)
- Long-term, if the above positions are created, the City of Kalispell will need to consider the addition of an additional administrative assistant to the KFD administrative support staff. (Recommendation No. 4.)
- CPSM recommends the KFD develop and implement a comprehensive strategic plan that incorporates measurable and obtainable administrative, operational, fiscal, and programmatic goals and objectives. CPSM further recommends this strategic planning document cover the near-, mid-, and long-term, and be updated as appropriate at the end of the mid-term period. (Recommendation No. 5.)

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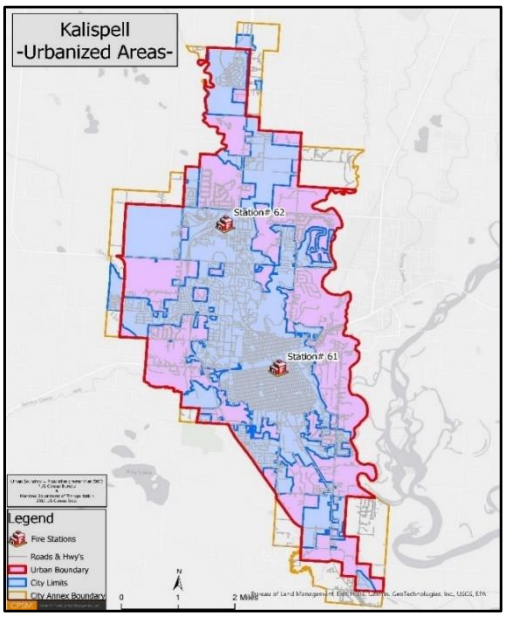
Operational Staffing Review

The KFD currently has an authorized staff of 35 personnel. Of these, 34 are sworn emergency response personnel, with 32 assigned to primarily fire and EMS operations positions while the remaining two, the Fire Chief and Assistant Fire Chief, perform a variety of administrative and support functions. However, both Chiefs are also actively involved in fire and EMS operations as needed. This is common in smaller departments where personnel often wear multiple hats or perform multiple functions. The single non-uniformed person is an office Administrative Assistant position who performs a variety of roles for the department.

It is important to note that the staffing data we will cite are not recommendations, they are statistics that were compiled from data provided by fire departments. The numbers also do not differentiate between fire departments that provide primary EMS to their communities as the KFD does, and those that do not. Departments that do provide EMS generally have much higher call volume and thus require higher staffing levels.

FIGURE 2-11: Kalispell Municipal Boundaries, Urbanized Areas, and KFD Stations



Fire and EMS operations in Kalispell are currently deployed from two stations. In addition to the ambulances, E631 is ALS-level and staffed with a minimum of two paramedics. When Ladder 642 is in service, it is ALS as well with a minimum of two paramedics.

The figure to the left illustrates Kalispell's municipal boundaries, urbanized areas, and fire station locations.

Each department shift (except D Shift) has a total of 10 personnel assigned, including two Captains, two Engineers, and six firefighters with an allowance for up to three off. D Shift, which is between 7:00 a.m. and 7:00 p.m. daily, is staffed with two firefighters. One of these personnel is on duty each day. Of the department's operations personnel 24 are certified paramedics (EMT-P); the remainder are Advanced Emergency Medical Technicians (AEMTs). CPSM was informed that in 2006 when Station 62 opened, and the city's population and call volume were much lower, each shift had 11 personnel.

Prior to the current collective bargaining agreement (CBA) there was no minimum staffing requirement, and a station could be closed. This resulted in times during which just a single station was open with three personnel on duty. In this case, these personnel staffed an engine at Station 61; there was no ambulance on duty. Instead, mutual aid was utilized for transport ambulances.

Through negotiations, the current CBA stipulates a minimum of staffing of five personnel for one engine company (Station 61) and one ambulance (Station 62). The KFD attempts to maintain staffing of seven personnel from 7:00 a.m. to 7:00 p.m. for staffing two ambulances; and six from 7:00 p.m. to 7:00 a.m. By contract, up to three personnel can be off on scheduled leave including vacation, personal, holiday, compensatory time, and Kelly Days.

The accompanying table illustrates the deployment of KFD resources based upon the on-duty staffing level.

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TABLE 2-2: KFD Staffing Matrix

On-duty Staffing Level	Station 61 Staffing	Unit(S) Staffed	Station 62 Staffing	Unit(S) Staffed
5 Personnel	3	Engine w/ 3	2	Ambulance w/ 2
6 Personnel	3	Engine w/ 3	3	Ladder w/ 3 or Ambulance w/ 3
7 Personnel	3	Engine w/ 3	4	Ladder w/ 4 and/or 2 Ambulances w/ 2
8 Personnel	5	Engine w/ 3 Ambulance w/ 2	3	Ladder w/ 3 or Ambulance w/ 3
9 Personnel	5	Engine w/ 3 Ambulance w/ 2	4	Ladder w/ 4 and/or 2 Ambulances w/ 2
10 Personnel	5	Engine w/ 3 Ambulance w/ 2	5	Ladder w/ 3 Ambulance w/ 2
11 Personnel	6	Engine w/ 4 Ambulance w/ 2	5	Ladder w/ 3 Ambulance w/ 2

The department delivers field operations and emergency response services through a clearly defined division of labor that includes first-line operational supervisors (Captains), technical specific staff (Engineers), and firefighters. Currently, the entire city is considered a single operational unit. The senior Captain serves as the shift commander.

In Kalispell, except for D Shift personnel, field operations personnel work a three-platoon system that is comprised of 24-hours on and 48-hours off. In a straight 24-48 schedule personnel work an average of 56 hours per week. This can trigger the provisions of the federal Fair Labor Standards Act (FLSA), which stipulates that firefighters whose work schedule averages more than 53 hours per week must be compensated at 1.5 times their normal rate of pay for any hours worked in excess of 53. As an example, if firefighters work a 28-day cycle, as they do in Kalispell, those personnel who work their full schedule during the cycle can work a maximum of 212 hours before they must be compensated at their overtime rate. Because these personnel would work 224 hours during this cycle, this equates to needing to be compensated for 12 hours of overtime during that rotation. Since they are already being compensated at straight time for those 12 hours, in reality, the city would need to compensate them at 12 hours of half (0.5) time for those hours or a total of six hours of additional pay. If the personnel take any time off on leave during the cycle their hours are reduced, and if they take 12 or more hours off during the cycle, no FLSA compensation is required.

There are various ways to address the provisions of the FLSA including the use of Kelly Days, which are days when the member's shift is scheduled on-duty, but the member is scheduled off, in order to reduce the average number of hours in the workweek during each cycle. This is a common practice utilized by many municipalities. It should be noted that Kelly days are in addition to vacation, personal, sick, and other types of leave each member receives as part of the benefit package.

In a 28-day cycle, if each member were awarded 12 hours—or one-half a shift—off their average workweek would be reduced to 53 hours and no FLSA compensation would be

required. However, as agreed to in the current collective bargaining agreement between the City of Kalispell and Local 547 of the International Association of Firefighters, each member of the bargaining unit, which includes all uniformed personnel except for the Fire Chief and Assistant Fire Chief, receive a total of 20 Kelly days each year. This reduces each member's average workweek to 46.77 hours.

The number of Kelly Days that each member earns increased from 13 in a previous contract, which was in effect from July 1, 2016, until June 30, 2019, to the current number in the CBA. The awarding of 13 Kelly Days is fairly common in the fire service and equates to one 24-hour Kelly Day each 28-day cycle (13 per year) and reduces the average weekly hours to around 50 hours. Some facts to consider regarding the number of Kelly Days awarded annually:

- The number of Kelly Days now is an increase of 7 days from the 13 given in the contracts prior to 2016. Thirteen days is a common number awarded.
- The current 20 Kelly Days as opposed to the previous 13 equates to an additional 203 shifts per year that personnel can take off, which directly impacts staffing. This will become a bigger challenge as the city continues to grow and the department's staffing needs increase.
- The 30 personnel on shift accrue a total of 600 24-hour Kelly Day shifts that must be covered, which also directly impacts staffing.
- The current number of Kelly Days for each member equates to 16.7 percent of each shift's total workdays in the year.

As CPSM mentioned in our 2018 study of the KFD, the number of Kelly Days awarded, and as a result, the total amount of time off for personnel in the most recent CBA will impact the KFD's ability to staff its stations and units at levels that will be recommended in Section 5 of this report. The larger the department grows, the more the leave situation will impact on the department's ability to staff without the excessive use of overtime.

The next figure illustrates the number of days the KFD was at each average staffing level of between five personnel (as specified in the CBA) and ten personnel between January 1, 2022, and December 31, 2022. Since staffing levels often fluctuate at various times throughout each 24-hour shift, the average on-duty staffing for the entire day was utilized.

The department averaged seven personnel on duty 40.6 percent of the time during this time period, followed by 7.5 personnel 22.7 percent of the time. So overall, 63.3 percent of the time KFD had seven or 7.5 personnel working. Conversely, there were 10 days the department worked with just five personnel, and another five where the average was 5.5. There were only two days when 10 or more personnel were on duty and none where staffing was at 11, as it could be with D shift also on duty.

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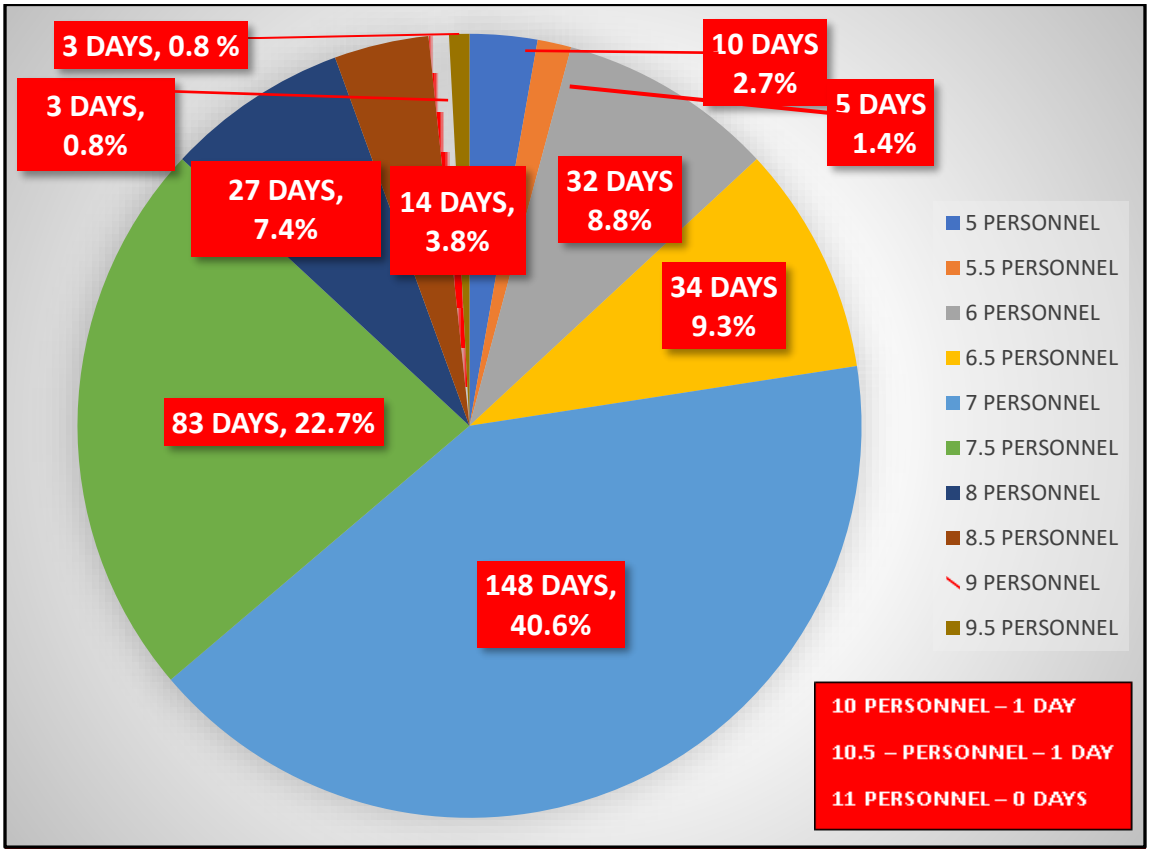
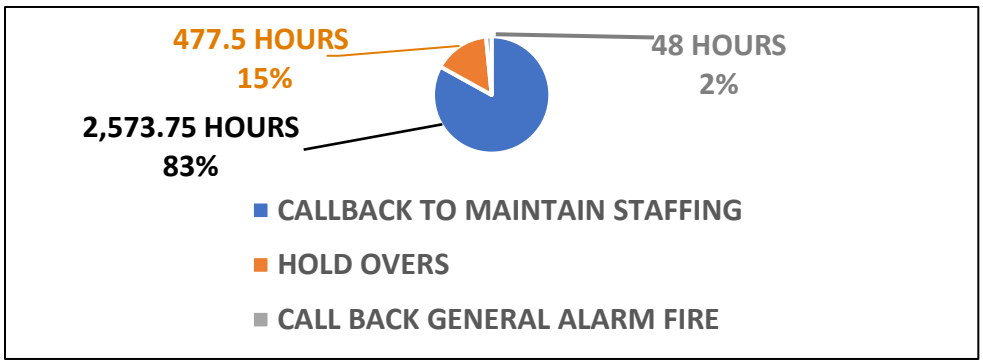
FIGURE 2-12: Average Number of Personnel on Duty Each Day, January 1, 2022 to December 31, 2022



Another factor that comes into play regarding recommended staffing levels, the amount of leave earned, etc., is the amount of overtime needed to maintain the specified minimum staffing levels of personnel on duty. For the period of January 1, 2022, through December 31, 2022, the KFD utilized 3,099.25 hours of overtime, of which 2,573.75 hours (83 percent) involved call-back to maintain staffing levels. This equates to an average of 49.5 hours per week, or slightly more than two full 24-hour shifts. The following figure breaks down the overtime by type.

FIGURE 2-13: KFD Overtime by Type, January 1, 2022 to December 31, 2022



Note: Holdovers cover late (near shift change) calls, report completion, etc.

Looking ahead, and as will be discussed in greater detail in Section 5, the KFD will need to gradually increase both overall department and on-duty staffing levels to keep up with the city's growth and rising call volume.

Municipalities and fire departments utilize a wide range of practices to maintain their designated minimum staffing levels. These include both overall on-duty shift staffing and specifying minimum apparatus staffing. Many municipalities staff more personnel on each shift than are needed in order to account for personnel on leave. Kalispell does this with the stipulation in the contract that three personnel on each 10-person shift can be off on scheduled leave, bringing staffing down to seven. The CBA stipulates a minimum staffing of five, which suggests that another two personnel could be off on other types of leave. However, at that point, 50 percent of the on-duty shift would be on leave.

At the opposite end of the spectrum is municipalities that maintain constant staffing, which is when the designated shift staffing is also the minimum staffing level. Under this system any time anyone is off on any type of leave, another member on overtime must be brought in to fill that vacancy.

The best system is probably a combination of both as each municipality generally knows where the tipping point is when it is less expensive to hire additional personnel rather than continuing to pay overtime to fill vacancies. Conversely, if a department's use of overtime is low, it is often less expensive to pay the overtime rather than hire additional personnel with the associated benefit costs.

During our field visit to Kalispell, CPSM was informed that time off is very important to the members of the KFD so they can take advantage of the many activities the area has to offer. That is understandable; however, even under a straight 24-48 shift schedule personnel work about 10 days a month, leaving 20 days off. There are many variations of the three platoon, 24-hour shift that provide a larger number of consecutive days off. A couple of these include:

- 24 on – 24 off – 24 on – 24 off – 24 on – 96 off.
- 24 on – 24 off – 24 on – 48 off – 24 on – 24 off - 24 on – 120 off.

A somewhat new shift concept involves a four-platoon work schedule (which requires more personnel) which in its simplest form involves a 24 on / 72 off schedule. This equates to a 42-hour workweek. The twist with the new concept is that personnel are required to work one "debit" day each month. In other words, they must work one of their normally scheduled days off each month with no extra pay. This reduces the number of personnel required to be assigned permanently to each shift with the additional staffing provided by personnel working debit days. This schedule averages out to about a 48.6-hour work week.

General Staffing Recommendation:

- The City of Kalispell should review the current staffing model and collective bargaining agreement while simultaneously exploring other staffing and shift schedule models/options to seek alternatives to the current allotment of 20 Kelly Days. The goal of this review is to be able to work toward increasing daily on-duty staffing levels. (Recommendation No. 6.)

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ORGANIZATIONAL GUIDELINES AND POLICIES

Effective communications systems are key to the successful operation of any emergency services organization. Standard operating guidelines (SOGs) and standard operating procedures (SOPs) are mission critical components of fire department daily operations and contribute to consistent, effective, and safe operations. Without them there is a tendency to "freelance" and personnel may not all be on the "same page" regarding a wide range of emergency and administrative operations.

A well written and up-to-date written communications system including a manual of operations —the playbook if you will—can describe what to do and what not to do. Standard operating guidelines and procedures in their simplest form are very much a "how-to" guideline for firefighters to follow to achieve a desired goal. Standard operating guidelines and procedures are formal documents that specify a firefighter's course of action thereby ensuring efficiency, predictability, consistency, and safety.

The fire service faces a dizzying array of challenges and must adapt to many things, including expanding missions, increasing legal and regulatory requirements, increasing complexity in emergency response techniques and equipment, and much more. The increasing acceptance of electric vehicles (EVs) is an example of the fire service needing to learn an all-new technology, retool, and develop comprehensive policies, procedures, and guidelines on an array of issues from new ways to provide patient extrication to extinguishing complex battery fires.

Generally speaking, policies are set and/or issued by the governmental authority having jurisdiction, in this case the City of Kalispell. Fire department rules, regulations, and policies should work in tandem with and be consistent with the overarching ordinances, rules, regulations, and policies that have been adopted by the City of Kalispell. For example, policies concerning such topics as non-discrimination, sexual harassment, purchasing, freedom of information, internet, and computer usage (including social media), and smoking (on city premises or in municipal vehicles) are typically applied across-the-board to all departments and employees. While the city should provide training and familiarization concerning these policies on a regular basis (an annual review is usually adequate, with appropriate documentation), employees are obligated to be familiar with and comply with each policy. Individual departments have either Standard Operating Procedures (SOPs) or Standard Operating Guidelines (SOGs), which, among other things, can be used to implement policy at the department level and establish operational procedures that guide day-to-day activities.

The use of rules and regulations, operational procedures, and various other forms of written communications are vital parts of a fire department's overall operations. Rules and regulations establish expected levels of conduct and general obligations of department members, identify prohibited activities, and provide for the good order and discipline necessary for the credible operation of a quasi-military emergency services organization. KFD does not have stand-alone rules and regulations.

Operational procedures ensure the consistent, effective, efficient, and safe operation of various aspects of the department's operations, both emergency and routine. One of many common denominators among the best fire departments across the United States is that they have a comprehensive and up-to-date operational procedural manual, and their personnel are well versed and well-trained in those procedures. The inclusion of written documents, such as training and safety bulletins, serves to make the system more effective.

Standard Operating Procedures/Guidelines (SOPs/SOGs) document how operational tasks should be accomplished. In essence, they provide personal guidance relative to how to accomplish operational activities safely and consistently. To be effective, SOPs should be developed by each department through a participative process. Once developed, personnel need to be trained on the SOPs and periodically refreshed as to their content.

Standard Operating Procedures/Guidelines are developed for specific instances and based on the operations, training, resources, services delivered, and the administrative needs of a fire department. These written policies and internal regulations are typically based on recognized standards, regulations, and local government rules. These are the procedures that personnel rely on to perform their duties effectively and safely, and which the department utilizes to establish administrative processes and oversight.

Over the past 20 years or more, many agencies have shifted from Standard Operating Procedures (SOGs) to Standard Operating Guidelines (SOGs) or a combination of both. Some experts feel that the term "procedures" implies relatively inflexible task steps or instructions, while "guidelines" implies more discretion in performing the job. Since emergency incidents are unpredictable and flexibility is essential, these experts advise fire departments to develop SOGs, thereby reducing the need to identify exceptions, and perhaps even limiting liability due to actions by personnel. Other experts believe the opposite is true: the term "guidelines" implies too much flexibility and discretion, thus reducing control and increasing the likelihood of mistakes.[12] Whether agencies use SOGs, SOPs, or a blend of both, well-written SOGs/SOPs are essential in fire service operations. The following table illustrates the differences between SOGs and SOPs.

TABLE 2-3: The Difference Between SOGs and SOPs

Standard Operating Guidelines (SOGs)	Standard Operating Procedures (SOPs)
SOGs tend to have more leeway or room for interpretations.	SOPs tend to be more rigid, more of a rule, and not flexible.
SOGs are often an action proceeded by the word "may" or "should," which can imply greater flexibility.	SOPs are often an action preceded by the word "shall" or "will," which is more definitive.

According to the National Fire Protection Association (NFPA), a standard operating procedure (SOP) is "**an organizational directive that establishes a standard course of action**." In other words, SOPs are written guidelines that explain what is expected and required of fire service personnel in performing their jobs. Standard operating procedures clearly spell out what is expected and required of personnel during emergency response and non-emergency activities. They provide a mechanism to communicate legal and administrative requirements, organizational policies, and strategic plans to the members. Both fire department SOPs/SOGs and policies are official documents that provide instruction, methods, procedures, and requirements for how to operationalize things like bylaws, ordinances, plans, strategies, mutual aid agreements, and more. Both SOPs and SOGs provide a common set of standards by which every team member must follow. From the perspective of this discussion, the terms procedure and guideline can be used interchangeably, but should be applied consistently throughout the system.

Fire departments face an array of constant challenges and must adapt to many things including expanding missions, increasing legal and regulatory requirements, increasing complexity in emergency response techniques and equipment, and much more. For those reasons,

12. Developing Effective Standard Operating Procedures for Fire and EMS (FEMA publication)

procedures specific to fire department operations are more commonly found in a fire department SOP/SOG manual. The increasing acceptance of electric vehicles (EVs) is an example of the fire service needing to learn an all-new technology, retool, and develop comprehensive procedures and guidelines on an array of issues from new ways to provide patient extrication to extinguishing complex battery fires. The coronavirus pandemic (COVID-19) is another example where response procedures and use of personal protective clothing had to change. These examples are what CPSM finds important to cover in specific fire department SOPs/SOGs.

CPSM was initially provided with two sets of documents that were the same ones that were provided in connection with our 2018 study of the KFD. One of these documents was listed as the Fire Department Policy Manual, which consisted of a total of 10 documents. The second set was listed as the SOG Manual, which contained 40 documents. The terms policy and procedure appear to be considered to be the same and are used interchangeably in the documents. The study team was provided with, and reviewed, these documents that we believe are the extent of that system.

To begin with, referring to one of these sets of documents as the Policy Manual can confuse it with the city policy manual. That term should be reserved for the city's manual, which should be applicable to all city employees. If there is a need to clarify how provisions of the city manual and/or collective bargaining agreement are implemented within the fire department, this can be accomplished through the development of appropriate SOPs/SOGs or by issuing a General or Special Order (discussed below).

Working on the confirmation that these documents comprised the extent of the department's recent written communications system, we find the system as it has existed is seriously deficient for providing the wide-ranging guidance and direction necessary for operations involving a twenty-first century fire and EMS provider. Many of the limited KFD policies and procedures that CPSM reviewed may be out of date, or their age could not be determined because they did not indicate either an issue date or most recent review and/or revision date. They also did not utilize a standard format or contain the approval signature of the Fire Chief at the time of issue.

Although very important procedures such as for Maydays and rapid intervention team (RIT) operations were created recently, many other important ones were missing. There were no operational procedures/guidelines in place to deal with mission critical operations such as *Structure Fires*, *Basic Engine Company and/or Truck Company Operations*, *Vehicle Extrication Operations*, or *Thermal Imaging Camera* and *Automatic External Defibrillator Use* to name just a few. These are the types of operational procedures/guidelines that are most important and provide standardization and consistency of operations. On the administrative side, CPSM was not provided with policies or procedures that might cover topics such as meal and rest periods, shift coverage procedures when vacancies occur, incident reports, etc.

The lack of an effective system of standard operating procedures/guidelines (SOPs/SOGs) can have an adverse impact on many different facets of the day-to-day operations of the department that can result in a lack of consistency during operations, freelancing, unsafe actions, loss of accountability and discipline, poor performance of individuals and operational crews, and increased risk to firefighters and citizens.

During our field visit and our review of pertinent documentation provided by the department, and, in interviews with the department's internal stakeholders, CPSM was informed by the Chief that the Assistant Fire Chief has been working on a priority project (among her many other duties) to update—probably more realistically create a new—comprehensive standard operating procedures manual. Like many agencies starting this process basically from scratch,

the work ahead will take an extended time (most likely several years) to complete, even if the Chief dedicates a certain number of hours each week to the project.

The CPSM team was provided with the following lists of SOPs that have already been developed, and those that are in the development pipeline. The first list includes "Policies." The second list is for SOGs.

Policies

- **100 Series-Administration**
- 101 Policy Review
- 102 Chain of Command
- 103 Uniforms
- 104 Shift Vacancy/Transfer
- 105 Light Duty Policy
- 106 Documentation and Reports
- 107 Annual Fitness Evaluations (needs revision)
- 108 Annual Physicals
- 109 Cell Phones
- 110 Safety Concerns
- 110 Attachment A: Safety Concern Form
- 111 Grooming Standards
- 112 Citizen complaint
- 113 Shift Trade Policy
- 114 Promotional Process
- 115 Comp Time
- 116 Annual Leave Selection
- 117 Paid Time Off
- 118 Illness/Injury/Exposure (Attachment)
- 118 Attachment A: Exposure Determination Guide
- 119 D shift
- 120 Scheduling
- 121 Chaplaincy Program (in legal)
- 122 Specialty Teams
- 123 Compensation for Training
- 124 Ride-along Policy
- 124 Attachment A: Ride-along Waiver
- **200 Series-Fire Operation Policies**
- 201 Company Officer Step Program
- 201 Attachment A-Approved Leadership Courses
- 201 Attachment B: Check-off list
- 202 Gross Decontamination (formerly known as Carcinogen Exposure Reduction)
- 203 Requesting a Fire Investigator (formerly SOG 221)
- 204 NFIRS Codes
- **300 Series-Emergency Medical Policies**
- 301 Medication Control
- 302 Medical Care Scope of Practice
- 303 Biological Decontamination
- 304 Refusal

SOGs - Completed

- **SOG INDEX-Completed**
- SOG 114 Acting Out of Class
- SOG 115 Scheduling
- SOG 205 Response Guidelines
- SOG 501 Peer Support Program
- SOG 502 Critical Incident Stress Management

SOGs – Revision Needed

- 201 Shift Change
- 202 Daily Equipment Checks
- 203 Daily Schedule
- 204 Staffing
- 206 Unit Designation
- 207 Radio Communications
- 208 PPE 209 Apparatus Operation
- 210 Command
- 211 Fire Alarm Response
- 212 Carbon Monoxide Response
- 213 Responses with Suspected Violence
- 214 Gas Leak Response
- 215 Mayday Procedures
- 216 Electrical Hazards
- 217 IRIC
- 218 MDT Use
- 219 SCBA Inspection
- 220 SCBA Use
- 223 Assigned Vehicles
- 224 Cancelling resources
- 225 Fire Attack
- 226 Call-Back
- 401 Hazardous Materials Response
- 402 Ice Rescue
- 403 Swiftwater Rescue
- 404 Tech Rescue

CPSM reviewed a sampling of the recently developed procedures and found them to be well-written, thorough, and consistent with current industry best practices regarding emergency services operations. The KFD is now using a standardized template similar to the ones used by many other fire departments. The template includes the title of the procedure, the issue or revision date, the number, the category, the number of pages, and approval by a chief officer. However, we noted that they still refer to "Policy" in one set of documents and "SOGs" in another. In order to not be confused with city policies, we would recommend this be changed to either "Procedure" or "Guideline" for all documents and they be combined into a single manual with appropriate sections.

The challenge for Kalispell, as with many fire departments, will be to secure organizational buy-in relative to these procedures. The Chief is attempting to do that with the current process. Once the Assistant Chief completes a draft of a new SOP, she distributes it throughout the department (and if necessary, forwards it to the city legal department for review). Personnel have two weeks to submit comments on the draft. Where appropriate, revisions are made based upon the comments received. The SOP is then finalized and issued. **The Fire Chief and Assistant Fire Chief are to be commended for this process, which CPSM considers to be a Best Practice.**

Fire rescue personnel provide a valuable technical resource in the development of SOPs/SOGs. For the most part, the development and drafting of these procedures should not be a top-down, management-driven process. The personnel who are going to be required to adhere to and follow the procedures should have input into their development. Input from personnel at all levels will continue to strengthen the quality and effectiveness of SOPs/SOGs.

Once an SOP/SOG has been developed, it should be presented to department personnel, and then periodically reviewed to ensure that these practices are implemented on the incident scene. Moving forward, the Chief plans to establish a committee comprised of a cross-section of department members of all ranks to regularly review the current SOPs/SOGs to ensure that they reflect the organization's current operations. They will then be revised again as necessary and appropriate. **If implemented, the Fire Chief and Assistant Fire Chief should be commended for this process, which CPSM will consider to be a Best Practice.** In addition, one SOP/SOG and one policy should be reviewed by a randomly selected member at each shift change briefing and training session. Once personnel get used to this expectation, the knowledge and respect for SOPs/SOGs will grow within the organization and become an accepted part of the Department's culture.

CPSM encourages fire departments to draw upon the policies, practices, and procedures of other organizations, both local and distant. The experiences and lessons learned from other fire and rescue agencies can be extremely helpful in the development of SOPs/SOGs. There are numerous excellent SOP/SOG manuals on-line that can assist with the development of necessary procedures. No emergency services provider should be expected to write a policy document from scratch or without a template. In addition, the KFD may want to consider, when applicable, a reference listing of applicable fire service industry standards and benchmarks and even city policy. By doing this, members gain a better understanding of the SOG and can research references for additional learning opportunities.

As part of its revamping of its written communications system, the KFD should institute a process for issuing General or Special Orders, which are directives and/or special instructions that cover various facets of department operations but can be quickly issued as needed. They may cover a particular period of time regarding a special situation or may provide a temporary procedure pending development and issue of a full operational procedure.

Also included in the system should be Training Bulletins that would be issued to serve as reference with regard to tested and approved methods of performing tasks; Safety Bulletins, which are issued to serve as references with regard to general and specific safety and health issues; and Informational Bulletins or memorandums that are published for the general knowledge of recipients such as temporary street closures, hydrants out of service, community events, etc. A numbering system should be implemented to keep track of these documents for indexing and future reference purposes.

Organizational Policies and Guidelines Recommendations:

- Rules and regulations establish expected levels of conduct and general obligations of department members, identify prohibited activities, and provide for the good order and discipline necessary for the credible operation of a quasi-military emergency services organization. The KFD should form a management-labor committee to develop a comprehensive rules and regulations document that identifies anticipated, acceptable/ permitted, and prohibited behaviors. This document should be distributed to and signed by each member of the department. It will also provide important guidance to new employees. (Recommendation No. 7.)

  Suggested sections for the rules and regulations include, but are not limited to:

  - A preamble.
  - Department vision statement and mission statement.
  - Purpose of the rules and regulations.
  - Organization.
  - Membership requirements.
  - General rules of conduct.
  - Officer qualifications and selection (may just reference current department procedure, CBA language, and/or civil service language).
  - Officer duties and responsibilities.
  - Chain of command.
  - Uniforms and grooming.
  - Discipline.
  - Other areas that may be agreed upon for inclusion.
- The KFD should continue to make the revamping of the department's policies, procedures, and guidelines a high priority. In addition to the documents already completed and/or in development, attention should be given to mission-critical procedures such as, but not limited to, basic engine company and truck company operations, dwelling fires, commercial structures, mid-rise buildings, industrial incidents, personnel accountability, hazardous materials incidents, vehicle extrication operations, thermal imaging camera and automatic external defibrillator use, and mass-casualty incidents. The addition of numerous other procedures covering additional operational, routine administrative, and training procedures should then follow. (Recommendation No. 8.)
- In order for its materials to not be confused with city policies, the KFD should consider not utilizing the term "policy" in its documents. This should be changed to either "Procedure" or

"Guideline" for all documents. AS well, all documents should be combined into a single manual with appropriate sections. (Recommendation No. 9.)

- The general format and organization of the SOP/SOG manual is a very important consideration and the department must ensure that the manual/system is easy to utilize, with cross-referencing of the necessary procedures. If personnel are going to be required to learn and adhere to the department's procedures, then the format, organization, and filing of them must be user-friendly, otherwise they will sit on a shelf, or on a computer drive, unused. (Recommendation No. 10.)
  - The first operational procedure should identify and explain the components of the Written Communications System, including the use and organization of the SOG Manual and other components of the system such as standardized forms. This procedure should also contain a provision that the entire SOG Manual will be reviewed on at least an annual basis and that updates and revisions can/will be made at any time, as necessary.
- The KFD is strongly encouraged to carry through with the plan to establish a committee to review and assist with revisions to the SOG manual in the future. The committee should be comprised of members of each rank and include specific representation by a senior officer of the collective bargaining unit. (Recommendation No. 11.)
- The KFD should institute a process for issuing General Orders, Training Bulletins, Safety Bulletins, and Informational Bulletins. A numbering system should be implemented to keep track of these documents for indexing and future reference purposes. (Recommendation No. 12.)

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COMMUNITY RISK REDUCTION

Community risk reduction activities are important undertakings of a modern-day fire department. A comprehensive fire protection system in every jurisdiction should include, at a minimum, the key functions of fire prevention, code enforcement, inspections, and public education. Preventing fires before they occur, and limiting the impact of those that do, should be priority objectives of every fire department. Fire investigation is a mission-important function of fire departments, as this function serves to determine how a fire started and why the fire behaved the way it did, providing information that plays a significant role in fire prevention efforts. Educating the public about fire safety and teaching them appropriate behaviors on how to react should they be confronted with a fire is also an important life-safety responsibility of the fire department.

Fire suppression and response, although necessary to protect property, have minor impact on preventing fires. Rather, it is public fire education, fire prevention, and built-in fire protection systems that are essential elements in protecting citizens from death and injury due to fire, smoke inhalation, and carbon monoxide poisoning. The fire prevention mission is of utmost importance, as it is the only area of service delivery that dedicates 100 percent of its effort to the reduction of the incidence of fire.

Fire prevention is a key responsibility of every member of the fire department, and fire prevention activities should include all personnel. On-duty personnel can be assigned with the responsibility for "in-service" inspections to identify and mitigate fire hazards in buildings, to familiarize firefighters with the layout of buildings, identify risks that may be encountered during firefighting operations, and to develop pre-fire plans, such as the KFD does currently. On-duty personnel in many departments are also assigned responsibility for permit inspections and public fire safety education activities.

Fire prevention should be approached in a truly systematic manner, and many community stakeholders have a personal stake and/or responsibility in these endeavors. A significant percentage of all the requirements found in building/construction and associated codes are related in some way to fire protection and safety. Various activities such as plan reviews, permits, and inspections are often spread among different departments in the municipal government and are often not coordinated as effectively as they should be. Every effort should be made to ensure these activities are managed effectively between departments.

The community risk reduction (CRR) function in the KFD is commanded by the Fire Chief, who also holds the title of Fire Marshal. Under Kalispell's current organizational structure his roles and responsibilities (as well as the fire department's) are more limited than in many comparably sized jurisdictions. Most of the code-related functions in Kalispell are handled by the Planning, Building, and Community Development Department (PBCD). While the KFD previously had a full-service Bureau of Fire Prevention, at some point in the past it was disbanded for financial reasons and the majority of its duties transferred to the PBCD.

PBCD has a wide-ranging portfolio of duties and responsibilities. It is responsible for administering the various codes, performing inspections, development, and new construction plan reviews, witnessing fire prevention system tests, and ensuring code compliance through inspections regarding new buildings while under construction. The Fire Chief/Marshal works closely with the PBCD concerning matters of new development plan and site reviews.

PBCD has a staff of nine personnel including building inspectors, fire inspectors, and a fire plans examiner. Four of the department's staff are certified as International Codes Council (ICC) fire inspectors.

At the time of this assessment the State of Montana was utilizing:

- 2021 International Fire Code for new construction.

The City of Kalispell has adopted:

- 2021 International Fire Code (IFC).
- 2021 International Residential Code (IRC).
- International Existing Building Code.
- International Mechanical Code.
- International Fuel Gas Code.
- Uniform Plumbing Code.
- National Electrical Code.

The IFC and IRC are updated every three years.

Under the Administrative Rules of Montana, the building department is responsible for approving fire protection systems (not the Fire Marshal's office) and performing these types of plan reviews. This includes all NFPA 13 and 13R Fire Suppression Systems along with some dry chemical systems for server rooms, bank vaults etc. and fire alarm system reviews. The following are the plans reviewed for 2020 through 2022:

- 2020: 43.
- 2021: 49.
- 2022: 61.

The Fire Chief/Marshal does participate in final system inspections along with acceptance testing.

As previously mentioned, fire suppression and response, although necessary to minimize property damage, have little impact on preventing fires. Rather, public fire education, fire prevention, and built-in fire protection and notification systems are essential elements in protecting citizens from death and injury due to fire. Automatic fire sprinklers have proven to be very effective in reducing fire loss and minimizing fire deaths in residential structures. However, many states, Montana among them, have been reluctant to impose code provisions that require these installations in one- and two-family dwellings. The state's current fire code does not mandate the installation of these life safety systems, nor does it permit municipalities to adopt local ordinances that require them.

Automatic sprinklers are highly effective elements of total system design for fire protection in buildings, including- one, and two-family dwellings. Sprinklers help prevent fires from reaching flashover in a compartment fire, which is key to reducing fire deaths and injuries. They save lives and property, producing large reductions in the number of deaths per thousand fires, in average direct property damage per fire, and especially in the likelihood of a fire with large loss of life or large property loss. They do so much quicker, and often more effectively and with less damage, than do firefighters. No fire safety improvement strategy has as much documented life safety effectiveness as fire sprinklers because they actually extinguish the fire or, at a minimum, hold it in check and prevent flashover, until the arrival of the fire department.

While built-in fire protection should significantly reduce the spread of fire, it may not completely extinguish the fire. Firefighters still need to complete the extinguishment and perform ventilation, overhaul, and salvage operations.

From 2007 to 2011, fires in all types of structures, when sprinklers were present in the fire area of a fire large enough to activate sprinklers in a building not under construction, the sprinklers operated 91 percent of the time. When they operated, they were effective 96 percent of the time, resulting in a combined performance of operating effectively in 87 percent of reported fires where sprinklers were present in the fire area and the fire was large enough to activate sprinklers. In homes (including apartments), wet-pipe sprinklers effectively operate 92 percent of the time. When wet-pipe sprinklers were present in the fire area in homes that were not under construction, the fire death rate per 1,000 reported structure fires was lower by 82 percent, and the rate of property damage per reported home structure fire was lower by 68 percent. In all structures, not just homes, when sprinklers of any type failed to operate, the reason most often given (64 percent of failures) was shut-off of the system before the fire began.

The following figure provides a typical residential fire timeline.

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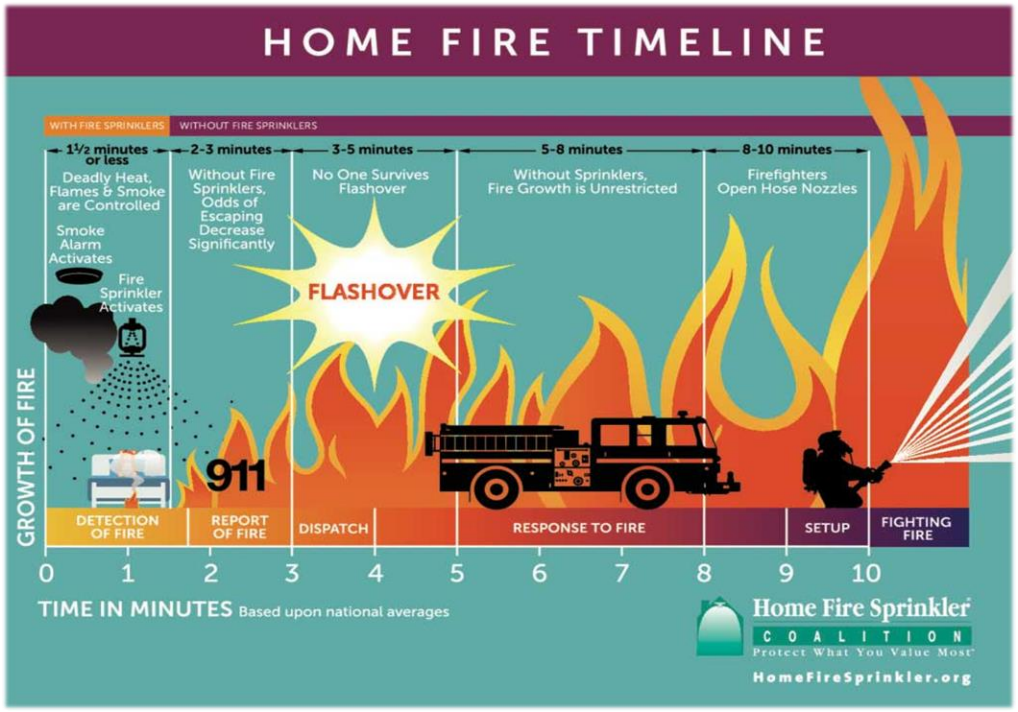
FIGURE 2-14: Residential Fire Timeline



According to the NFPA, the average cost nationally for installing automatic fire sprinklers in new, single-family residential structures is estimated to be $1.61 per square foot.[13] For a 2,000 square-foot home, the estimated cost would be approximately $3,220. This can be less than the cost of granite countertops or a carpeting upgrade. In addition, many homeowner's insurance policies provide a discount for homes equipped with residential fire sprinklers. The State of California has mandated the installation of residential fire sprinkler systems in all new one- and two-family dwellings and townhouses statewide since 2010. Currently the state does not require residential sprinklers in single-family residences.

Under Montana law only schools are required to be inspected on an annual basis, which is done by PBCD. In addition, the PBCD tries to perform annual inspections on the city's hotels, occupancies that have various licensing requirements such as healthcare facilities and daycare centers, and when there is a liquor license transfer. PBCD has two inspectors who focus primarily on fire-related issues.

Fire life-safety inspections completed for the past three years:

- 2020: 201.
- 2021: 180.
- 2022: 188.

There are many reasons why existing buildings should be inspected for fire code compliance. The obvious purpose is to ensure that occupants of the building are living, working, or occupying a building that is safe for them to do so. Some buildings are required to have specific inspections conducted based on the type of occupancy and the use of the buildings such as but not

13. NFPA, "Cost of Installing Residential Fire Sprinklers Averages $1.61 per Square Foot" Quincy, MA: September 11, 2008.

limited to healthcare facilities (hospitals, nursing homes, etc.), schools, restaurants, and places of assembly. These inspections are mandated by various statutes, ordinances, and codes. The inspections themselves are often limited to specific areas within the building and to specific time frames. The fire inspectors will also witness tests of required fire protection systems and equipment. Conversely, many businesses are not required to have any type of periodic fire safety inspections.

Fire inspections can also identify violations and make follow-up inspections to ensure that violations are addressed and that the fire code is enforced. In fire prevention, the term "enforcement" is most often associated with inspectors performing walk-throughs of entire facilities, looking for any hazards or violations of applicable codes. Educating the owner to the requirements, as well as the spirit and intent, of the code can also attain positive benefits for fire and life safety.

With more than 1,000 business located in Kalispell, several of them large, along with numerous schools, multifamily residential complexes, and other hazards, there is no consistent or comprehensive program that ensures that all businesses and commercial occupancies receive a routine "maintenance" fire prevention inspection on a regular periodic basis.

In many departments, on-duty firefighters can be assigned with the responsibility for "in-service" inspections to identify and mitigate fire hazards in buildings, to identify risks that may be encountered during firefighting operations, and to develop pre-fire plans (which the KFD already does). On-duty personnel in many departments are also assigned responsibility for permit inspections and public fire safety education activities. Fire department personnel are often able to recognize hazards or violations, whereas inspectors are often able to identify features of a specific property that could prove important during an emergency. Effective information sharing enhances the ability of the fire department to protect the community. While KFD personnel perform some "inspections," these are primarily for the purpose of developing pre-fire/incident plans (which are discussed in Section 5) rather than for evaluating code and safety compliance.

Performing complex, technical inspections can be a very time-consuming, but necessary, endeavor. Nationwide, communities that have proactive fire inspection and code enforcement programs in place often have a lower incidence of fire loss because many potential fire- and life-safety hazards are identified and corrected before they cause or contribute to a fire.

Of course, having sufficient personnel to perform fire prevention inspections can be a costly proposition. To help offset these costs, many jurisdictions are now assessing the application of registration or inspection fees for businesses. The fees assessed often vary widely by jurisdiction. New Jersey has enacted a uniform statewide fee structure for different types of businesses with the annual registration fees for businesses ranging from $108 to $4,781. Fees for various permits range from $54 to $641. Kern County, Calif., has established a fee schedule that covers a wide range of permits, inspections, and services such as plans reviews. The fee schedule includes:

- Operating Permits: $50 to $520.
- Construction Permits: $35 to $1,000.
- Fireworks Permit: $325.
- Plan Review: $130 to $195.
- Special Inspections: $450 to $520 and $140/hour (minimum two hours).
- Fire Safety Inspections and Standbys (all two-hour minimum): $140/hour to $455/hour.
- Administrative Fees: $10 to $1,000.

Some jurisdictions also assess a reinspection fee if an inspector must make a return visit to determine if code violations have been abated. At the time of this assessment, the City of Kalispell did not have any significant fees for post-occupancy fire prevention and safety functions and services. In addition, the city cannot use building fees for subsequent life safety and maintenance inspections.

FIGURE 2-15: Remote Video Inspection (RVI)

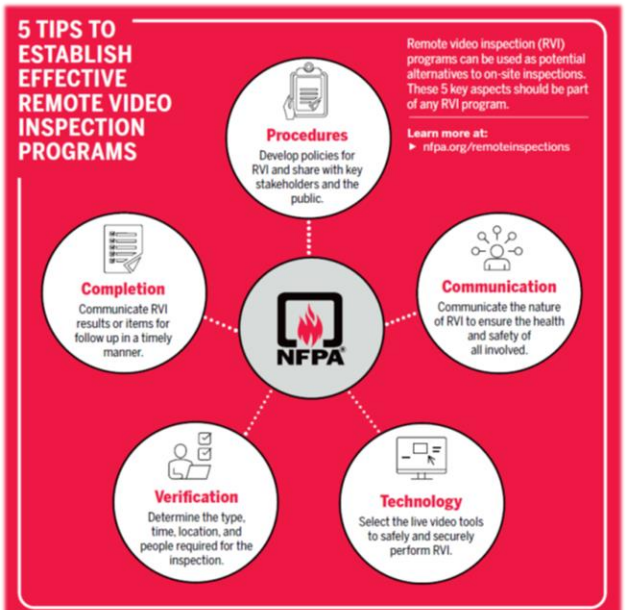


Image credit: National Fire Protection Association

One of the newest trends in fire prevention inspections is the use of Remote Video Inspection (RVI) programs. According to the NFPA, "RVI provides an effective alternative means for building inspection, enabling one or more parties to remotely perform an inspection of a building or building component." The NFPA has released a new infographic that emphasizes the five key considerations for an RVI inspection program: procedures, communication, technology, verification, and completion.

According to the NFPA:

"RVI provides an effective alternative means for building inspection, enabling one or more parties to remotely perform an inspection of a building, or building component. Just like traditional on-site or in person inspections, an RVI typically occurs as part of a jurisdiction's permitting or inspection process. Virtual inspections are not intended to be less complete than an on-site inspection; they are meant to achieve the same (or enhanced) results as an on-site inspection."[14]

Until recently, use of RVI was limited and sporadic. The COVID-19 pandemic and remote work conditions combined with a normal extensive workload have made more jurisdictions consider alternatives to traditional inspection procedures and processes. Long term, the use of a program such as this can help any fire prevention entity better manage often unrealistic inspection workloads.

The KFD has a very active public fire education program, which is an important component of an overall fire prevention program, particularly in the residential areas of the city. **This effort is very commendable and results in time and resources well spent**. Nearly 75 percent of all fires, fire deaths, and injuries occur in the home, an area where code enforcement and inspection programs have little to no jurisdiction. Public education is the area where the fire service will make the greatest impact on preventing fires and subsequently reducing the accompanying loss of life, injuries, and property damage through adjusting people's attitudes and behaviors with regard to fires and fire safety. Fire prevention presentations include to grade school students, school station tours and education, drivers ed presentations in high schools, and car seat safety visits from citizens to stations. These programs are completed mostly by on-duty

[14]. https://www.nfpa.org/News-and-Research/Publications-and-media/Press-Room/News-releases/2020/New-infographic-from-NFPA-highlights-remote-inspection

firefighter crews, though some overtime is used for special events, safety fairs, etc. The number of public educations completed over the past three years is:

- 2020: 0.
- 2021: 11.
- 2022: 37.

This current program also includes offering home safety inspections along with the distribution and installation of smoke detectors. The KFD is to be commended for this effort, which CPSM considers to be a **Best Practice**.

FIGURE 2-16: KFD Personnel Performing School Presentation

There are numerous ways the KFD can spread its fire safety (and all hazard) messages. These include, but are certainly not limited to:

- Maximize KFD public appearances at community events.
- Add signs or marquees to fire stations with regular fire and life safety messages.
- Keep school and other presentations on track.
- Include fire safety messages in the city's community videos.
- Increase social media presence for the community to learn about their fire department and its services, along with frequent social media postings (Facebook, Instagram, etc.) on department events, disaster preparedness, all-hazards injury prevention, etc.
- Social media addresses advertised on apparatus, department letterhead, etc.
- Development of a KFD YouTube page.
- Increased social media activity during holidays (when there is an uptick in cooking fires), prior to and during major weather events, during public education events (Facebook Live, for example), and live dispatch or live updates from PIO on incidents.

The investigation of the cause and origin of fires is also an important part of a comprehensive CRR system. Determining the cause of fires can help with future prevention efforts. At the time of this evaluation, the Fire Chief and/or Assistant Fire Chief were charged with initiating the fire origin and cause determination process. When needed, particularly when the fire involves a significant loss, injury, or fatality, the KFD can request assistance from the Montana State Fire Marshal to perform an in-depth investigation. The number of fire investigations completed by the FMO over the past three year are:

- 2020: 6 investigations.
- 2021: 4 investigations.
- 2022: 6 investigations.

Community Risk Reduction Recommendations:

- As a long-term planning objective, the City of Kalispell should consider re-establishing a full-service Fire Prevention Bureau within the KFD. This bureau should be staffed, at a minimum, with a Fire Marshal (rank of Captain) and one fire inspector (Fire Marshal and inspector should also be certified to perform fire investigations). The focus of their activities should be on post-occupancy fire prevention inspections, code enforcement, and education of business and building owners. (Recommendation No. 13.)
  - The inspector can be either a sworn firefighter or civilian, the latter often being a less costly option. In this case consideration could be given to utilizing retired KFD personnel provided there are no negative pension implications.
- The KFD should implement an in-service company inspection program at residential, medical, manufacturing, and retail business establishments throughout the city. (Recommendation No. 14.)
  - The KFD should provide appropriate training to all field personnel in conducting routine fire prevention inspections, particularly the Captains who will be responsible for supervising their companies.
- To fund the KFD's fire prevention and safety activities the City of Kalispell should consider the adoption of registration, inspection, and/or permit fees to help offset the actual costs of providing these services throughout the city. These fees should include inspections conducted by in-service fire companies. (Recommendation No. 15.)
  - Should the City of Kalispell implement the recommendations above, the KFD should complete a comprehensive review of the city's actual costs for providing fire prevention services. The review should include a full costing of providing all fire prevention services, reviewing the city's fire code(s), as well as a comparative analysis of the fees charged for similar services by other fire departments. The review should be designed to capture the full range of services provided and capture the full scope of the operational permits and certain inspections required as part of a comprehensive fire prevention program.
- The KFD should develop a compelling public education program that includes discussing the significant life-saving benefits of installing residential fire sprinklers in all new one- and two-family dwellings. (Recommendation No. 16.)
- The City of Kalispell should explore possible funding opportunities to encourage businesses to install smoke alarms and sprinkler systems. (Recommendation No. 17.)

- If the City of Kalispell authorizes the formation of a full-service Fire Prevention Bureau within the KFD, the KFD should explore the feasibility of utilizing Remote Video Inspections (RIV) to assist with managing the inspection workload. (Recommendation No. 18.)
- The KFD should encourage—and if possible, expand—the voluntary home inspection and assistance program. This is a ***Best Practice***. The program should continue to include the distribution of smoke detectors to the community. (Recommendation No. 19.)
- The KFD should provide an inventory of smoke alarms for fire apparatus and ambulances to take on all calls for installation in residential structures. This recommendation includes a program where companies conduct free smoke alarm checks on all calls when possible. (Recommendation No. 20.)
- The KFD should provide training on basic fire cause and origin determination to all officers. This will assist with ensuring the cause of every fire that causes damage or injury is determined while easing the workload for the Fire Chief and Assistant Fire Chief. (Recommendation No. 21.)

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EDUCATION AND TRAINING

Training is, without question, one of the most essential functions that a fire department can perform on a regular basis. One could even make a credible argument that training is, in some ways, more important than emergency responses because a department that is not well-trained, prepared, and operationally ready will be unable to fulfill its emergency response obligations and mission. Education and training are vital at all levels of fire service operations to ensure that necessary functions at an incident are completed correctly, safely, and effectively. A comprehensive, diverse, and ongoing training program is critical to the fire department's level of success.

An effective fire department training program must cover all the essential elements of that department's core missions and responsibilities. The level of training or education required for a set of tasks varies with the jobs to be performed. The program must include an appropriate combination of technical/didactic training, manipulative or hands-on/practical evolutions, and training assessment to gauge the effectiveness of these efforts. Most of the training, but particularly the practical, standardized, hands-on training evolutions should be developed based upon the department's own operating procedures and operations while remaining cognizant of widely accepted practices and standards that could be used as a benchmark to judge the department's operations for any number of reasons.

Certain Occupational Safety and Health Administration (OSHA) regulations dictate that minimum training must be completed on an annual basis, covering assorted topics that include:

- A review of the respiratory protection standard, self-contained breathing apparatus (SCBA) refresher and user competency training, SCBA fit testing (29 CFR 1910.134).
- Blood Borne Pathogens Training (29 CFR 1910.1030).
- Hazardous Materials Training (29 CFR 1910.120).
- Confined Space Training (29 CFR 1910.146).
- Structural Firefighting Training (29 CFR 1910.156).

In addition, National Fire Protection Association (NFPA) standards contain recommendations for training on diverse topics such as a requirement for a minimum of 24 hours of structural firefighting training annually for each fire department member. Also, the ISO-Fire Suppression Rating Scale (ISO-FSRS) has certain training requirements for which fire departments receive credit during the ISO-FSRS review.

Because so much depends upon the ability of the emergency responder to effectively deal with an emergency, education and training must have a prominent position within an emergency responder's schedule of activities when on duty. Education and training programs also help to create the character of a fire service organization. Agencies that place a real emphasis on their training tend to be more proficient in performing day-to-day duties. The prioritization of training also fosters an image of professionalism and instills pride in the organization. Overall, the KFD has an excellent, robust, and comprehensive training program and there exists a dedicated effort focused on a wide array of training activities.

The KFD does not have a formal, stand-alone Training Division. The Assistant Fire Chief is primarily responsible for the department's training function while a Fire Captain/Paramedic coordinates EMS training. There are no full-time dedicated personnel assigned to training. Training has predominantly been provided by peers within the department until last year. In FY2022, the KFD hosted two courses for Engineers through the Montana State University Fire Service Training School (FSTS), and one Fire Officer training course offered online through Blue Card. Auto extrication, ice rescue, aerial ladder operations, peer support, yoga, drone piloting, etc. are recent training opportunities for KFD members that had outside instructors.

FIGURE 2-17: Probationary KFD Personnel Performing In-Station Training

The KFD hires both certified and non-certified firefighting personnel based upon a civil service exam and eligibility list position. However, these personnel must be certified through the national registry and the state as either an EMT-A or as a Paramedic. Regardless of previous firefighter training or certification levels, all newly hired firefighters are put through a Montana State Firefighter I and II academy/certification along with hazardous materials operations. These classes, which are conducted by the FSTS, result in personnel being International Fire Service Accreditation Commission (IFSAC)/ National Board on Fire Service Professional Qualifications (NBFSPQ or Pro Board) Certified FF I/II. Once they have completed their FF I/II training, an in-house field training program ensures the new hire's ability to demonstrate skills and knowledge of EMS operations, firefighting skills, and KFD's operations. The program utilizes daily evaluation sheets, a task book, and a final comprehensive evaluation. The field training program is accomplished during probation and is one year in duration. The KFD is to be commended for this program, which CPSM considers to be a **Best Practice**.

The requirements for personnel seeking promotion to the position of Engineer include three years as a firefighter with the KFD, Montana State FSTS engineer certification, along with successful completion of in-house testing and ranking.

The KFD utilizes a multistep process at the rank of Captain. The requirements for each step are as follows:

- Captain Step I
  - Command and Control/ Blue Card Incident Commander Certification.
  - Incident Safety officer.
  - 1st Leadership/Emergency Systems Management course.
- Captain Step II
  - Two years as a Captain Step I
  - Fire Instructor I.
  - Fire Officer I.
  - 2nd Leadership / Emergency Services Management course.
- Captain Step III
  - Two years as a Captain Step II
  - Fire Investigator.
  - Health and Safety Officer.
  - 3d Leadership/ Emergency Services Management course.

The department is planning on hosting training courses in Fall 2023 that will allow officers to be certified at the Fire Instructor I and Fire Officer I levels. Looking ahead, the KFD should consider adding additional certification requirements to each level of Captain.

The Assistant Chief informed CPSM that the on-shift and specialized training schedules are evolving again after having been dormant for several years due to the COVID pandemic. As a best practice, there should be a goal for each shift to complete some type of group training every week, or at least several times a month. In-service training should be topic-specific to either teach or practice important skills and to allow crews to work together in simulated emergency situations. With any good fire department training program, at least 50 percent of the drills should include manipulative (hands-on) training to allow for the development of proficiency and to review critical skills.

FIGURE 2-18: KFD Personnel Performing On-Duty Training

CPSM was informed that it is "difficult to meet" daily training targets, including between KFD companies and with mutual aid departments. It is clearly reasonable that some days it will be difficult to complete training since various time demands throughout the duty day, including increasing emergency responses, gradually compete with each other. Yet, in many fire departments some less-than-efficient time management, and even past practices, can hinder attempts to provide training for on-duty personnel. We believe that this is at least partially true in Kalispell. Every effort should be made to make completion of a daily training session a KFD priority.

Additional daily opportunities for training can be found during related activities such as daily/weekly apparatus and equipment inspections and fire pre-planning activities. Annual inspection and testing requirements such as for hose, pumps, hydrant flow testing, etc. can also provide additional training credits for personnel who participate. Training can and should also be conducted during evening hours and on weekends.

An area where CPSM noted a deficiency in training for the KFD was in the area of providing all companies and personnel with high-intensity training on various subjects, including periodic live fire training on at least a semi-annual basis. However, the team was informed that although the department has had some success in obtaining vacant structures to train in the lack of a permanent training facility with live fire capabilities hampers the ability to conduct such training. The only local training facilities with live fire "burn buildings" are at the West Valley Fire Department and in Columbia Falls. CPSM encourages the KFD to move forward and attempt to provide all personnel with this type of training, including live fire, a minimum of twice per year, with quarterly being preferred.

FIGURE 2-19: KFD Personnel Performing High-Intensity Training

This type of training—including training involving live fire—is very difficult for on-duty personnel to perform due to the need to retain the personnel for immediate emergency response. Larger departments can take a company or two out of service for this type of training, but Kalispell's staffing and deployment makes this impossible.

The KFD utilizes Vector Solutions as its platform for all department in-service training. Vector Solutions offers a robust course catalog for fire and EMS training that can be utilized to meet all federal, state, and local public safety training mandates. Vector Solutions can also provide the platform for scheduling training and managing all training records and reports. The use of this program helps to ensure that there is a reliable and accurate database for tracking and retrieving all department-level training and for recording and tracking the status of certifications for all personnel.

On the EMS side of operations, training programs and requirements are primarily driven by the mandatory nature of continuing education and recertification requirements for various levels of practitioners. All levels of EMS training require continuing education credits on a multiyear cycle for recertification. If individual personnel, or the agency, were to not keep up with required training and/or certification requirements they could lose their ability to practice or provide the prescribed levels of service. In Montana, the state certifying agency is the Montana Board of Medical Examiners.

Best Practice Medicine provide EMT-A and Paramedic recertification training. A KFD Captain assists with coordinating and providing this training. Whenever possible, fire training should be tied into EMS continuing education credits, providing dual discipline benefit for personnel. Since EMS incidents make up a large percentage of the department's responses, ensuring that these certifications continue to be maintained should remain a significant component of the department's training focus.

Professional development for fire department personnel, especially officers, is also an important part of overall training. There are numerous excellent opportunities for firefighters and officers to attend training on a wide range of topics outside of Kalispell, including those offered at various state firefighting academies, at the National Fire Academy in Emmitsburg, Maryland, and at national conferences such as the Fire Department Instructor's Conference (FDIC), Fire Rescue International, and the annual Firehouse Expo. CPSM was informed that although a few officers have attended NFA, most have so far declined to take advantage of this excellent opportunity. Beyond the practical benefits to be gained from personnel participating in outside training, encouraging personnel to earn and/or maintain various specialized certifications such as Fire Instructor or Fire Officer increases the positive professional perception of the organization and can help to demonstrate a commitment to continued excellence.

As of the time of this assessment the KFD's officer development program was a work in progress; additional training is planned for Fall 2023. The department is to be commended for this effort and given the support to continue to develop this program.

KFD officers typically provide feedback to personnel regarding their performance but there is no formal testing or skills assessments for fire training in the department. Training is a required activity in the fire service and thus it is essential to incorporate a formal testing process as part of the learning effort. EMS skills assessments, both practical and written, are regularly incorporated into EMS training. Traditionally, fire departments are reluctant to incorporate skills testing into their fire training components. However, an increasingly common way to evaluate the department's training program is through annual skills proficiency evaluations where all members of the department are required to successfully perform certain skills or complete standardized evolutions, either individually or as part of a team.

The ability to monitor and record training test scores is beneficial from an overall proficiency standpoint. In addition, training scores should be incorporated into the annual performance appraisal process for both the employee, his/her supervisor, and the training staff. In addition, the concept of adding a testing process to each training evolution adds to the importance and seriousness in which these activities are carried out.

The KFD does not currently utilize a formal task book process to provide training guidance and new rank orientation, with the exception being probationary firefighters. A growing number of fire departments are employing task books for personnel who aspire to (or in some cases have already been promoted to) higher rank. Use of task books would be appropriate in the KFD for firefighter, Engineer, and the various steps for Captain. The successful completion of any task book can be considered as a prerequisite for promotion to higher rank or step, or alternatively,

can be a required element of the post-promotional evaluation and probationary process. These efforts can help provide newly promoted personnel with the tools needed to operate both administratively and in field settings. The completion of the task book could also qualify individuals to assume acting Engineer and Captain assignments in which they receive practical experience and on-the-job training.

Beyond the establishment of requirements to achieve certain levels of certification for promotion, the department should consider the implementation of a formal professional development program for all department personnel. The program should attempt to strike an appropriate balance between technical/practical task books, simulator training, formal certifications, mentor relationship, and outside influences. Where practical, best practices identified by the NFA, NFPA, ISO, IFSTA, IFSAC, Montana Firefighters Training Council, MIOSHA, and the Center for Public Safety Excellence (CPSE) should be incorporated.

Fire Education, Training, and Professional Development Recommendations:

- The KFD should make it a priority to implement daily in-station training lasting one to two hours each duty day. (Recommendation No. 22.)
- The KFD should continue to develop and budget for its company fire officer training and development program. To further enhance the program the department should consider components that are competency-based on National Fire Protection Association (NFPA), International Association of Fire Chiefs (IAFC), and International Fire Service Training Association (IFSTA) standards, and that focus on contemporary fire service issues including community fire protection and emergency services delivery approaches, fire prevention practices, firefighter safety and risk management, and labor/staff relations; reviewing, approving, or preparing technical documents and specifications, departmental policies, standard operating procedures and other formal internal communications; improving organizational performance through process improvement and best practices initiatives; and having a working knowledge of information management and technology systems. (Recommendation No. 23.)
- The KFD should consider increasing the requirements for further step advancements at the Captain level. (Recommendation No. 24.)

  These requirements should include:

  - Captain Step I
    - Fire Instructor I.
    - Fire Officer I.
    - NFA Command and Control for Company Level Officers.
    - IMS Level 300.
  - Captain Step II
    - Fire Instructor II.
    - Fire Officer II.
    - NFA Command and Control of Incident Operations.
  - Captain Step III

- Fire Officer III.
- IMS Level 400.
- NFA Command and Control of Fire Department Operations at Target Hazards.

- The KFD should develop task books for firefighter, Engineer, and each Captain step. For ranks other than probationary firefighter, all personnel aspiring for promotion to a higher rank should successfully complete all elements of that rank's task book to be eligible to participate in the formal promotional testing process. (Recommendation No. 25.)
- The KFD should develop a plan—including providing appropriate funding—to provide all companies and personnel with mandatory, off-duty, high-intensity training on various subjects, including periodic live fire training on at least a semi-annual basis, with quarterly being preferred. (Recommendation No. 26.)
- The KFD should institute written and practical skills testing and proficiency evaluations (non-punitive) as part of the department's comprehensive fire training program. (Recommendation No. 27.)
- The City of Kalispell in consultation with the KFD should consider providing funding for the KFD to procure an appropriate training facility where the department can safety perform NFPA 1403-compliant live fire training and other basic and advanced/complex evolutions for all personnel on at least a semi-annual (quarterly preferred) basis. Consideration should also be given to approaching this project as a county-wide or regional endeavor. (Recommendation No. 28.)

FIGURE 2-20: Typical Fire Training Tower and Burn Building

- The KFD should make a concerted effort to send as many officers as possible to the National Fire Academy (NFA). This should include the Assistant Chief (or future dedicated Training Officer) for various training-related classes, and the Fire Marshal (if the city re-establishes a dedicated fire prevention bureau within the Fire Department) for fire prevention and community risk reduction classes. Any officers who meet the admissions criteria should be encouraged to enroll in the Academy's Executive Fire Officer Program. (Recommendation No. 29.)
- The KFD should look for opportunities to provide periodic joint training between the department and various agencies that provide automatic/mutual aid to the city, including in

the evening and on weekends. Consideration should also be given to hosting large-scale exercises to test and evaluate regional interoperability. (Recommendation No. 30.)

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ISO-PPC ANALYSIS

The ISO is a national, not-for-profit organization that collects and evaluates information from communities across the United States regarding their capabilities to combat building fires. ISO conducts field evaluations in an effort to rate communities and their relative ability to provide fire protection and mitigate fire risk. This evaluation allows ISO to determine and publish a Public Protection Classification (PPC) rating of Class 1/1X to Class 9 (Class 10 are areas with no fire protection) for the community.

Class 1 (highest classification/lowest numerical score) represents an exemplary community fire suppression program as outlined below. In contrast, a Class 9 score indicates that the community's fire suppression program does not meet ISO's minimum criteria. It is important to understand the PPC is not just a fire department classification, but a compilation of community services that include the fire department, the emergency communications center, and the community's water supply system operator. A lower numerical rating makes the community more attractive from an insurance risk perspective, so insurance costs are generally reduced for businesses and homeowners. A community's PPC grade depends on:

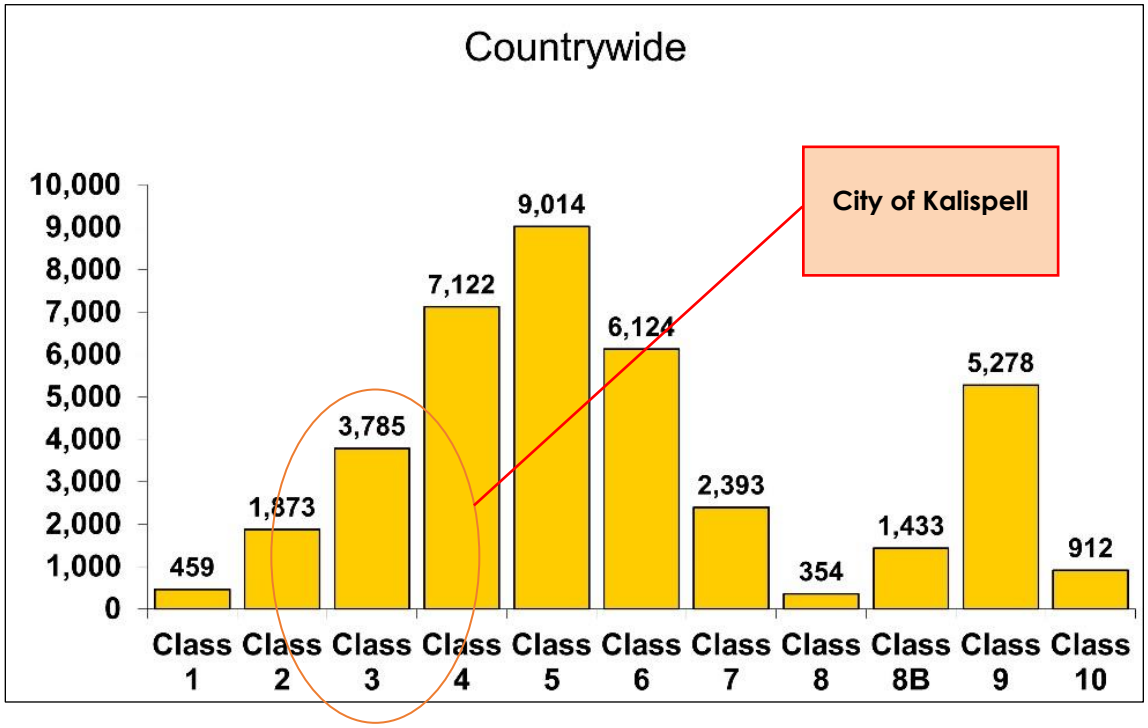
- **Emergency Communications**: A maximum of 10 points of a community's overall score is based on how well the fire department receives and dispatches fire alarms. ISO field representatives evaluate:
  - The emergency reporting system.
  - The communications center, including the number of telecommunicators.
  - Computer-aided dispatch (CAD) facilities.
  - The dispatch circuits and how the center notifies firefighters about the location of the emergency.
- **Fire Department**: A maximum of 50 points of the overall score is based on the fire department. ISO representatives review the fire companies and check that the fire department tests its pumps regularly and inventories each engine and ladder company's equipment according to NFPA 1901. ISO also reviews the fire company records to determine factors such as:
  - Type and extent of training provided to fire company personnel.
  - Number of people who participate in training.
  - Firefighter response to emergencies
  - Maintenance and testing of the fire department's equipment.
- **Water Supply**: A maximum of 40 points of the overall score is based on the community's water supply. This part of the assessment focuses on whether the community has sufficient water supply for fire suppression beyond daily maximum consumption. ISO surveys all components of the water supply system and reviews fire hydrant inspections and frequency of flow testing.
- **Community Risk Reduction**: The Community Risk Reduction section of the FSRS offers a maximum of 5.5 points, resulting in 105.5 total points available in the FSRS. The inclusion of this section for "extra points" allows recognition for those communities that employ effective fire prevention practices, without unduly affecting those who have not yet adopted such measures. The addition of Community Risk Reduction gives incentives to those communities that strive proactively to reduce fire severity through a structured program of fire prevention activities. The areas of community risk reduction evaluated in this section include:

- Fire prevention.
- Fire safety education.
- Fire investigation.

Many communities view achieving a Class 1 (or a low ISO rating overall) as an accolade. Therefore, when it is possible, maintaining a favorable rating or lowering an ISO score is often included in a community's strategic plan.

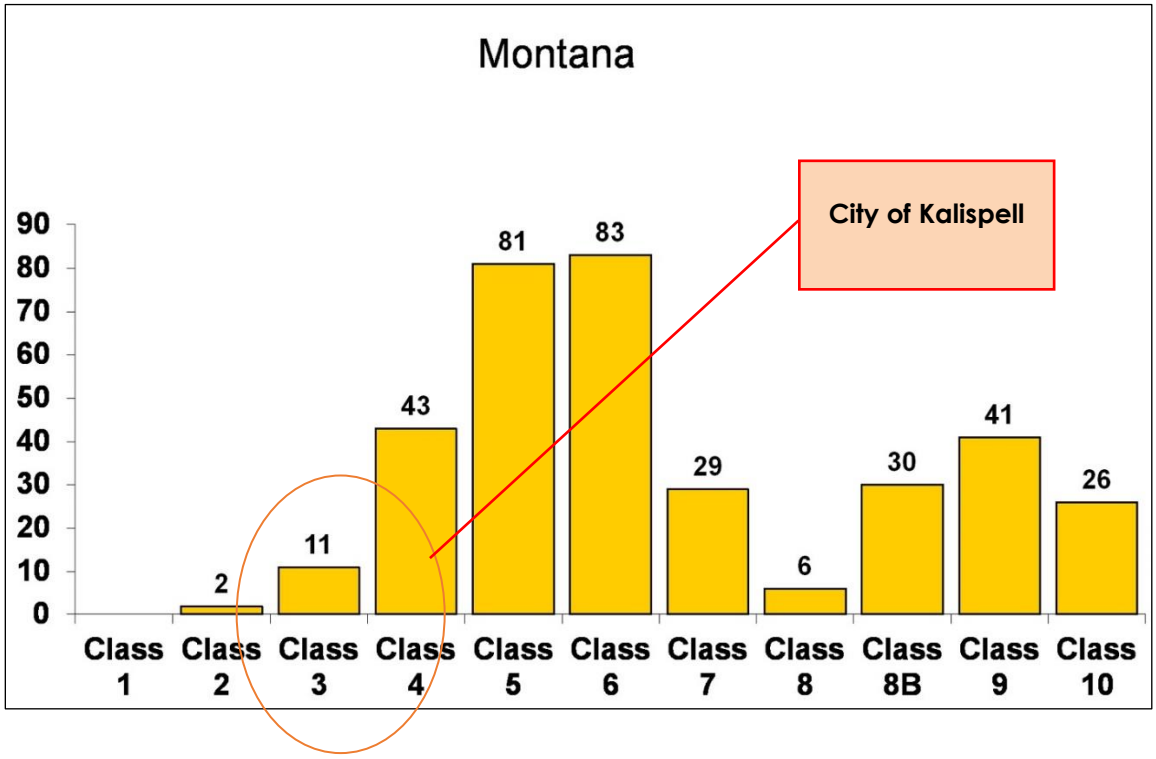
Overall, the community PPC rating for Kalispell (2020) yielded 70.69 out of 105.5 earned credits, leading to a 3/3Y rating.[15] This is a satisfactory score (and class), yet highlights areas for improvement. However, there is a caveat to this, in that the overall points from the most recent evaluation fell 1.94 points since 2015.[16] The current rating puts the city just 0.69 points into the Class 3/3Y rating. If the rating declines again, the city will most likely drop to a Class 4 rating.

FIGURE 2-21: ISO PPC Ratings in the U.S.



15. ISO 2020 Report and Synopsis Memorandum (2020)
16. ISO 2015 report

FIGURE 2-22: ISO PPC Ratings in Montana



The following table is a summary and comparison of Kalispell's 2015 and 2020 ISO ratings.

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TABLE 2-4: City of Kalispell ISO Earned Credit Overview

FSRS Component	Credit Available	Earned Credit 2015	Earned Credit 2020	Difference
414. Credit for Emergency Reporting	3	2.40	3	+0.6
422. Credit for Telecommunicators	4	3.20	4	+0.8
4.32. Credit for Dispatch Circuits	3	1.88	2.46	+0.58
440. Credit for Emergency Communications	**10**	**7.48**	**9.46**	**+1.98**
513. Credit for Engine Companies	6	4.48	5.63	+1.15
523. Credit for Reserve Pumpers	.5	0.40	0.00	**-0.40**
532. Credit for Pump Capacity	3	3.0	3	N/C
549. Credit for Ladder Service	4	3.91	0.82	**-3.08**
553. Credit for Reserve Ladder and Service Trucks	.5	0.00	0.00	N/C
561. Credit for Deployment Analysis	10	3.78	4.72	+0.94
571. Credit for Company Personnel	15	8.40	7.41	**-0.99**
581. Credit for Training	9	6.56	3.42	**-3.14**
730. Credit for Operational Considerations	2	2	2	N/C
590. Credit for Fire Department	**50**	**32.53**	**27.00**	**-5.53**
616. Credit for Supply System	30	28.03	29.72	+1.69
621. Credit for Fire Hydrants	3	3	3	N/C
631. Credit for Inspection and Flow Testing	7	0.00	5.60	+5.60
640. Credit for Water Supply	**40**	**31.03**	**38.32**	**+7.29**
Divergence	**---**	**-2.50**	**-8.36**	**-5.86**
1050. Community Risk Reduction	**5.50**	**4.09**	**4.27**	**+0.18**
Total	**105.50**	**72.63**	**70.69**	**-1.94**

This table shows that the Emergency Commutations, Water Supply, and Community Risk Reduction credits are very good. Some positive items of note from one ISO evaluation to the next are:

- The KFD improved its Credit for Emergency Communications by 1.98 points. The city is just 0.54 points away from maximum credit for this section.
- The KFD received additional points for both Credit for Engine Companies and Credit for Deployment Analysis of 1.15 and 0.94 points, respectively.
- The city received a significant increase of 7.29 points for Credit for Water Supply. The city is now just 1.68 points from receiving maximum credit for this component of the evaluation.
- The city earned a slight increase of 0.18 points under Community Risk Reduction.

The Fire Department credits have room for improvement, specifically improving credits in Reserve Pumpers and Ladder trucks, Ladder Service, Deployment Analysis, Company Personnel,

and Training sections. On the negative side, point reductions from one evaluations to the next are:

- Credit for Reserve Pumpers – ISO provides credits for the number and adequacy of pumpers (engines) and their equipment within. The number of needed reserve engines and ladder trucks is one for each eight needed in a community, or fraction thereof. There is one reserve pumper in the city, which would be adequate for the City of Kalispell. However, the credit for engine companies is calculated by ISO based on an agency's capability to provide 3500 GPM from three engine companies. To achieve the 3500 GPM standard, the reserve pumper was utilized, thus negating the reserve credit.
- ISO provides credit for the number of response areas within the city with five buildings that are three or more stories (or 35 feet or more in height), or with five or more buildings that have a Fire Flow requirement greater than 3,500 GPM. The height of all buildings in the city, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies.
- The KFD lost 3.08 points for Credit for Ladder Service due to several factors, but in its simplest form, the fact that the city utilizes Ladder 642, which is a quint, as both an engine and a ladder (and is primarily an engine/pumper) costs points as ISO will not give full credit for both. In addition, the fact that it is stationed at Station 62, rather than at Station 61's downtown location (not within 2.5 road miles of all buildings three stories or greater or that require 3500 GPM or more fire flow) also results in a point loss. To receive full credit for the ladder, the KFD would need to:
  - Staff an additional pumper at Station 62 along with Ladder 642.
  - Have a ladder truck stationed downtown also, or within 2 ½ road miles of all buildings of three stories or more in height or that require 3,500 GPM or more for fire flow.
- The KFD does not have a reserve ladder truck, so it did not earn 0.5 points for that. When the one and only ladder truck is down for service, repairs, out providing mutual aid, etc., the city is without a ladder truck.
- The Credit for Deployment Analysis section measures the number of fire units staffed at ISO or NFPA standards that are available to respond to incidents within the city. ISO provides credits for the percentage of the community within specified response distances, which is 1.5 miles for pumpers and 2.5 miles for a ladder truck. As an alternative, a fire protection area may use the results of a systemic performance evaluation; an evaluation analyzing CAD history to demonstrate that, with its current deployment of companies, the fire department meets the time constraints for initial arriving engine and initial full-alarm assignment as specified by NFPA 1710. KFD receive reduced points in this section also because of the cross-staffing of the ladder truck with EMS units.
  - The KFD would need to add staffed and equipped apparatus that can respond immediately (no cross-staffing) to increase its points in this section. These units would also need to meet the response area and time frames specified.
- The section on Credit for Company Personnel simply looks at the department's staffing practices based upon averages. It also includes automatic aid companies and on-call personnel that fall within a five-road mile status or response times as recommended by NFPA standards.
  - To receive additional points in this area KFD would most likely need to increase staffing. The addition of a third station would also probably help.

- Credit for Training provides credit for training facilities and their use, training (general), company training at fire stations, training and certification of fire officers, driver/operator, hazardous materials, and recruit training, and building familiarization and pre-incident planning inspections. KFD received full points for its recruit training and existing driver and operator training. The KFD is to be commended for this. However, overall, the KFD lost 3.14 points from the previous ISO evaluation. CPSM discussed this issue with the Fire Chief and was informed that ISO had reported the following:
  - Even though station 62 has training components associated with it, it is not a true training facility to ISO standards. A training facility that meets ISO requirements would need to be established.
  - The KFD has struggled with keeping up with ISO training standards, which are approximately 20 hours per member/per month. Prior to the assessment, the fire department was required to switch software companies for the program required to track and store training logs for the department. A number of years of training documentation did not transfer to the new software and this documentation was lost in the transition. A significant number of points were lost in the most recent assessment due to this.
    - Better tracking of training hours would be required for the KFD to achieve more points in this section.
    - A better assessment of training types would also need to be reviewed.
    - CPSM was informed that the current software for tracking training meets these points and will allow the KFD to better meet ISO requirements.
  - Recommendations that could assist with these areas are included in the previous section on Training and Professional Development.
  - Fire department staff would also need more time available to conduct pre-fire planning inspections. This is addressed later in Section 4 on Fire Operations.
- KFD's credit for Divergence fell 5.85 points between evaluations. For the divergence analysis, when a fire departments apparatus and personnel points fall below the capabilities of the water system for the city, the department loses what are called divergence points.
  - To receive 8.36 points, the KFD would need to place additional fire suppression apparatus and personnel into service.

There are multiple recommendations made throughout this report that if implemented should improve KFD's ISO rating. CPSM believes that with the potential enhancements to staffing and deployment by the KFD, including the potential addition of a third fire station, should make earning an ISO Class 2 rating achievable for Kalispell.

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FLEET ANALYSIS

The resources that the fire department uses to perform its core mission and mitigate a wide range of emergency incidents are generally divided into two major categories, apparatus, and tools/equipment.

Apparatus generally includes the department's motorized vehicle fleet and includes the major emergency response apparatus such as engines (pumpers), aerial apparatus including towers and ladders, rescue vehicles, and ambulances. Specialized apparatus includes emergency units such as lighting vehicles, brush trucks, and other off-road vehicles. They also often include trailers for specialized applications such as technical rescue, hazardous materials response/equipment, hazardous material decontamination, structural collapse rescue equipment, breathing air/light support units, foam units/supplies, and mass casualty incident supplies. Support vehicles that are critical to fire department operations, both routine and emergency, include command post and emergency communications units, command/staff vehicles, and maintenance trucks.

The geography, infrastructure, hazards, and construction features within the community all play a major role in determining the composition of each department's unique and individualized apparatus fleet and equipment inventory. Kalispell's characteristics present the fire service with a wide variety of strategic and tactical challenges related to emergency response preparedness and mitigation. This includes fire suppression operations, emergency medical responses, and complex incidents requiring special operations capabilities such as technical rescue and hazardous materials emergencies.

Large commercial buildings, mid/high-rise structures, and a diverse mixture of target hazards present much different operational hazards and challenges than those required for operations in single-family dwellings. These factors, as well as projected future needs, must be taken into consideration when specifying and purchasing apparatus and equipment. Every effort should be made to make new apparatus as versatile and multifunctional/capable as is possible and practical.

Fire department apparatus are designed and intended to transport firefighters and fire and life safety equipment to the scene of an emergency. The provision of an operationally ready and strategically located fleet of mission-essential fire and rescue vehicles is fundamental to the ability of a fire-rescue department to deliver reliable and efficient public safety within a community. Modern, reliable vehicles are needed to deliver responders and the equipment/materials they deploy to the scene of dispatched emergencies within the city.

The procurement, maintenance, and eventual replacement of response vehicles is one of the largest expenses incurred in sustaining a community's fire-rescue department. Reliable vehicles are needed to deliver responders and the equipment/materials they employ to the scene of dispatched emergencies within the city. A well-planned and documented emergency vehicle replacement plan (capital improvement plan) ensures ongoing preservation of a safe, reliable, and operationally capable response fleet. A plan must also include a schedule for future capital outlay in a manner that is affordable to the community.

NFPA 1901, *Standard for Automotive Fire Apparatus*, serves as a guide to the manufacturers that build fire apparatus and for the fire departments that purchase them. NFPA 1901 is updated every five years using input from the public/stakeholders through a formal review process. The committee membership is made up of representatives from the fire service, manufacturers, consultants, and special interest groups. The committee monitors various issues and problems that occur with fire apparatus and attempts to develop standards that address those issues. A

primary interest of the committee over the years has been improving firefighter safety and reducing fire apparatus crashes. A key component of NFPA 1901 states:

> *"It is recommended that apparatus greater than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status and upgraded in accordance with NFPA 1912, Standard for Fire Apparatus Refurbishing (2016), to incorporate as many features as possible of the current fire apparatus standard. This will ensure that, while the apparatus might not totally comply with the current edition of the automotive fire apparatus standards, many improvements and upgrades required by the recent versions of the standards are available to the firefighters who use the apparatus."*

Under the NFPA1912 standard there are two types of refurbishments a fire department can choose. These are Level 1 and Level 2 refurbishments. According to NFPA 1912, a Level 1 refurbishment includes *the assembly of a new fire apparatus by the use of a new chassis frame, driving and crew compartment, front axle, steering and suspension components, and the use of either new components or components from existing apparatus for the remainder of the apparatus.* A Level 2 refurbishment includes *the upgrade of major components or systems of a fire apparatus with components or systems of a fire apparatus that comply with the applicable standards in effect at the time the original apparatus was manufactured.*

A few important points to note regarding the NFPA 1912 standard regarding the refurbishment of heavy fire apparatus. These are:[17]

- **Apparatus that was not manufactured to applicable NFPA fire apparatus standards or that is 25 years old <u>should be replaced</u>.** Some departments will utilize vehicles such as this (frontline but not regularly utilized) for longer than 25 years. CPSM does not recommend this practice; however, we understand the financial burden of replacing heavy fire apparatus. It is up to the department and municipality regarding the management of older fire apparatus and the risks these may pose to firefighters and the public who share the road with them.
- A vehicle that undergoes a Level 1 refurbishing receives a new make and model designation and a new Certificate of Origin for the year of refurbishment. Apparatus receiving a Level 1 refurbishing are intended to meet the current edition of the NFPA automotive fire apparatus standard. *This is the optimal level of refurbishing*.
- A vehicle that undergoes a Level 2 refurbishing retains its original make and model identification as well as its original title and year of manufacture designation. Apparatus receiving Level 2 refurbishing are intended to meet the NFPA automotive fire apparatus standard in effect when the apparatus was manufactured.

It is a generally accepted fact that fire department apparatus and vehicles, like all types of mechanical devices, have a finite life. A primary impetus for these recommended service life thresholds is continual advances in occupant safety. Despite good stewardship and maintenance of emergency vehicles in sound operating condition, there are many advances in occupant safety, such as fully enclosed cabs, enhanced rollover protection and air bags, three-point restraints, antilock brakes, higher visibility, cab noise abatement/hearing protection, and a host of other improvements as reflected in each revision of NFPA 1901. These improvements provide safer response vehicles for those providing emergency services within the community, as well those "sharing the road" with these responders.

17. NFPA 1912, *Standard for Fire Apparatus Refurbishing*, 2016 Edition.

Today's fire departments are obligated to establish and document formal programs and procedures to ensure that equipment is replaced regularly, maintained properly, and deployed in accordance with accepted standards and department procedures. Proper training on the use and maintenance of equipment is essential to effective and safe firefighter performance and minimizes the fire department and city's risk exposure.

The current KFD fire apparatus fleet consists of two (2) pumpers (1 frontline, 1 reserve), one (1) quint/aerial ladder,[18] one (1) brush engine, three (3) ALS-capable transport ambulances, one (1) hazardous material response unit and trailer, and (2) command vehicles (Fire Chief and Assistant Fire Chief). The age of the major firefighting apparatus currently in service ranges from 20 years old for Reserve Engine 633, which is a spare pumper, to five years old for Engine 631. The three ambulances range in age from three to 17 years. The apparatus fleet as a whole, even the older units in it, all appear to be in very good to excellent condition, well maintained, and with the equipment stowed in an orderly fashion. When considering apparatus usage, hours on the motor and pumps hours must be taken into consideration. Fire apparatus typically spend more time idling while at emergency scenes or throttled up when operating the fire pump. A rule of thumb that can be used is that each hour on the motor is the equivalent of 30 to 35 miles of actual road usage.

The KFD emergency vehicle inventory, age, and station assignment are outlined in the following table.

TABLE 2-5: KFD Full Fleet Listing and Age

Unit #	Year	Make	Model	Pump Size (GPM)	Tank Size (Gallons)
Station 61					
Engine 631	2018	Spartan/Smeal	Engine	2,000	750
Reserve Engine 633	2003	American LaFrance	Engine	2,000	750
Medic 621	2006	Ford F-450	Horton Medic Unit		
Haz. Mat. Truck 671	2014	International	Haz. Mat. trailer haul vehicle		
Haz. Mat Trailer 670					
Car 601	2014	Toyota Tundra	Fire Chief		
Car 602	2016	Toyota Tundra	Assistant Fire Chief		
Station 62					
Ladder 642	2008	Smeal	105-foot Quint/Aerial	2,000	500
Brush 682	2005	Chevrolet/Kodiak	Brush Unit	150	300
Medic 622	2016	Ford F-450	Osage Warrior Medic Unit		
Medic 624	2020	Ford F-450	Osage Warrior Medic Unit		
Utility 673	2000	Ford F-350	Utility vehicle and snowplow		

18. A quint fire truck is an apparatus that combines the equipment capabilities of a ladder truck and the water-pumping ability of a fire engine. As its name implies, it features five main tools to carry out firefighting functions: pump, water tank, fire hose, aerial device, and ground ladders.

All KFD apparatus appears to be in good condition with normal wear and tear. Equipment within all apparatus is comprehensive and common with industry trends. Items within appear modern, secure, clean, and in good condition.

One of the biggest factors that can impact the serviceable life of an apparatus is the level of preventive maintenance that it receives. NFPA 1911 provides guidance on this important aspect of fire department support operations. Apparatus manufacturers also identify suggested programs and procedures to be performed at various intervals. As apparatus ages it is reasonable to expect that parts will wear out and need to be replaced. It follows then that maintenance costs and overall operating expenses will increase. As a result, cost history and projected costs for the future must be considered as a factor in determining when to replace, or refurbish, a fire apparatus. In addition, reliability of the apparatus must be considered. Experiencing low downtime and high parts availability are critical factors for emergency equipment maintenance and serviceability. A proactive preventive maintenance program can assist with holding costs to an acceptable level. The Annex Material in NFPA 1911 contains recommendations and worksheets to assist in decision making in vehicle replacement.

The City of Kalispell provides routine vehicle repairs and maintenance to the KFD fleet using the city's maintenance shop. In addition, limited preventive maintenance is completed by some personnel within each of their stations. More complex and/or warranty work on the vehicles is performed by either the dealer of the apparatus, or a regional vendor who is contracted to do the work. Regarding maintenance and repair to apparatus, a few key points to remember are:

- Ensuring that preventive maintenance programs are developed and implemented for fire apparatus according to manufacturer's guidelines and national consensus standards.
- Ensuring that preventive maintenance on fire apparatus is performed and/or overseen by qualified personnel who meet the certification requirements outlined in NFPA 1071, *Standard for Emergency Vehicle Technician Professional Qualifications*.
- Develop and utilize policies and procedures that monitor preventive maintenance and other automotive services performed by vendors.

CPSM noted that annual pump and ladder testing on the apparatus is performed utilizing outside vendors. Test results provide an indicator of apparatus condition and are a valuable tool in budget planning. Often, because of this testing, minor maintenance issues can be resolved which will delay or eliminate the need for major repairs in the future. It is also important to remember that from a safety and performance perspective, this annual testing needs to be completed to ensure the overall rating, capacity, and functionality of the pumps and ladders are reliable during emergency incidents.

The City of Kalispell does maintain a five-year Capital Improvement Plan (CIP) that is reviewed and updated annually. In the FY 2022/2023 fiscal year, the city ordered a new fire pumper at a cost of $907,000. The following table shows the five-year (2024–2028) CIP for the KFD.

TABLE 2-6: KFD Fire Operations CIP, 2024–2028

FIRE DEPARTMENT PROJECT	2024	2025	2026	2027	2028	Total
NEW FIRE ENGINE-PUMPER- Financed for 10 years ($860,000)						$0
PORTABLE-MOBILE RADIO REPLACEMENTS (Contingent on receiving Radio Grant)	$106,000	$106,000				$212,000
NEW BRUSH APPARATUS CHASSIS (Contingent on receiving Radio Grant+ AFG co-pay)	$120,000					$120,000
VEHICLE REPLACEMENT (1/2T Crew Cab)		$65,000		$68,000		$133,000
NEW FIRE ENGINE-PUMPER- For new station paid by impact fees			$950,000			$950,000
LADDER TRUCK REPLACEMENT (20 years of age)					$1,900,000	$1,900,000
STATION 63			$5,500,000			$5,500,000
TOTAL	**$226,000**	**$171,000**	**$6,710,000**	**$68,000**	**$1,900,000**	**$9,075,000**

The next table illustrates the CIP for ambulance-related purchases funded by the EMS fund. In 2023 the city and KFD purchased a new ambulance with cash that will be a 2025 model.

TABLE 2-7: KFD Ambulance CIP, 2024–2028

PROJECT	2024	2025	2026	2027	2028	TOTAL
Transport Ambulance			$310,000		$325,000	$635,000
Total	**$0**	**$0**	**$310,000**	**$0**	**$325,000**	**$635,000**

Fleet Recommendations:

- CPSM recommends new apparatus (including the recently ordered pumper and ambulance) and staff/command vehicles be designed with clean cab concepts.[19] (Recommendation No. 31.)
  - Non-porous waterproof flooring for ease of cleaning.
  - Seat material should be vinyl or other material that reduces absorption of toxic materials and is easier to clean.
  - Filtered ventilation systems; routine cab filter changes.
  - No contaminated equipment (SCBAs, fire hose, contaminated PPE, etc.) should be brought into the cab.

19. Full clean cab concepts: https://www.iaff.org/wp-content/uploads/FFCancer_CleanCab.pdf

- All interior material used in the cab should be easy to clean and designed to repel moisture. The material must also be durable enough to be cleaned weekly with disinfecting agents and/or soap and water.
- All apparatus should have a designated PPE compartment separate from the cab.

- CPSM recommends that after the new ladder scheduled for purchase in FY 2028 is delivered, that the existing quint apparatus be retained as a reserve ladder. This will also help the city's ISO rating and more importantly not leave the city without an aerial when the primary ladder is out of service for any reason, or committed to mutual aid, training, etc. (Recommendation No. 32.)

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KFD FACILITIES

Fire Facilities are designed and intended for housing fire department personnel and applicable equipment to allow the fastest and safest response possible within the specific response area. Strategic distribution of fire facilities ensures effective services and coverage is achieved. That is, response travel times satisfy prevailing community goals and national best practices and standards. Station design and location goes hand-in-hand with strategic fire ground (or patient needs) priorities. [20]

Fire facilities are critical infrastructure within a community. Depending on the scope of services, size, and complexity, other facilities may be necessary to support items such as emergency communications, personnel training, fleet and essential equipment maintenance, and supply storage and distribution. Main headquarters buildings may house conference rooms, computer rooms, an administrative area, training rooms, evidence rooms, civilian offices, etc.

Personnel-oriented needs in fire facilities must enable the performance of 24-hour daily duties in support of response operations. For personnel, fire facilities must have provisions for essential equipment and supplies; space and amenities for administrative office work, training, physical fitness, laundering, meal preparation, and personal hygiene/comfort.

Occupant safety is a key element of effective facility design. This begins with small details such as the quality of finish on bay floors and nonslip treads on stairwell steps to decrease tripping/fall hazards, or use of hands-free plumbing fixtures and easily disinfected surfaces/countertops to promote infection control. Fire facilities should have specialized equipment such as an exhaust recovery system to capture and remove cancer-causing by-products of diesel fuel exhaust emissions and should incorporate best practices for achieving a safe and hygienic work environment. Likewise, facility design should carefully consider lavatories/showers in close proximity of dorm rooms, desired segregations, and break rooms or fitness areas that are remote from sleeping quarters.

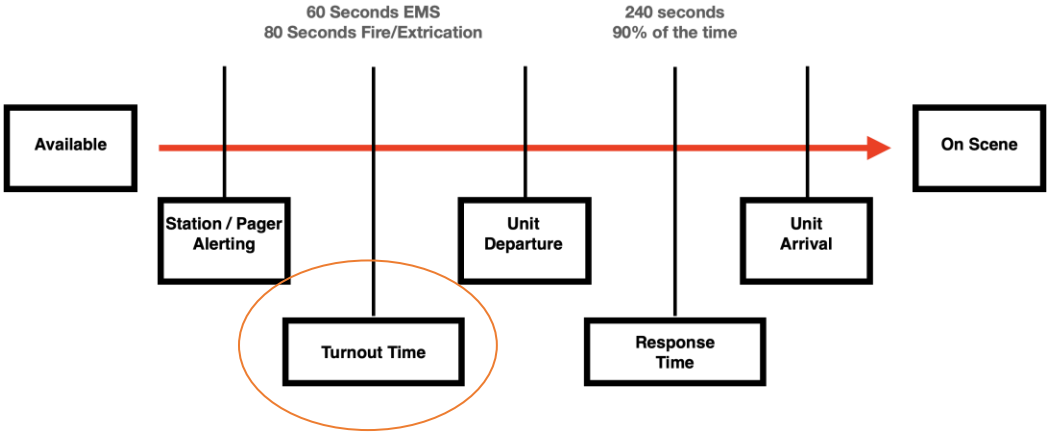
Furnishings, fixtures, and equipment selections should provide thoughtful consideration of the around-the-clock occupancy inherit to fire facilities. Durability is essential, given the accelerated wear and life cycle of systems and goods in facilities that are constantly occupied and operational. Safety and security systems should be installed such as a controlled access system (employee card access for example), closed-circuit TV near entry points, parking lots, employee parking, and in secure rooms such as narcotics storage.

20. FEMA Publications – Fire Facility Designs.

National standards such as NFPA 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Programs*, outlines standards that transfer to facilities such as infection control, personnel and equipment decontamination, cancer prevention, storage of protective clothing, and employee fitness. NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Firefighting and Proximity Fire Fighting*, further delineates laundering standards for protective clothing and facility wear. Laundry areas in fire facilities continue to evolve and are being separated from living areas to reduce contamination. Factors such as wastewater removal and air flow need to be considered in a facility design.

Ergonomic layouts and corresponding space-adjacent planning is critical for fire facilities. Internal adjacency design is driven by response times. The location of the residential and living areas must accommodate quick and clear access to the apparatus room for response. It is essential that crews are able to get from any point of the fire station to the fire apparatus within 80 second up receipt of an alarm (aka: "turnout time") for a fire suppression response or a response requiring full personal protective clothing (PPE) and within 60 seconds for a medical response.[21] The following graph shows the complete response algorithm.

FIGURE 2-23: Fire Service Response Time Algorithm – Turnout Time



Fire facilities often serve as a de facto "safe haven" during local community emergencies, and also serve as likely command center for large-scale, campaign emergency incidents. Therefore, design details and construction materials and methods should embrace the goal of having a facility that can perform in an uninterrupted manner despite prevailing climatic conditions, natural disasters, or disruption of utilities. Programmatic details, such as the provision of an emergency generator connected to automatic transfer switching—even going as far as to provide tertiary redundancy of power supply via a "piggyback" roll-up generator with manual transfer (should the primary generator fail)—provide effective safeguards that permit the fire department to function fully during local emergencies when response activity predictably peaks. Fire facilities should conform to all building and fire codes—fire facilities should have fire sprinkler systems.

Fire facilities are exposed to some of the most intense and demanding uses of any public local government facility, as they are occupied 24 hours a day by a crew of three to six or more. Fire facilities must enable performance of daily duties in support of response operations such as vehicle maintenance and repair areas, and storage areas for essential equipment and supplies.

21. 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*.

Fire facilities shall be accessible and should be welcoming. Parking and walkways to the lobby of the station and emergency phone should follow ADA requirements to allow all members of the community to be able to approach the station for assistance. Station site configuration, building orientation, and exterior façade should provide a clear understanding of the location a community member should go to receive help, often the primary entry of the facility. Fire facilities should have a marquee or electric signs displaying important community fire and life safety information.

Equipment-oriented needs in fire facilities are critical—fire stations must be designed and constructed to accommodate both current and forecast trends in fire service vehicle type and manufactured dimensions. A facility must have sufficiently sized bay doors; circulation space between garaged vehicles; departure and return aprons of adequate length and turn geometry to ensure safe response (or preferred drive-through apparatus bays); and oil separator floor drains to satisfy environmental concerns. Vehicle bay areas should also consider future tactical vehicles that may need to be added to the fleet to address forecast response challenges, even if this consideration merely incorporates civil design that ensures adequate parcel space for additional bays to be constructed in the future.

In sum, today's modern fire stations are safe, high-tech, and high-functioning community infrastructure, and meet all government guidelines and regulations. For the emergency personnel who inhabit these stations, these buildings are, in a sense, a home away from home.

The City of Kalispell currently operates out of two fire stations strategically located in the city.

FIGURE 2-24: KFD Fire Stations

Kalispell Fire Station 61	
	
Address	312 1st Avenue, East
Year Built	1979/2010
Age	44/13
Square Footage	15,326 Square Feet
Number of Bays	4 - Double Deep, 2 - w/ Drive Thru Capability 1 – Single Deep w/ No Drive Through Capability
Number of Annual Responses	2,911
Attributes	Serves as a fire station and Fire Administration facility. With revenue from a $1.3M FEMA grant, the station was reconfigured and updated in 2010 including improved training and day room space, installation of improved sleeping accommodations.

Kalispell Fire Station 62	
	
Address	255 Old Reserve Drive
Year Built	2006
Age	17
Square Footage	12,450
Number of Bays	3 – All Double Deep w/ Drive Through Capability
Number of Annual Responses	2,997
Attributes	New, modern, state-of-the-art facility. This station also houses a satellite office for the Kalispell Police Department and a training room that is available to the surrounding community.

The CPSM team toured both city fire stations. Our tour and review of the city's fire stations was not intended or implied to be a complete facility assessment (aka: an engineering / architecture review) but rather an observation of general condition and efficiencies.

We visited both stations and found them to be clean and well maintained. It is obvious the personnel assigned to them take pride in the appearance of their facilities. Both stations are equipped throughout with automatic fire detection and suppression (sprinkler) systems, emergency generators, source capture vehicle exhaust extraction systems, and have gender-specific bathroom and sleeping facilities.

Station 61 was initially constructed more than 50 years ago when the KFD and its mission were very different. Although the station has been remodeled and renovated twice, in 2010, and again in 2021, for the construction of individual dormitories for employee privacy, the fire department facilities, including administrative offices, are all located on the second floor. This makes it difficult, if not impossible, for fire department personnel to interact with the public. In addition, the layout does not provide direct or easy access from the second floor down to the apparatus bays on the first floor. This can increase turnout times. It was reported to CPSM that this station has ongoing issues with both its HVAC systems, experiences frequent breakdowns of apparatus bay doors, and has insufficient emergency generator coverage.

Station 62, if anything, has been underutilized with KFD's staffing challenges. It was reported to CPSM that the boilers, HVAC system, and exterior lighting need to be replaced. Funds have been budgeted for these projects.

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SECTION III. ALL-HAZARDS RISK ASSESSMENT OF THE COMMUNITY

An all-hazards Fire and EMS risk assessment is a compressive, participatory process for assessing hazards, vulnerabilities, and overall risks in a community. The primary purpose of a community risk assessment is to provide data to better inform local decisions on the planning and implementation of risk reduction measures.

A community risk program (CRR) is a process used to identify and prioritize local risks, followed by the integrated and strategic investment of resources to reduce their occurrence and impact. [22] A CRR is a process to help communities find out what their risks are and develop a plan to reduce the risks viewed as high priority. The steps involved in the CRR are conducting a Community Risk Assessment (CRA), developing a CRR plan, implementing the plan, and evaluating the plan.

The CRA is a comprehensive evaluation that identifies, prioritizes, and defines the risks that pertain to the overall community. It is a critical first step in the CRR process and results in a full understanding of the community's unique risks, capabilities, and characteristics. An all-hazards approach is an integrated approach to emergency preparedness planning that focuses on capacities and capabilities that are critical to preparedness for a full spectrum of emergencies or disasters.

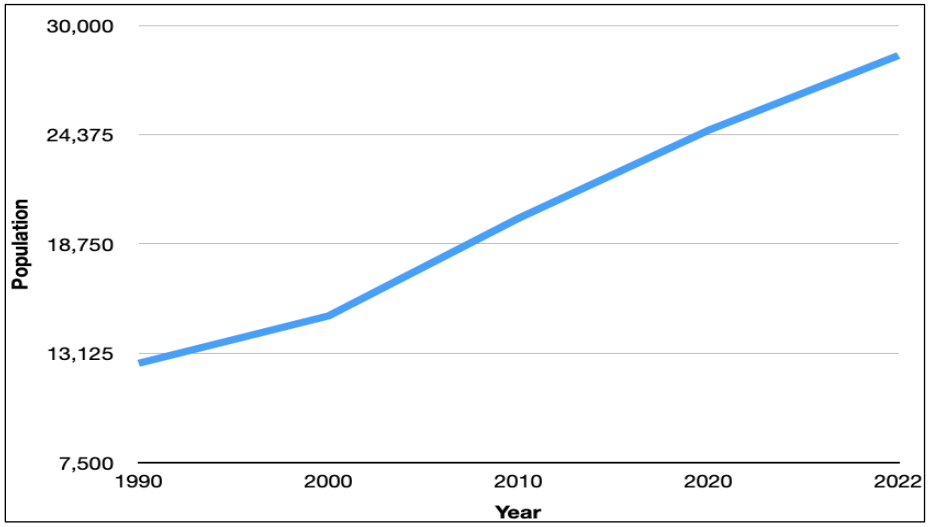
POPULATION AND COMMUNITY GROWTH

The City of Kalispel resides within Flathead County in northwest Montana, and is centrally located between Flathead Lake, Whitefish Mountain Resort, and Glacier National Park. Kalispell encompasses and area of is 11.72 square miles and has a population of 28,450.[23] The population density in the City of Kalispell is 1,955 per square mile.[24] There has been a 15 percent increase in population since the 2020 census and nearly a 25 percent increase since 2018 when CPSM completed a Fire and EMS feasibility study for the city. Kalispell is expected to grow at a rate of 6.13 percent annually.[25] From July 1, 2020, to July 1, 2021, Kalispell added 3,681new residents, a 3.5 percent growth rate.[26]

The following figure illustrates Kalispell's population increase since 1990.

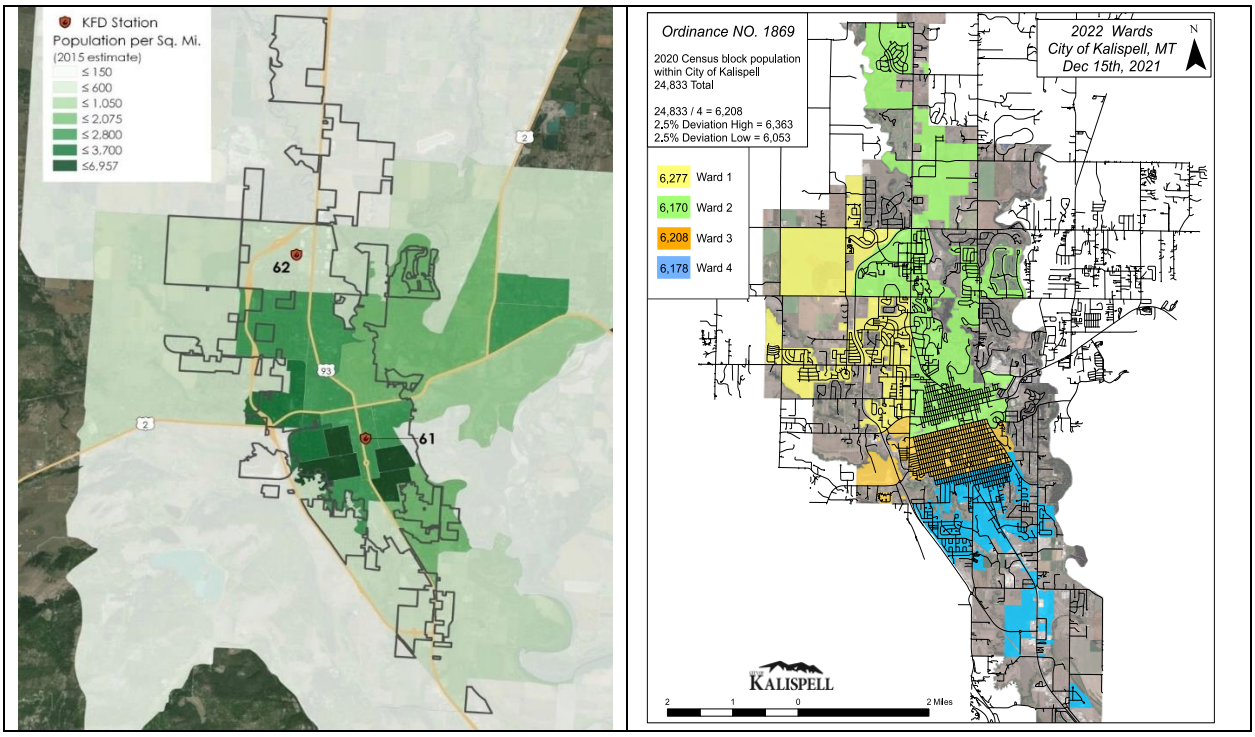
22. NFPA 1300, *Standards on Community Risk Assessment and Community Risk Reduction Plan Development*
23. https://www.census.gov/quickfacts/fact/table/kalispellcitymontana/INC110221
24. https://www.census.gov/quickfacts/fact/table/kalispellcitymontana/INC110221
25. https://worldpopulationreview.com/us-cities/kalispell-mt-population
26. City of Kalispell Budget Documents

FIGURE 3-1: Kalispell Population Increase, 1990–2022



The following maps illustrate Kalispell's population growth since 2018 (CPSM last study period). The map on the left describes the population per square mile in 2018. The map on the right describes the division of municipalities into wards adopted by the city in 2021.[27]

FIGURE 3-2: Kalispell Population Increase Illustrated, 2018–2022

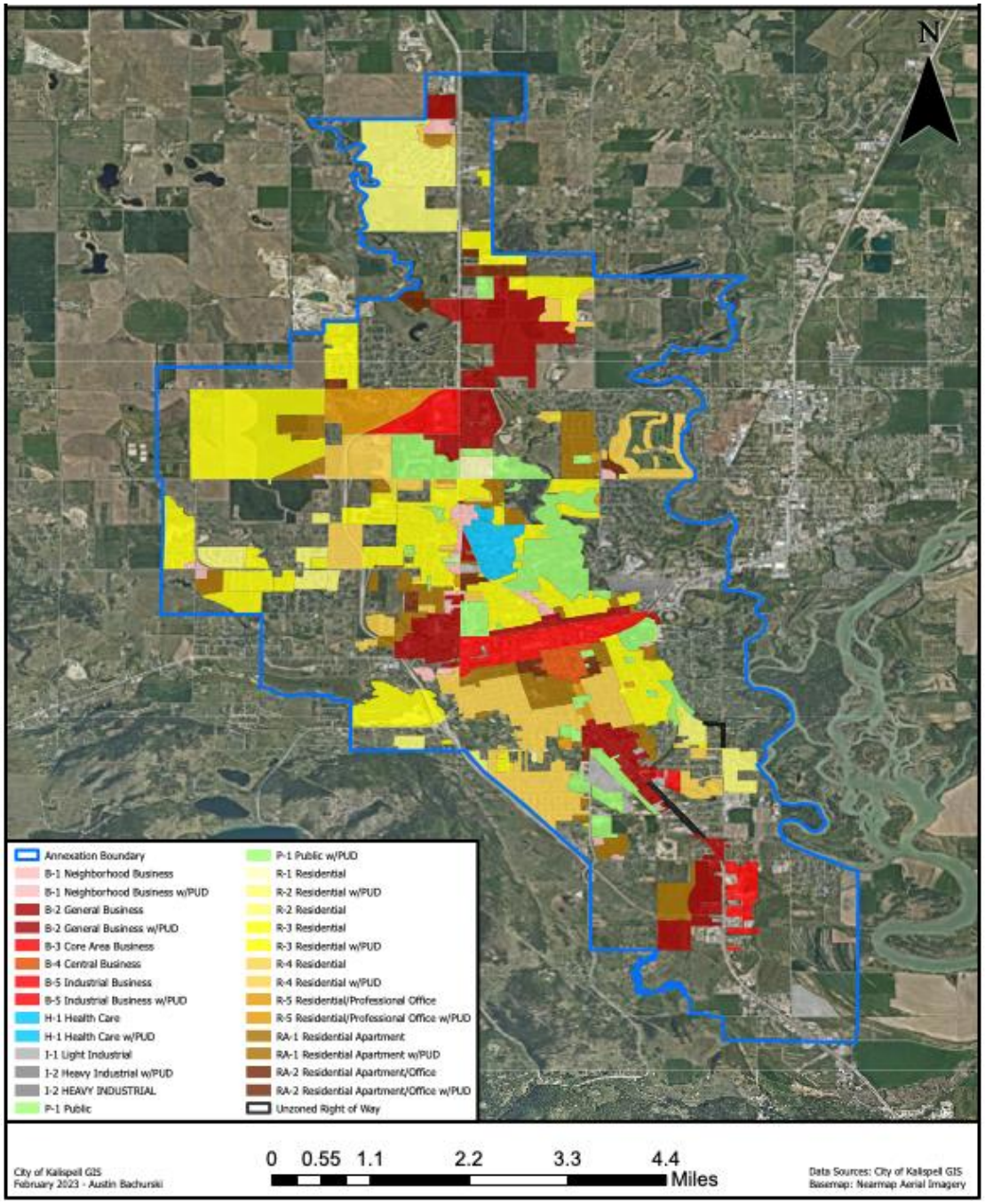


The city is divided into zones or districts, as shown on the official zoning map in the following illustration. It also illustrates annexation boundaries. Within such districts, the city will regulate and

27. City of Kalispell Ordinance No 1869, November 2021

restrict the creation, construction, reconstruction, alteration, repair, or use of buildings, structures, or land.

FIGURE 3-3: Kalispell Zoning Districts and Annexation Boundaries[28]



28. City of Kalispell GIS, February 2023

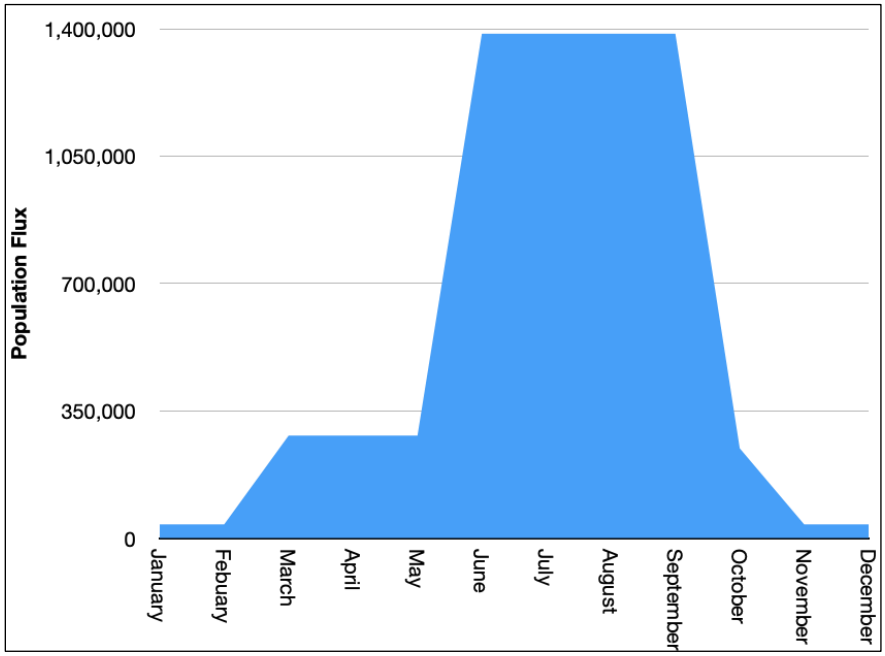
Kalispell is a central hub for healthcare, shopping, advanced education, kids' sports fields, etc. There has been an addition of a new semi-pro baseball team and stadium, Under the Big Sky concert events, and other events that are draws to the Kalispell areas.[29] Moreover, with its close proximity to Yellowstone and Glacier national parks (3.9 million visitors[30] and 2.9 million[31] visitors, respectively), Kalispell is a thriving tourist destination. It is estimated that 1.9 million visitors spent at least one night in Kalispell during 2022 and stayed on average five nights within the state.[32] This is a notable 136 percent increase in transient visitors since the 2018 study, when the visitor population was estimated at 803,000. It should be noted that transient visitor increase anomalies included the COVID pandemic, which at first lowered the number of visitors, then expanded the number of visitors greatly when pandemic restrictions were eased. The very popular TV show *Yellowstone* is said to have significantly increased the tourist traffic to the parks.[33] During peak seasons, tourist head to the historic downtown Kalispell area, which offers a wide variety of small retail shops and eateries. Conrad Mansion Museum and Hockaday Museum of Art are popular in Kalispell as are historical landmarks including the Carnegie Library, Masonic Temple, Calbick Block, and the Adams Building.

Kalispell's peak tourist season is June through September, with the fall, winter, and spring visitations spread out fairly evenly. Lodging properties in Kalispell include 23 hotels with 1,938 rooms.[34] Short-term rentals (STRs) such as Airbnb and VRBO are increasing along with traditional lodging. As of February 2022, about 260 STRs were active in Kalispell city limits, a 54.8 percent increase since 2021. Kalispell STR activity during the peak summer months shows an average occupancy rate of 86 percent.[35]

As stated above, Yellowstone National Park has about 4 million visitors a year. Using Yellowstone Park entrance data ("average number of visits"),[36] CPSM determined the percent of visitors to the park per season. (Similar comparison was done with Glacier Park data.)[37] Not surprisingly, about 80 percent of the visitors are in the summer months (June through September), 12 percent of the visitors are in the spring, six percent in the fall, and two percent in the winter. The following figures illustrate the seasonal influx of the tourist population in Kalispell.

29. Fire Chief.
30. https://www.statista.com/statistics/254231/number-of-visitors-to-the-yellowstone-national-park-in-the-us/
31. https://www.statista.com/statistics/253875/number-of-visitors-to-us-glacier-national-park/
32. Dana Medler, Executive Director, Discover Kalispell.
33. UM, Bureau of Business and Economic Research (Paramount's 'Yellowstone' generates 2.1 M visitors)
34. Kalispell Chamber of Commerce.
35. https://kalispellchamber.com/wp-content/uploads/2022/04/discover-kalispell-fy23-marketing-plan.pdf
36. https://www.statista.com/statistics/254231/number-of-visitors-to-the-yellowstone-national-park-in-the-us/
37. https://www.statista.com/statistics/253875/number-of-visitors-to-us-glacier-national-park/

FIGURE 3-4: Kalispell Population Influx by Seasons



In terms of fire and EMS risk, the age and socio-economic profiles of a population can have an impact on the number of requests for fire and EMS services. Evaluation of the number of seniors and children by fire management zones can provide insight into trends in service delivery and quantitate the probability of future service requests. In a 2021 National Fire Protection Association (NFPA) report on residential fires, the following key findings were identified for the period 2015–2019:[38]

- Males were more likely to be killed or injured in home fires than females and accounted for larger percentages of victims (57 percent of deaths and 55 percent of injuries).
- The largest number of deaths (19 percent) in a single age group was among people ages 55 to 65.
- 59 percent of the victims in fatal fires were between the ages of 39 and 74, and three of five (62 percent) of the non-fatal injured were between the ages of 25 and 64.
- Slightly over one-third (36 percent) of the fatalities were age 65 and older; only 17 percent of the non-fatality injured were in that age group.
- Children under the age of 15 accounted for 11 percent of the home fire fatalities and 10 percent of the injuries.
- Children under the age of 5 accounted for 5 percent of the deaths and 4 percent of the injuries.
- Adults of all ages had a higher rate of non-fatal fire injuries than children.
- Smoking materials were the leading cause of home fire death overall (23 percent) with cooking ranking a close second (20 percent).

38. M. Ahrens, R. Maheshwari, "Home Fire Victims by Age and Gender" (Quincy, MA: NFPA 2021

- The highest percent of fire fatalities occurred while the person was asleep or physically disabled and not in the area of the fire origin, key factors to vulnerable populations.

In the City of Kalispell, the following age and socioeconomic factors are considered herein when assessing and determining risk for fire and EMS preparedness and response, notwithstanding tourism impacts:

- Children under the age of five represent 7.7 percent of the population.
- Persons under the age of 18 represent 24.4 percent of the population.
- Persons over the age of 65 represent 17 percent of the population.
- Female persons represent 51.4 percent of the population.
- There are 2.45 people per household.
- The median household income in 2020 dollars was $55,411.
- Those living in property make up 10.85 percent of the population.

Demographically, Kalispell has an older population—17 percent of the total population is over 65 years of age, a factor that likely generates numerous several EMS calls, many of which are covered under Medicare/Medicaid.[39] Older individuals are at a higher likelihood of having pre-existing medical conditions or limited mobility, which can also diminish their capacity to effectively respond to natural disasters.

Black or African American alone represents 1.1 percent of the population. The remaining percentage of population by race includes White alone at 90.2 percent, American Indian or Alaska Native alone at 1.1 percent, Asian alone at 1.5 percent, two or more races at 4.5 percent, and Hispanic or Latino at 4.1 percent.

The average household income in Kalispell is $55,411 and a poverty rate of 10.85 percent.[40] There is often a connection between poverty and elevated fire risk (and use of the EMS systems). Factors associated with poverty and elevated fire risk include family stability, crowdedness, the percentage of owner-occupied homes, older housing, the proportion of vacant houses, and the ability to speak English.[41] Successful programs to reduce fire incident rates have been introduced in high-poverty areas. A significant impact on KFD calls for service (fire and EMS) has been an increase in homeless population relocating to Kalispell.[42] Kalispell has about 234 homeless persons in the city, which is about 20 percent of Montana's 1,406 homeless persons. [43] [44]

There is a considerable number of current and planned development projects in the City of Kalispell. The following table shows building permits issued since CPSM's last study (all permits).

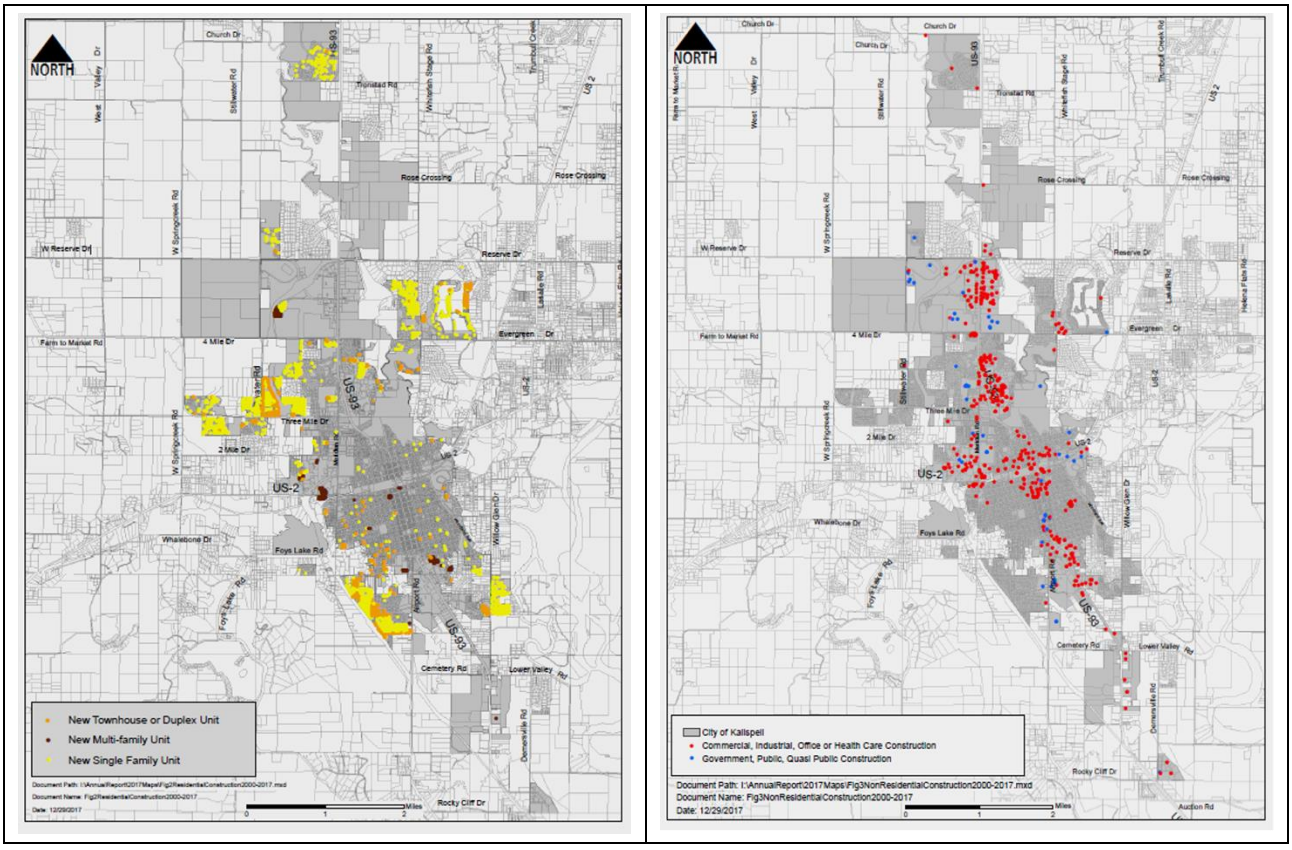
39. Fire Chief.
40. https://www.census.gov/quickfacts/fact/table/kalispellcitymontana/INC110221#INC110221
41. https://www.nfpa.org/~/media/Files/News and Research/Fire statistics and reports/US Fire Problem/poverty.pdf
42. Fire Chief.
43. https://endhomelessness.org/homelessness-in-america/
44. https://dailyinterlake.com/news/2023/feb/03/non-profit-orgs-conduct-annual-homeless-survey/

TABLE 3-1: City of Kalispell Building Permits, 2012–2022[45]

Type of Building Permit Issued	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Commercial, Office, Industrial	42	67	79	75	126	79	80	67	58	67	39
Residential	113	164	156	163	173	180	181	210	340	221	149
Public and Government	10	15	13	16	3	10	12	3	4	9	9
Heath Care	13	11	21	22	21	21	7	1	4	3	3
Total	**178**	**257**	**270**	**276**	**323**	**290**	**290**	**281**	**406**	**300**	**200**

Note: Gray indicates previous CPSM review period. Blue indicates more recent data.

FIGURE 3-5: Residential Development (Left) and Commercial, industrial, Healthcare, and Government Development (Right), 2012–2018



The following table shows a steady number of significant commercial projects and added square footage since CPSM's last study.

45. 2022 Construction, Subdivision and Annexation Report, City of Kalispell

TABLE 3-2: City of Kalispell Retail, Commercial, and Industrial Projects, 2018–2022[46]

Commercial Project	Description	Square Footage
4th and Zuri 55 4th Ave. W N,	Mixed Use (remodel)	13,149
Black Kaiju 313 2nd Ave. W	Retail	5,710
Chipotle 2264 US-93	Restaurant	2,325
CHS Grain Elevator 700 Rial Park Rd.	Industrial / Agriculture	2,000
CHS Fuel Station 700 Rail Park Dr.	Fuel Bays	N/A
CHS Storage 700 Rail Park Dr.	Storage	17,428
CHS Warehouse 700 Rail Park Dr.	Storage	25,000
Clarks North Hanger 1000 Ryan Lane	Airport / Airplane Hanger	7,500
Clarks South Hanger 30 Ryan Lane	Airport / Airplane Hanger	9,480
Dee O Gee 635 Treeline Rd., Ste. 2	Retail	4,100
FedEx 165 Schoolhouse Loop	Shipping Facility (Trailer)	1,410
Grease Monkey 665 Treeline Rd.	Auto Service	3,144
Kohl's 2248 US-93	Retail	39,181
My Place 755 Treeline Rd.	Hotel	37,529
NW Drywall 1105 Oregon Ave.	Industrial	29,800
Old Navy 2250 US-93	Retail	12,573
Panera Bread 2240 US-93	Restaurant	4,877
REI 2270 US-93	Retail	20,264
Sherwin Williams 52 1st Ave.	Retail	3,999
Skalsky Hanger 90 Ryan Lane	Airport / Airplane Hanger	9,480

46. 2022 Construction, Subdivision and Annexation Report, City of Kalispell

Commercial Project	Description	Square Footage
Skips Hanger 20 Ryan Lane	Airport / Airplane Hanger	13,650
Spring Prairie Shops 2495 US-93	Retail	7,188 (2018) 4,524 (2019)
Sunrift Pub House 55 1st Ave. W N	Restaurant (remodel)	3,858
Taco Bell 535 E. Idaho St.	Restaurant	2,101
Town Pump 445 W. Idaho St.	Tavern / Casino	17,440
Treeline Center (5) 625 Treeline Rd.	Retail	6,155
Treeline Retail Center 635 Treeline Rd.		7,000
UPS 1151 N. Meridian Rd.	Shipping Facility (expanded)	52,85
World Gym 555 E Swift Creek Way	Retail / Gym	17,500

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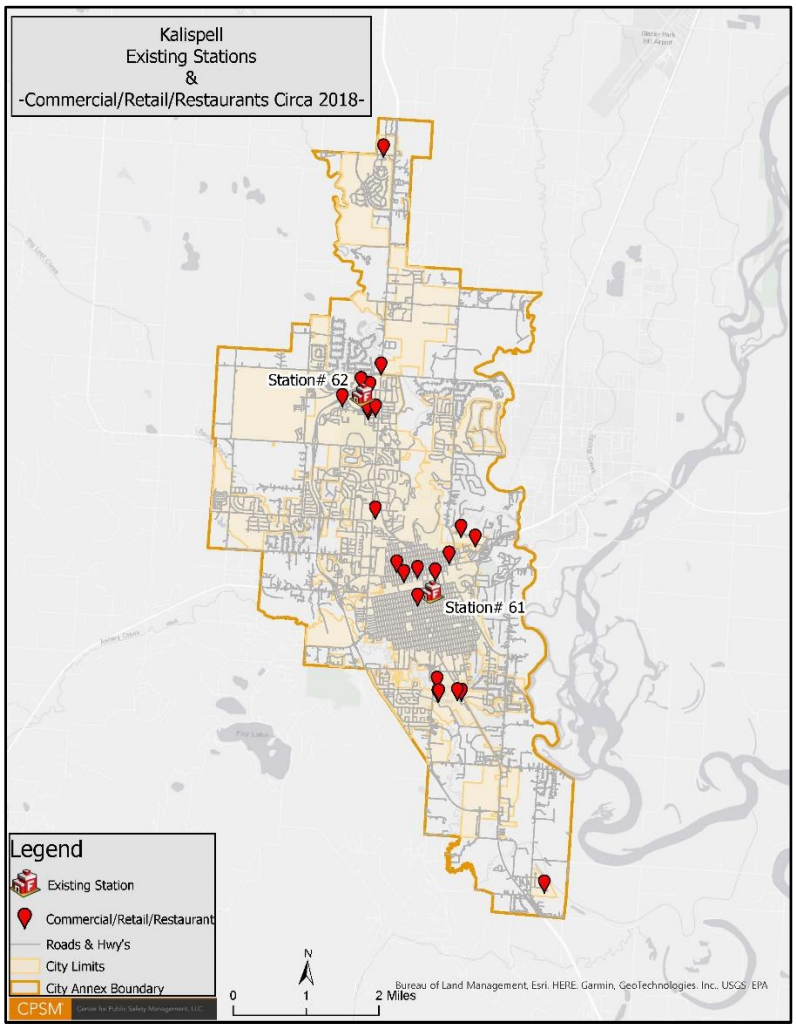
FIGURE 3-6: Map of City of Kalispell Retail, Commercial, and Industrial Projects, 2018–2022



The following table shows a steady number of residential projects since CPSM's last study, as well as projects in progress.

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TABLE 3-3: City of Kalispell Residential Projects Completed or In Progress, 2018–2022[47]

Residential Project and Subdivisions	Description
Stillwater Village 1051 Savannah Rd.	314 Apartments
Northland Subdivision Hwy 93 / Northland Dr.	100 SFD Subdivision
Silver Brook Apartments 150 Lily Dr.	229 Apartments
Owl View Landing 201, 202, 205 206, 207 Sawyer Lane	40 Apartment Style Condominiums
Junegrass Place North Meridian Rd.	138 Apartments
The Silos Fifth Avenue West	200 Apartments, Four Stories with Roof-top Restaurant
Stillwater Crossings 1041 Savannah Rd.	Apartments
Meridian Court Apartments 1 Meridian Court	Apartments
Mountain View Subdivision Foys Lake Rd.	407 Single Family Dwelling Subdivision
Meadows Edge Subdivision 1120 Farm Rd.	
Jaxon Ridge 702 S. Woodland Dr.	24 SFD Single Family Dwelling Subdivision
Creekside Samaritan House 124 9th Avenue West	Homeless Shelter
Commons (Gateway Mall) 110 Financial Drive / Highway 2 West	42 Apartments (residence 55+)
Hayden Tanner Fourth Avenue	80 Mixed occupancies (Apartments and Townhomes with Restaurant and Retail Space)
KM Building Refurbish Third Street West and Main Street	Five-story, 79-Room, 86,000 Square-Foot Boutique Hotel with Roof-Top Bar

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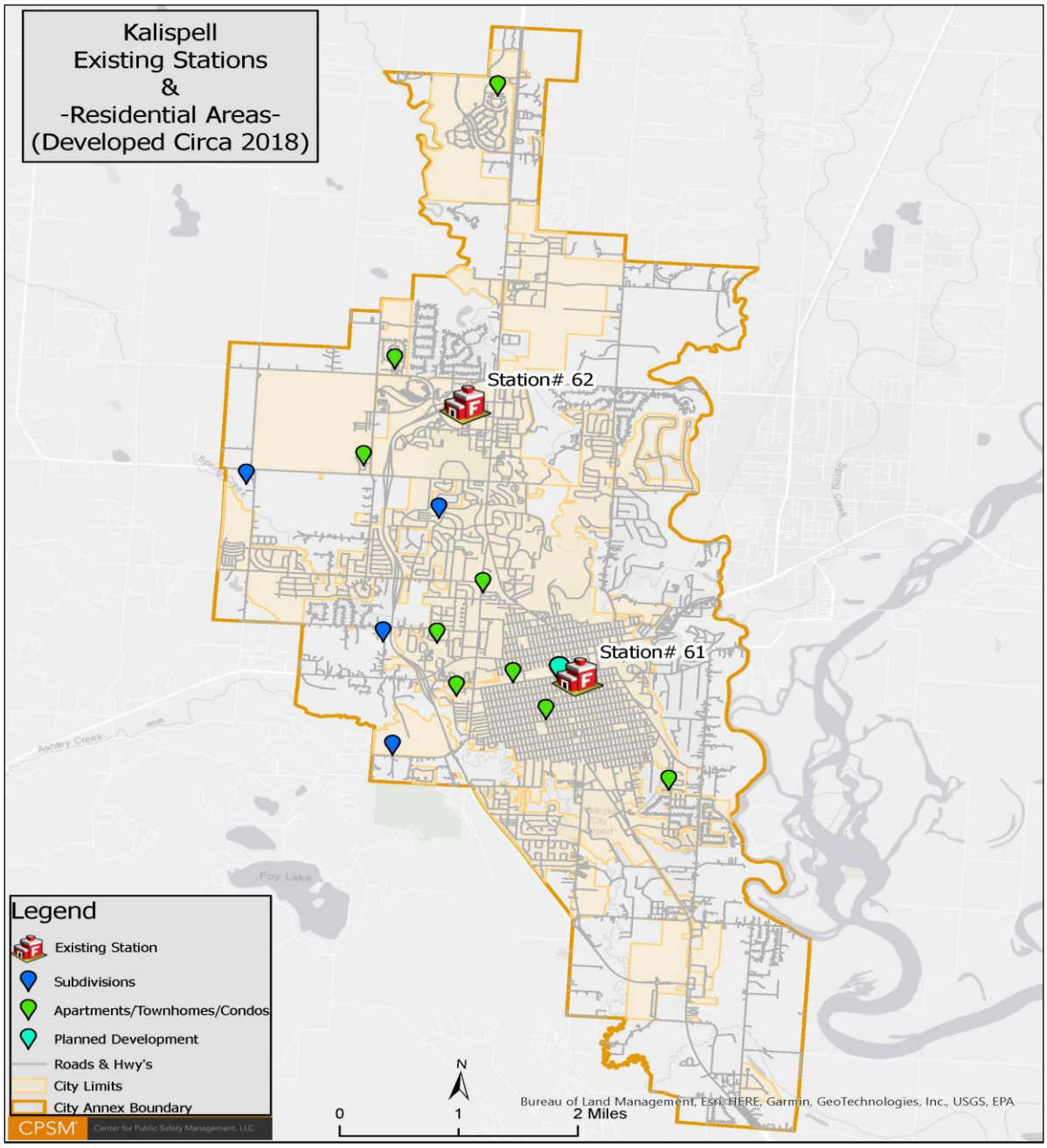
47. 2022 Construction, Subdivision and Annexation Report, City of Kalispell

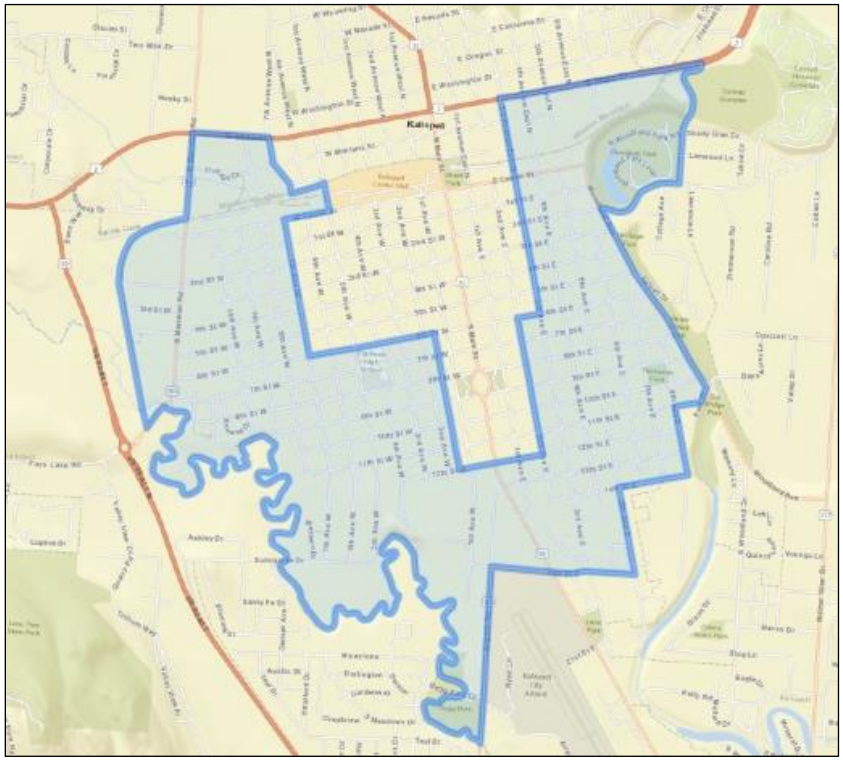
FIGURE 3-7: Map of City of Kalispell Residential Projects Completed or In Progress, 2018–2022



Opportunity Zones are intended to encourage long-term private investment in low-income communities. Opportunity Zones provide a federal tax incentive for taxpayers who reinvest unrealized capital gains into "Opportunity Funds," which are vehicles dedicated to investing in low-income areas called "Opportunity Zones."[48] The State of Montana has 25 designated Opportunity Zones in 25 low-income areas. Kalispell has one area dedicated to Opportunity Zoning, as shown in the following figure.

48. https://www.kalispell.com/615/Community-Development

FIGURE 3-8: City of Kalispell "Opportunity Zone"



The City of Kalispell is a prime location for recreational activities that attract millions of visitors each year to the region.[49] Therefore, the most common employment sectors in Kalispell are retail trade (2,137 people), healthcare & social assistance (2,053 people), and hospitality (1,060 people).[50] The following table illustrates Kalispell's largest employers.

TABLE 3-4: Largest Employers in Kalispell[51]

Employer	Number of Employees
Logan Medical Center	> 1000
Weyerhaeuser	500 to 999
Health Center Northwest Applied Materials Teletech Glacier Bank Whitefish Mountain Resort Super 1 Foods Walmart Logan Health	250 to 499

49. https://kalispellchamber.com/wp-content/uploads/2019/02/2018-annual-report_final.pdf
50. https://datausa.io/profile/geo/kalispell-mt/
51. City of Kalispell 2019 Comprehensive Annual Financial Report.

What this data tells us: The large infusion of visitor population, combined with significant growth, combined with an aging population are all of significant relevance to Kalispell's emergency services.

ENVIRONMENTAL FACTORS

The City of Kalispell is prone to and will continue to be exposed to certain environmental hazards that may impact the community. Identifying and assessing impacts of local hazards in a community is important; agencies can participate in county-wide and state-wide mitigation efforts and prepare local communities for disasters (all-risk).

The natural, manmade, and technological hazards are currently being evaluated in the 2023 Montana Hazard Mitigation Plan (MHMP).[52] In the western region of the state (Flathead County / Kalispell area), wildland fires, severe weather, flooding, earthquakes, drought, haz-mat, disease, landslide/avalanches, dam failures, terrorism, violence, civil unrest, cyber security, and volcanic ash are identified as potential hazards.

The following table places these environmental factors in order of probability; these factors are then discussed in greater detail.

TABLE 3-5: Potential Environmental Factors for Kalispell[53]

Environmental Factor	Geographical Area	Potential / Severity	Probability
Wildland Fire	Extensive	Critical	Highly Likely
Severe Weather	Extensive	Limited	Highly Likely
Flooding	Significant	Critical	Likely
Earthquake	Significant	Limited	Likely
Drought	Extensive	Critical	Likely
Haz-Mat	Limited	Limited	Likely
Disease	Extensive	Critical	Occasional
Landslides / Avalanches	Limited	Negligible	Occasional
Dam Failures	Limited	Critical	Occasional
Terrorism, Violence, Civil Unrest, Cyber Security	Significant	Critical	Occasional
Volcanic Ash	Extensive	Limited	Unlikely

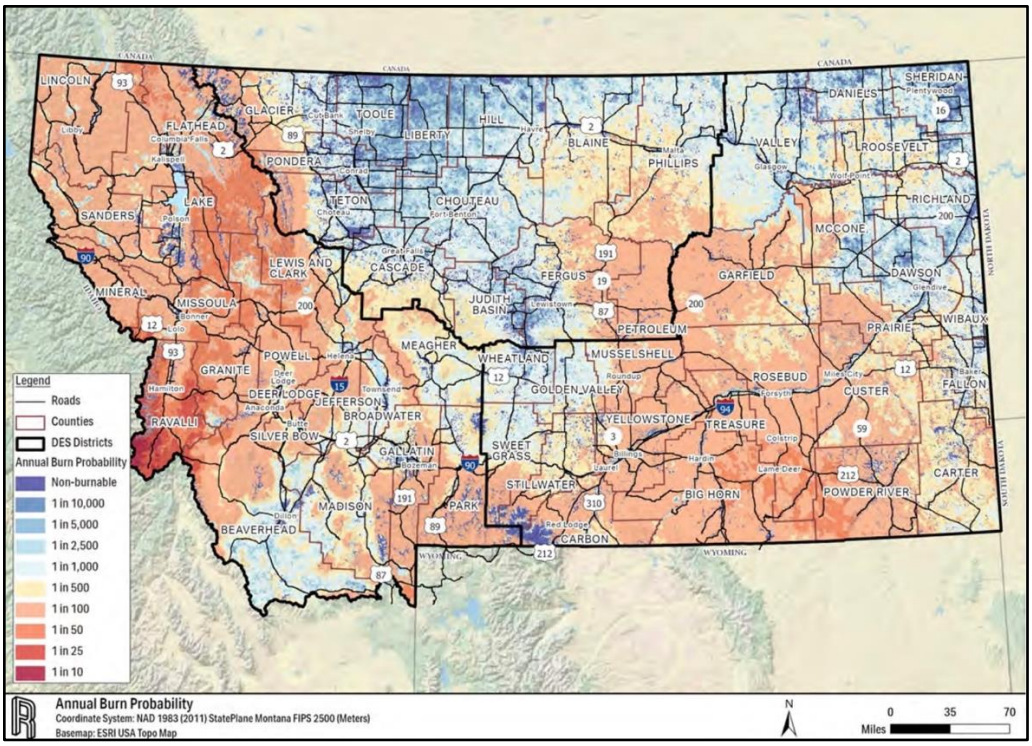
Wildland and Rangeland Fires

A wildland or rangeland fire is defined as any fire occurring on grassland or forestland, regardless of ignition sources. Three factors influence wildland fire behavior: weather, topography, and fuel. These components can increase the likelihood of a fire starting, its intensity, the speed and direction in which it travels, and the ability to control and extinguish it. Quantitatively, the wildfire hazard is measured by two main factors: 1) burn probability (or likelihood of burning), and 2) fire intensity (measured as flame length, fire line intensity, or other similar measures). Longer fire seasons caused by changing climate, lower precipitation, and reduced snowpack are

52. Montana Hazard Mitigation Plan (2023).
53. https://des.mt.gov/Mitigation/DRAFT_2023_MT_MHMP-20230522-11.pdf

contributing to the increased level of fire activity in Montana. Anthropogenic and forest health are also major issues which increase fire probability and intensity.

FIGURE 3-9: Wildland Fire Probability, State of Montana



Many rural areas of Flathead County are located within the Wildland Urban Interface (WUI). A WUI is defined as a zone of transition between unoccupied land and human development. It is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.[54] Any development that occurs outside city limits would therefore be within the WUI.[55] While the city is in an urban setting, fire embers play a large role in spreading wildfires because they easily become airborne. During a large fire with strong winds, embers can start spot fires several miles away from the fire front. The following figure shows WUI influence specific to Flathead County and the City of Kalispell.

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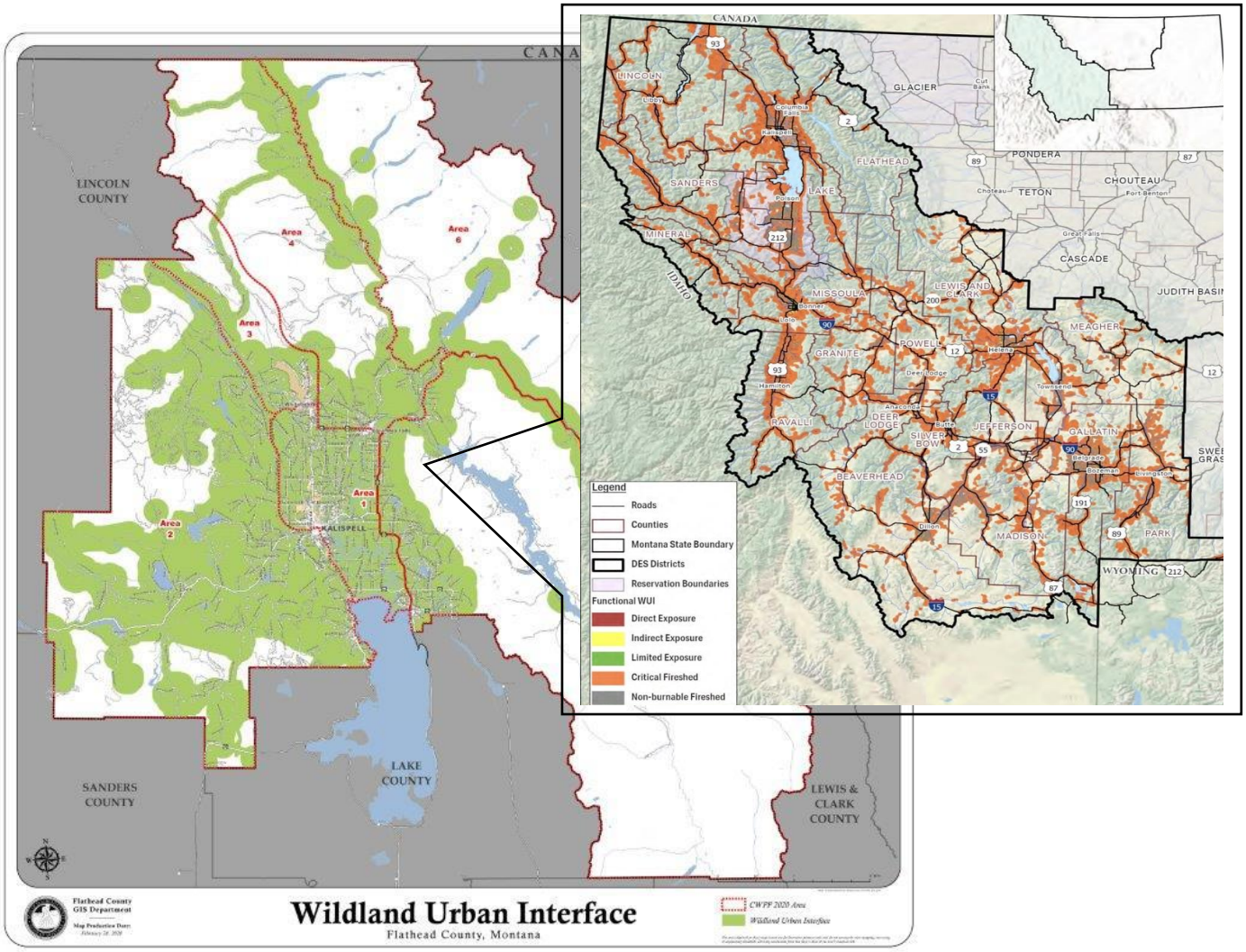
54. https://www.usfa.fema.gov/wui/what-is-the-wui.html
55. Flathead County Office of Emergency Services.

FIGURE 3-10: WUI Influence, Flathead County / Kalispell



Severe Weather, Flooding, Drought, Landslides, Avalanches

Severe winter weather typically causes drifting snow, road closures, trees falling into power lines, widespread power outages, increased motor vehicle accidents, and possible school closures. Cold waves cover parts of Montana on average 6 to 12 times a winter with temperatures well below zero accompanied by strong winds with blowing snow. Large accumulations of snow are also possible, increasing the risk of trees and/or branches falling onto roads, falling on vehicles and buildings, and impacting public utility lines. High wind events with debris covering roadways and power outages impact the ability of the public to travel. Travel is impacted by heavy rain and the risk of flooded roadways; air travel is impacted by high winds and or lightning. Significant flooding can cause damage to infrastructure within inundated areas. Duration of flooding also plays a major role in flooding impacts, often ranging from a few hours to many days. Flathead County experiences high water events almost yearly.

While much of the state is entering the third year of drought, conditions dramatically improved from one year ago as the state experienced higher than average rain and snowpack season.

Still, drought conditions in the state of Montana are a common climate event.[56] Floods are the result of a multitude of naturally occurring and human-induced factors, but they all can be defined as the accumulation of too much water in too little time in a specific area. Types of floods that affect Montana include regional floods, flash floods, dam failure, and ice-jam floods.

Earthquake

A belt of seismicity known as the Intermountain Seismic Belt extends through western Montana, from the Flathead Lake region in the northwest corner of the State to Yellowstone National Park and continues southward through Yellowstone Park.[57] This seismic source zone includes the City of Kalispell as well as the Cities of Missoula, Helena, Bozeman, and Livingston (all of which are rapidly growing communities). The following table illustrates magnitude 3.0 and above earthquake activity within the last eight years in close proximity to the City of Kalispell.

TABLE 3-6: Seismic Activity in Close Proximity to Kalispell

Date	Location	Magnitude
4/11/2014	Somer Bay	3.6
11/11/2014	SE Happy's Inn	3.7
12/1/2014	SE Happy's Inn	3.5
4/11/2015	Haskill Basin	3.5
11/15/2015	Haskill Basin	3.9
9/14/2017	NNE Olney	3.0
1/22/2018	Bigfork	3.0
4/10/2018	SSW Stryker	3.3
1/2/2021	ENE Stryker	3.2

Montana's historical earthquakes demonstrated their destructive effects, which include landslides, liquefaction resulting in uneven ground settling, flooding, and damage to homes and public buildings, dams, irrigation systems, the power grid, communications systems, and transportation systems. Seasonal tourism increases exposure to seismic hazards in all areas, but the greatest exposure is in the Yellowstone National Park-Hebgen Lake region, where several million people visit annually. The following figure shows regional earthquakes in the past 41 years of up to 5.0 magnitude and earthquakes above 5.0 magnitude in the past 125 year.

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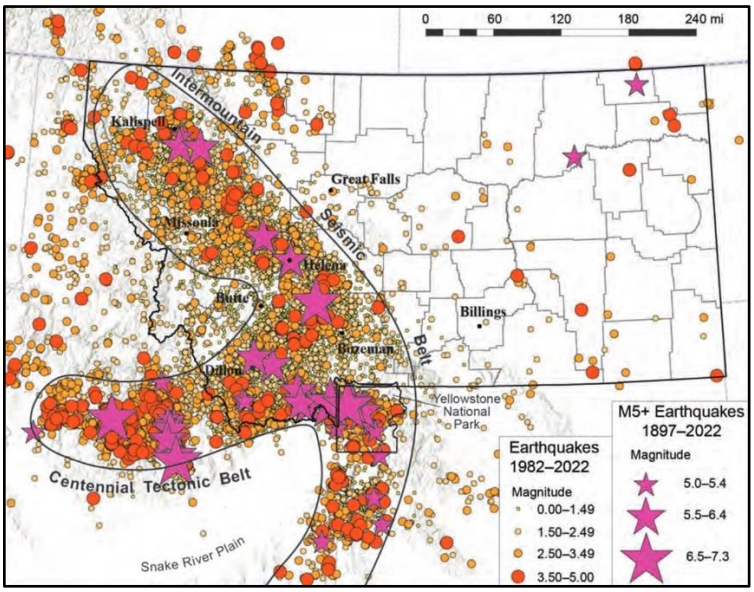
56. https://www.drought.gov/states/montana#drought
57. https://pubs.er.usgs.gov/publication/70029992

FIGURE 3-11: Historical Regional Earthquakes



Hazardous Material Incident

The most likely locations for larger hazardous material incidents are along Montana's highways, railroads, and pipelines. Hazardous materials from fixed facilities and transportation incidents pose possible threats within the city. Locations within Kalispell that report hazardous materials include:[58]

- CHS, 700 Rial Park Drive.
- City Services, 640 West Montana Street.
- UPS, 1151 North Meridian Road.
- FedEx, 2425 Highway 93 South.
- FedEx, 164 School House Loop.
- Car Quest, 535 West Idaho Street.
- American Welding, 515 West Idaho Street.
- Batteries Plus, 215 Wet Idaho Street.
- J2 Office, 700 Sunset Boulevard.
- Logan Health, 310 Sunnyview Lane.
- Logan Medical Supply, 53 3rd Street.
- Kalispel City, 45 North Woodland Park Drive.

The Kalispell Regional Hazmat Team, a State of Montana resource, was established to assist local jurisdictions with hazardous materials incidents.

58. Fire Chief's Report.

To respond to hazardous materials incidents, the Montana Department of Military Affairs' Disaster and Emergency Services Division maintains six state-wide hazardous materials incident response teams (SHMIRTs). The Kalispell Regional Hazmat Team was established to assist local jurisdictions with hazardous materials incidents. The team's response area borders Canada to the north, Idaho to the west, Missoula's Regional Team to the South, and Great Falls' Regional Team to the East. The team is staffed by Kalispell Fire Department personnel trained to the Hazmat Technician level; their equipment is housed and available from Kalispell Fire Department Station 61.[59]

Disease

The population of Montana increased from 1.06 million in 2018 to 1.1 million in 2020 [U.S. Census, 2020]. Most of the population growth has occurred within the Western Mountain region around the larger cities of Kalispell, Bozeman, and Missoula. The increased population in this area of the state can increase the human-to-human exposure to disease.

Pandemics are large-scale outbreaks of infectious disease that can greatly increase morbidity and mortality over a wide geographic area and cause significant economic, social, and political disruption. Coronavirus disease (COVID-19) is a contagious disease caused by a virus, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019, then spreading worldwide and leading to the COVID-19 pandemic. The international community has made progress toward preparing for and mitigating the impacts of pandemics. However, despite these improvements, significant gaps and challenges exist in global pandemic preparedness. Pandemics can cause economic damage through multiple channels, including short-term fiscal shocks and longer-term negative shocks to economic growth.

Dam Failure

Dam failures are not a frequent occurrence but when they do occur, they can cause large-scale damage. The greatest threat from dam failure is to people and property in areas immediately downstream from the dam. There are 14 dams in Flathead County, three in proximity to Kalispell (within 14 miles): Skyles Lake Dam (9.38 miles), Jessup Mill Pond (9.46 miles), and Ashley Lake (14.29 miles).[60]

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59. https://dailyinterlake.com/news/2018/jan/31/cuts-hit-hazmat-response-teams-6/
60. https://www.anyplaceamerica.com/directory/mt/flathead-county-30029/dams/

FIGURE 3-12: Hungry Horse Dam (Approximately 9.38 Miles From Kalispell)

Civil Unrest, Cyber Security, Terrorism, Violence, Mass Shootings

Over the last few decades, many cities have been affected by civil unrest and rioting. Often, this develops from protests of political, social, economic, environmental or law enforcement issues. Often, peaceful protests can escalate into a violent and dangerous situation. Communities face increased risks during periods of public protests and social unrest, which can threaten civilians, cause disruption to businesses, and damage both private and public property.[61]

Cybercriminals target a computer network or a networked device to gain information or breach confidential information. Most cybercrime is committed by cybercriminals or hackers who want to make money. However, occasionally the aim of cybercrime is to damage computers or networks for reasons other than profit, or as a result of the hack. Due to our reliance on computers and data networks, a cyberattack can be very debilitating and cause damage to local government productivity and infrastructure.

National Security Threats / Terrorism: On September 11, 2001, 19 militants associated with the Islamic extremist group al Qaeda hijacked four airplanes and carried out suicide attacks against targets in the United States. Almost 3,000 people were killed during the 9/11 terrorist attacks and there were billions of dollars in destruction to public and government infrastructure. National security is the ability of a country's government to protect its citizens, economy, and other institutions. National security encompasses national defense, foreign intelligence and counterintelligence, international and internal security, and foreign relations. This includes countering terrorism; combating espionage and economic espionage conducted for the benefit of any foreign government. This also includes cyber threats that are perpetrated by nation states, terrorists, or their agents or proxies.[62]

Gun Violence / Mass Shootings / Domestic Violence (Mass Casualty) Incidents: Since 2009, there have been 279 mass shootings in the United States, resulting in 1,576 people killed and 1,046

61. https://theconversation.com/us/topics/civil-unrest-78423
62. US Department of Justice.

people wounded.[63] In nearly all mass shootings over this period, the shooter was an adult man who acted alone.[64] There is no specific pattern to mass shootings; they accrue in small rural settings, metropolitan cities, movie theaters, schools, and shopping malls. The destructive reach of a mass shooting stretches far beyond those killed and wounded, damaging the well-being of survivors, their families, and communities. Studies of survivors from various mass shootings consistently find that mass shootings harm the mental health of both direct survivors and community members, including psychological symptoms such as post-traumatic stress and depression.[65]

Civil Unrest (Mass Casualty) Incidents: Over the last few decades, many cities have been affected by civil unrest and rioting. Often, this develops from protests of political, social, economic, environmental or law enforcement issues. Peaceful protests can escalate into a violent and dangerous situation. Communities face increased risks during periods of public protests and social unrest, which can threaten civilians, cause disruption to businesses, and damage both private and public property.[66]

Landslides

A landslide is the mass movement of rock, soil, and debris down a slope due to gravity. It occurs when the driving force is greater than the resisting force. It is a natural process that occurs on steep slopes. The movement may range from very slow to rapid. It can affect areas both near and far from the source. Slower movement can also cause severe problems in developing areas. The effects of the very slow movements can be seen along many roadways in the form of leaning trees, misaligned fences and walls, and damaged road surfaces, foundations, and structure

Volcanic Ash

Although the probability is minimal, there is the potential for a catastrophic volcanic eruption in the vicinity of Yellowstone National Park that would have very serious consequences for Montana and neighboring states. The probability of volcanic eruption hazard is ranked as "Unlikely," with less than one event per 100 years. The primary effect of volcanic eruptions in Montana would be ash fall. Ash fall, because of its potential widespread distribution, offers some significant volcanic hazards. Volcanic ash can cause failure of electronic components, interrupt telephone and radio communications, and cause internal combustion engines to stall.

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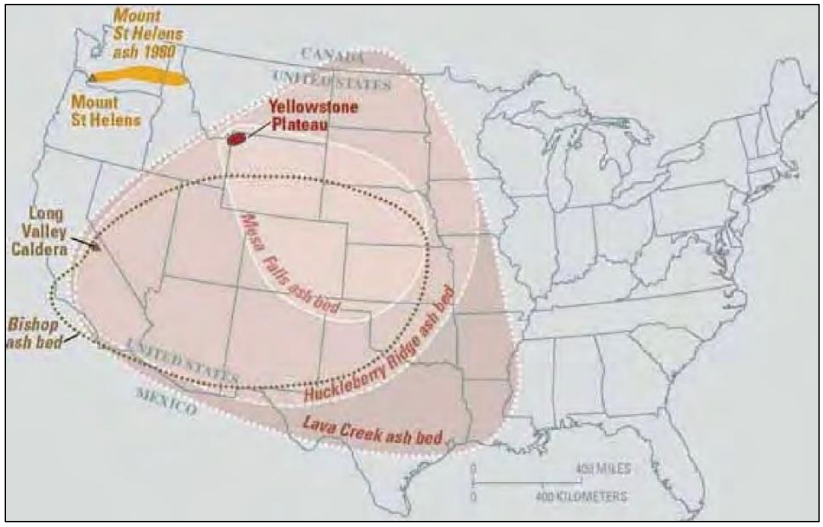
63. https://www.everytown.org/issues/mass-shootings/
64. https://everytownresearch.org/maps/mass-shootings-in-america/
65. Sarah R. Lowe and Sandro Galea, "The Mental Health Consequences of Mass Shootings."
66. https://theconversation.com/us/topics/civil-unrest-78423

FIGURE 3-13: Distribution of Ash Fall From Historic Volcanic Eruptions



Airborne particles of volcanic ash can pose a health risk to people with respiratory conditions. Volcanic eruptions are generally not a major concern in Montana due to the relatively low probability (compared with other hazards) of events in any given year. However, Montana is within a region with a significant component of volcanic activity and has experienced the effects of volcanic activity as recently as 1980 when Mount St. Helens erupted in Washington state.

BUILDING AND TARGET HAZARD FACTORS

Building and target hazards are defined as significant hazards that can strain the fire department response capability—*a plausible scenario* in which a fire department could quickly become overwhelmed and for which additional resources would be needed to mitigate the incident. The definition of target hazards varies among jurisdictions but typically covers hospitals, nursing facilities, schools, churches, storage facilities, military sites, high-rise, multi-family dwellings, assemblies, and industrial parks / manufacturing plants.

Target hazards are often segregated by high, medium, or low hazard depending on factors such as the life and building content hazard, and the potential fire flow and staffing required to mitigate an emergency in the specific property. According to the NFPA *Fire Protection Handbook*, these hazards are defined as:

High-hazard occupancies: Schools, hospitals, nursing homes, assisted living, explosives plants, refineries, high-rise buildings, and other high life-hazard (vulnerable population) or large fire-potential occupancies.

Medium-hazard occupancies: Apartments, offices, and mercantile and industrial occupancies not normally requiring extensive rescue by firefighting forces.

Low-hazard occupancies: One-, two-, or three-family dwellings and scattered small business and industrial occupancies.

Identifying high-hazard occupancies or target hazards that would require a higher concentration of fire department resources is an essential part of fire risk assessment. The process

of identifying target hazards and pre-incident planning are basic preparedness efforts that have been key functions in the fire service for many years. In this process, critical structures are identified based on the risk they pose. Then, tactical considerations are established for fires or other emergencies in these structures. Consideration is given to the activities that take place (manufacturing, processing, etc.), the number and types of occupants (elderly, youth, handicapped, imprisoned, etc.), and other specific aspects relating to the construction of the facility, or any hazardous materials that are regularly found in the building.

Target hazards are those occupancies or structures that are unusually dangerous when considering the potential for loss of life or the potential for property damage. Typically, these occupancies include hospitals, nursing homes, and high-rise and other large structures.

The City of Kalispell has roughly 13,000 units (residential, commercial, industrial, mercantile) in the city:[67]

- Total Housing Units: 10,078.[68]
- Historic Mixed / Historical Buildings: no count provided to CPSM.
- Within the City of Kalispell is the Main Street Historic District, a two-block concentration of historic mixed-occupancy buildings. These buildings are largely two to four stories, older unprotected construction, with zero lot lines, and limited area separations. Fire can be one of the greatest threats to heritage buildings as they lack modern building features such as area separation, and fire notification and suppression systems. Their proximity (zero separation) promotes building-to-building fire spread.
- Assisted Living / Nursing Homes: 18+.
- Assembly: 2.
- Commercial and industrial buildings: no count provided to CPSM.
- Schools: 15.
- Hospitals: 1.

Logan Health (formerly Kalispell Regional Medical Center) is a 622-bed non-profit, tertiary, research and academic medical center located on a 50-acre campus complex with 52 various offices, clinics, and outpatient services It is locates about a mile north of downtown Kalispell.

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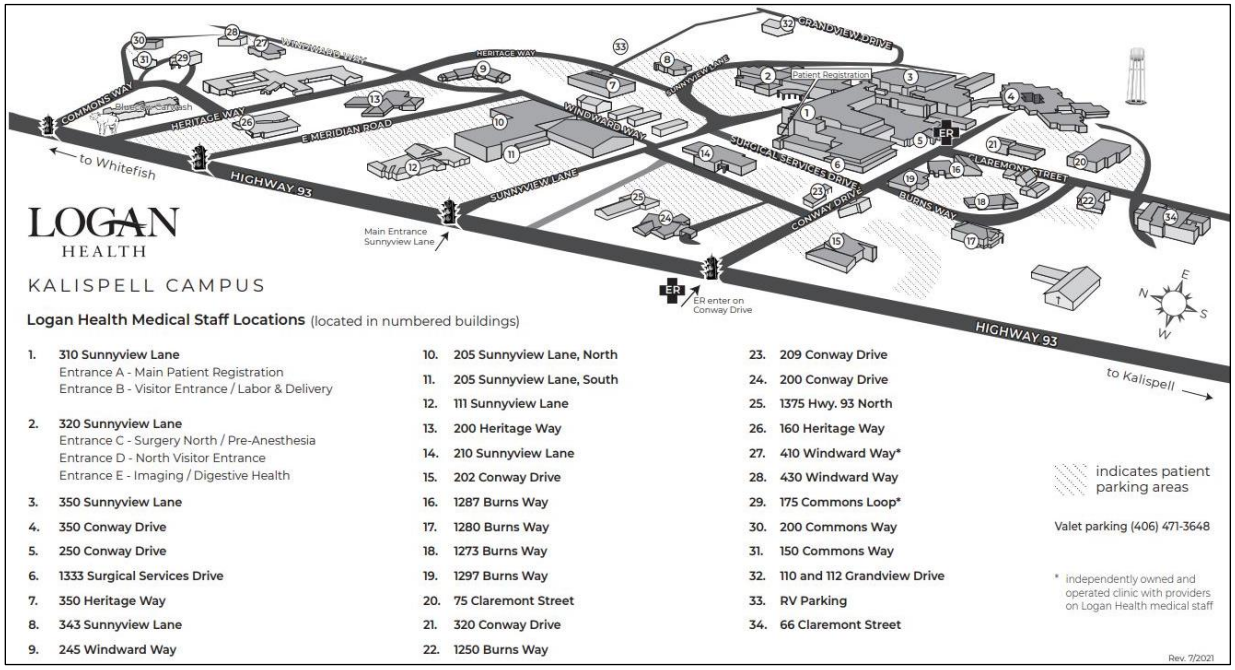
67. City of Kalispell Planning Dept.
68. https://datacommons.org

FIGURE 3-14: Logan Health Campus



An identified high hazard for Kalispell is the number of high- to mid-occupancy buildings that do not have sprinklers. Specific information about these buildings is shown in the following table.

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TABLE 3-7: Sprinkler Status of High- to Mid-occupancy Buildings (2018)

Building Name	Building Purpose	Location	Sprinklered	Building Name	Building Purpose	Location	Sprinklered
1018 8th St W	Apartment	1018 8th St W	No	Aero Inn	Hotel/motel	1830 Highway 93 S	No
1120 Kenway Dr	Apartment	1120 Kenway Dr	No	Americas Best Value	Hotel/motel	1550 Highway 93 N	No
1122 Kenway Dr	Apartment	1122 Kenway Dr	No	Blue and White Motel	Hotel/motel	640 e Idaho St	No
1124 Kenway Dr	Apartment	1124 Kenway Dr	No	Vacationer Motel	Hotel/motel	285 7th Ave EN	No
1126 Kenway Dr	Apartment	1126 Kenway Dr	No	Travel Lodge Inn	Hotel/motel	350 N Main St	No
1128 Kenway Dr	Apartment	1128 Kenway Dr	No	Super 8 Motel	Hotel/motel	1341 1 St Ave E	No
1030 8th St W	Apartment	1030 8th St W	No	Comfort Inn	Hotel/motel	1330 Highway 2 W	No
1032 8th St W	Apartment	1032 8th St W	No	Motel 6	Hotel/motel	1540 Highway 93 S	No
716 1St Ave W	Apartment	746 1St Ave E	No	Kalispell Hilltop Inn	Hotel/motel	801 E Idaho St	No
Big Sky Manor	Apartment	110 2nd Ave W	No	Kalispell Grand Hotel	Hotel/motel	100 S Main St	No
Westgate Senior	Apartment	516 Corporate Dr	No	Flathead County Library	Assembly	233 1St Ave E	Partial
Cherry Orchard	Apartment	700 Liberty St	No				
Rosebriar Inn	Apartment	24 1St Ave W	No	Flathead High School	Educational	644 4th Ave W	Partial
Glacier Manor	Apartment	506 1St Ave W	No	Buffalo Hills Terrace	Apartment	40 Claremont St	Yes
Gate Way Village	Apartment	308 Two Mile Dr	No				
Bethlehem Lutheran	Assembly	603 S Main St	No				
Trinity Day Care	Educational	486 3Rd Ave W	No	Center Court	Apartment	121 2nd Ave W	Yes
Trinity Day Care	Educational	373 W Washington St	No	Samaritan House	Apartment	124 9th Ave W	Yes
St. Matthews	Educational	602 S Main St	No	Fernwell Apartments	Apartment	20 4th Ave W	Yes
School District 5	Educational	233 1St Ave E	No	Eastside Brick	Apartment	723 5th Ave E	Yes

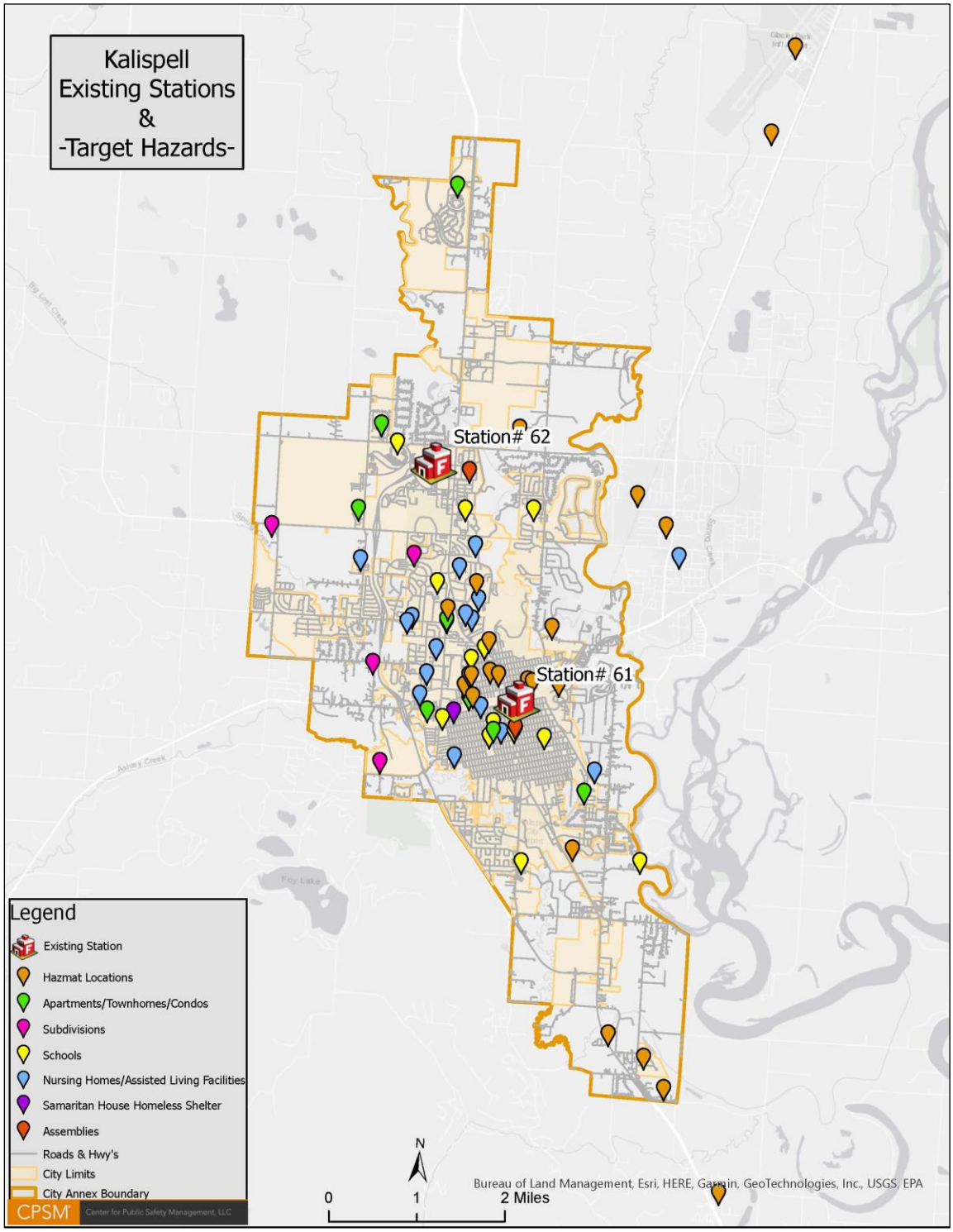
Building Name	Building Purpose	Location	Sprinklered	Building Name	Building Purpose	Location	Sprinklered
Russel Elementary	Educational	227 W Nevada St	No	Signature Theaters	Assembly	185 Hutton Ranch Rd	Yes
Peterson Elementary	Educational	1119 2nd St W	No	Flathead County Detention Ctr.	Detention / corrections	920 S Main St	Yes
Linderman Education	Educational	124 3Rd Ave E	No	North West Health	Educational	79 7th Ave EN	Yes
Kalispell Middle School	Educational	205 Northwest Ln	No	Glacier High School	Educational	375 Wolfpack Way	Yes
Hedges Elementary	Educational	826 4th Ave E	No	FVCC	Educational	777 Grandview Dr	Yes
Gift of Love Child Care	Educational	602 S Main St	No	Adult Mental Health	Group home	410 Windward Way	Yes
Elrod Elementary	Educational	412 3Rd Ave W	No	Willow Glen Group	Group home	1600 Woodland Ave	Yes
Edgerton Elementary	Educational	1400 Whitefish Stage Rd	No	Sinopah House	Group home	420 Windward Way	Yes
Agape Home Care	Group home	40 Appleway Dr	No	Safe House Adult	Group home	412 Windward Way	Yes
Discovery	Group home	75 Glenwood Dr	No	North West Health	Health	66 Claremont	Yes
Renaissance Assisted Living	Group home	645 Liberty St A	No	Med North Urgent Care	Health	2316 Highway 93 N	Yes
Lone Pine Lodge	Group home	1300 8th St W	No	Kalispell Regional	Health	310 Sunnyview Ln	Yes
Hope Pregnancy Center	Group home	940 1St Ave E	No	HCNW Rehab (Floor 2)	Health	320 Sunnyview Ln	Yes
Friendship House	Group home	606 2nd Ave W	No	Wel Life	Hospital/ nursing	156 Three Mile Dr	Yes
Flathead Youth Home	Group home	825 E Oregon St	No	Brendan House	Hospital/ nursing	350 Conway Dr	Yes
Flathead Industries	Group home	21 4th Ave W	No	Prestige Assisted Living	Hospital/ nursing	125 Glenwood Dr	Yes
Flathead Industries	Group Home	2329 Merganser Dr	No	Immanuel Lutheran	Hospital/ nursing	185 Crestline Rd	Yes

Building Name	Building Purpose	Location	Sprinklered	Building Name	Building Purpose	Location	Sprinklered
Flathead Industries	Group Home	2327 Merganser Dr	No	Heritage Place	Hospital/ nursing	171 Heritage Way	Yes
Flathead Industries	Group Home	1212 6th Ave W	No	Red Lion Hotel	Hotel/motel	20 N Main St	Yes
Flathead Industries	Group Home	1214 6th Ave W	No	Holiday Inn Express	Hotel/motel	275 Treeline Rd	Yes
Flathead Industries	Group Home	110 3Rd Ave W	No	Hilton Garden Inn	Hotel/motel	1840 Highway 93 S	Yes
Woodland Clinic	Health	705 6th Ave E	No	Hampton Inn	Hotel/motel	1120 Highway 2 W	Yes
Thurston Orthodontics	Health	125 Commons Way	No	EconoLodge	Hotel/motel	1680 Highway 93 S	Yes
The Sleep Medicine	Health	200 Commons Way	No	Fairbridge Inn	Hotel/motel	1701 Highway 93 S	Yes*
Potthoff Dentistry Suite	Health	195 Commons Loop	No				
Pathways	Health	200 Heritage Way	No				
Montana Woman	Health	1103 S Main St	No				
Glacier Prostetic	Health	985 N Meridian Rd	No				
Glacier Dental Clinic	Health	1340 Airport Rd	No				

Note: *Frequently broken or inoperable.
Other: CHS Railway Center with multiple grain silos, fertilizer storage, chemicals, storage, fuel station, 700 Rail Park Drive.

The following figure illustrates the location of target hazards in the city.

FIGURE 3-15: Target Hazards (all)



In terms of identifying target hazards, consideration must be given to the activities that take place (public assembly, life safety vulnerability, manufacturing, processing, etc.), the number

and types of occupants (elderly, youth, special needs, etc.), and other specific aspects related to the construction of the structure. Incidents in assisted living facilities, nursing homes, and hospitals, as examples, can tax a fire department's resource and are considered high hazard targets. Rescue in these facilities can be difficult.

The City of Kalispell has a variety of target hazards:

High Hazards

- Assisted living/nursing facilities (12).
- Educational facilities (12).
- Hospitals (multibuilding, 50-acre campus facility).
- Assemblies (4).

Low to Medium Hazards

- Residential over commercial buildings (mixed use).
- Mixed Use/Historical Buildings.
- Commercial and industrial sites (large mercantile, for example).
- One-, two-, or three-family dwellings and multifamily apartments (due to the number of them).

Hazardous Materials

Hazardous materials from fixed facilities and transportation incidents pose possible threats. In Flathead County, these hazards include petroleum products and agricultural chemicals. Locations within Kalispell that report hazardous materials include:[69]

- CHS, 700 Rail Park Drive.
- City Services, 640 West Montana Street.
- UPS, 1151 North Meridian Road.
- FedEx, 2425 Highway 93 South.
- FedEx, 164 School House Loop.
- Car Quest, 535 West Idaho Street.
- American Welding, 515 West Idaho Street.
- Batteries Plus, 215 Wet Idaho Street.
- J2 Office, 700 Sunset Boulevard.
- Logan Health, 310 Sunnyview Lane.
- Logan Medical Supply, 53 3rd Street.
- Kalispel City, 45 North Woodland Park Drive.

69. Fire Chief's Report.

Summary and Observations:

- The greatest building risks in the City of Kalispell are of a low-to-moderate hazard (single-family dwellings, predominantly lightweight, wood-frame construction, and mixed use / historical buildings in the downtown).
- The city has high-risk/vulnerable population risks (nursing/assisted living facilities, schools, and multifamily residential structures apartments/condominiums).
- The city also has multiple residential projects under construction or approved and planned for near- to mid-term construction.
- The industrial and mercantile building risk, while a lower life safety risk, is generally a moderate to higher hazard risk and based on processes, storage, and overall occupancy type. All the high-hazard risk locations pose either a difficulty for KFD to conduct evacuations and/or fire attack. The KFD, as with most fire departments, utilizes a quick and aggressive fire attack to contain a conflagration to the room of origin. However, a significant commercial or a large complex fire and/or a multiple occupancy evacuation will quickly exhaust both the KFD and mutual aid partner resources.
- Robust public education and fire inspections / pre-fire planning, specifically in the downtown historical districts, remain an important endeavor for the KFD. See the operations and fire prevention sections.

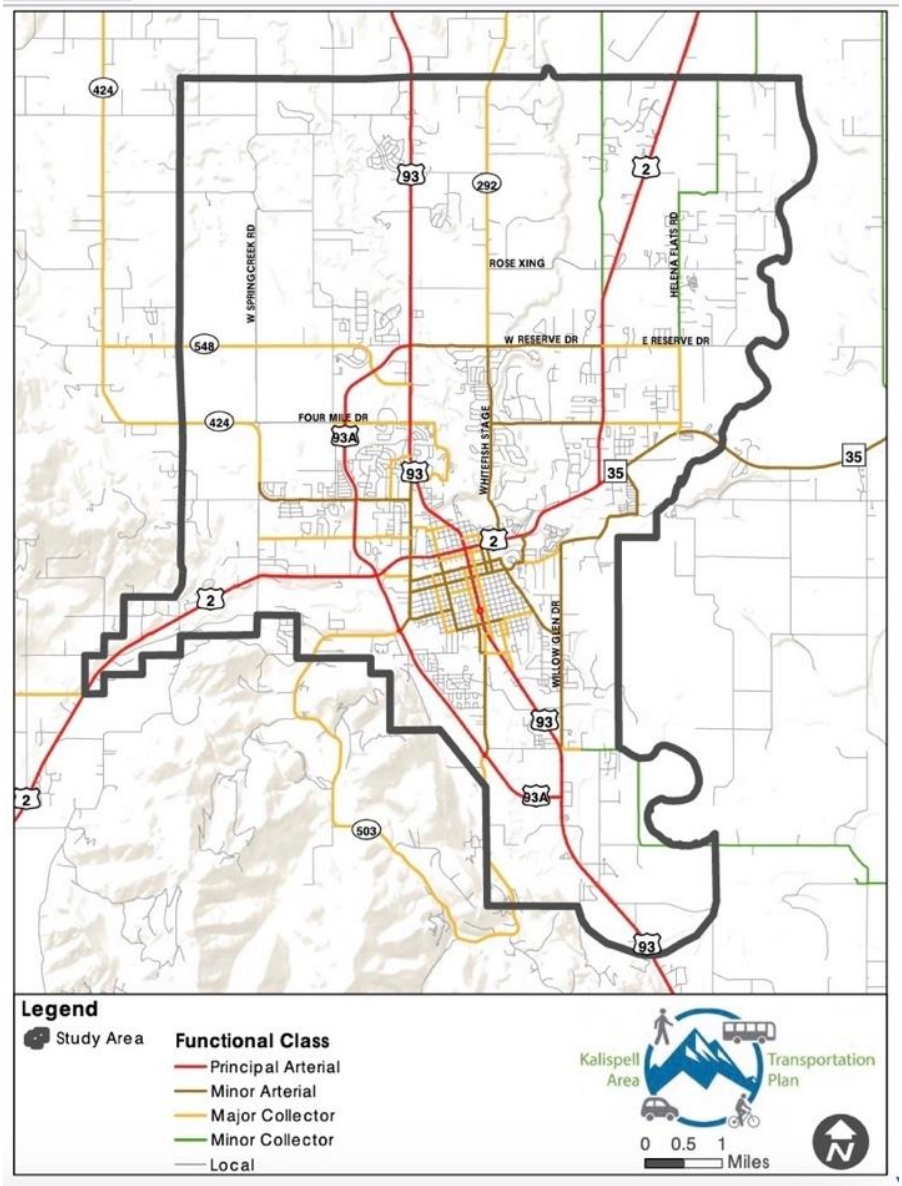
TRANSPORTATION FACTORS

The existing public street network within the city limits consists primarily of city-maintained roadways. According to the city's Growth Policy (July 2017), the street network totals approximately 120 miles of roadway within the city. Roads by functional type in Kalispell include:

- Arterial streets, which provide high-speed/high-capacity movement of traffic and are accessed from collector and local streets.
- Collector streets, which are medium speed and volume roads and provide access within and between neighborhoods.
- Connector streets, which are low-speed, low-volume roads within and between neighborhoods, which also have access to collector and arterial roads.
- Local streets, which are low-speed, low-volume roads that provide direct access to residential and commercial areas.

The following figure illustrates the principal road network for the City of Kalispell.

FIGURE 3-16: Principal Road Network for the City of Kalispell



Overall traffic volumes in Kalispell are forecast to continue to increase. The road and transportation network described herein poses the following risks:[70]

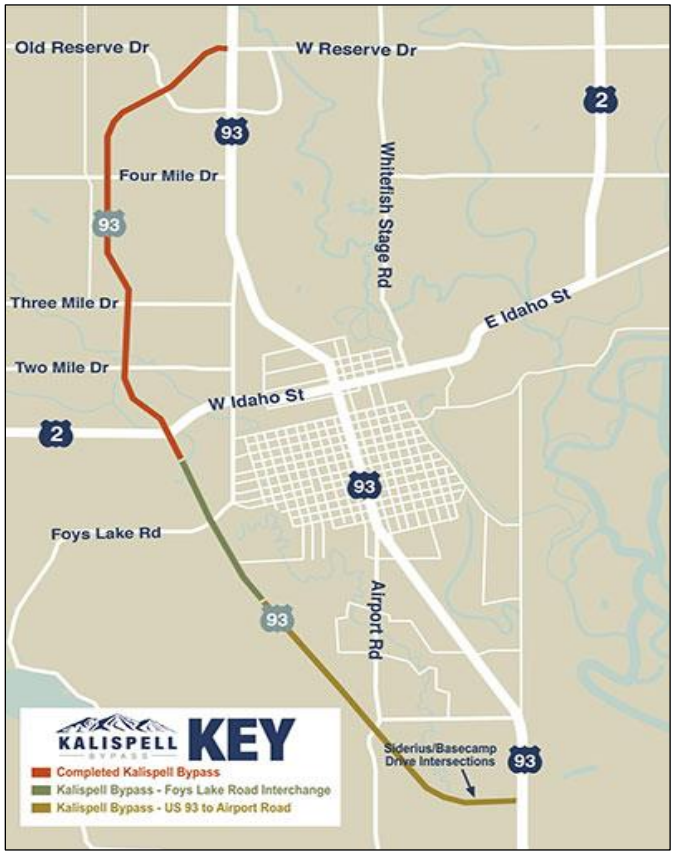
- Some areas lack a gridded, interconnected street system, which limits route options for local residents and business, and concentrates traffic onto one or two access roads.
- At times, traffic volumes overwhelm the capacity of traffic control devices to adequately maintain system performance.
- Pedestrian safety issues are especially problematic as the further one travels from the core of the community, especially in the older and middle-aged neighborhoods, due to the almost total lack of sidewalks, bike lanes, and multi-use trails.

70. City of Kalispell Growth Plan (2017) (Paraphrased).

- The narrow two-lane segment of Whitefish Stage Road between Oregon Street and West Reserve Drive is substandard, with the volume of traffic expected too nearly double.
- There is no east / west connection between Highway 93 and Whitefish Stage Road north of Oregon Street and south of West Reserve Drive, which inhibits free flowing access between Kidsports, Flathead Valley Community College, the Highway 93 North retail area, and Fire Station #62 with the Edgerton School neighborhood and Evergreen.
- The City of Kalispell roadway network allows for evacuations to other communities as well as many access points in/out of communities. Roads are wide, allowing fire apparatus access. Evacuation will be deterred by rail crossing and weather-related setbacks such as snow or ice.

The Kalispell Bypass is an eight-mile stretch of roadway that is intended to divert traffic around the center of Kalispell. The bypass begins at the intersection with US 93 on the southern edge of Kalispell and extends north approximately 1.7 miles, ending 0.6 miles north of the Airport Road roundabout. The Foys Lake Road Interchange begins 0.6 miles north of the Airport Road roundabout and extends north along the Bypass approximately 1.7 miles, ending south of the Ashley Creek Bridge which is 0.5 miles south of the intersection with US 2. This project is currently in the final stages and has led to improvements on the Alternate Highway 93 route with improvements at the Foy's Lake intersection.

FIGURE 3-17: Alternative Highway 93 Project



Several public transit providers also serve the residents of Kalispell:

- Mountain Climber Transportation, which provides fixed, fixed-deviated, and paratransit public transportation in Flathead County including Kalispell. It is operated by Flathead County.

- Tri-City Commuter Service, which offers three trips in the morning and afternoon to Columbia Falls and Whitefish.
- Eagle Transit Service, which covers an area from the North (Whitefish) with a stop at Alpine Village Market to the South (Kalispell) with a stop at Laker's Field.

The road and transportation network described herein poses risks for a vehicular accident, some at medium to greater than medium speeds, as well as vehicular-vs.-pedestrian/bicycle risks. There are additional transportation risks since tractor-trailer and other commercial vehicles traverse the roadways of the city to deliver mixed commodities to business locations. Fires or releases of product involving these products can produce vapors, smoke, and other products of combustion that may be hazardous to health. Additionally, there is risk for a mass casualty incident involving mass transit buses either on specific bus routes/roads in the city or utilizing the road network in the city for stops in jurisdictions external the city (Trailways and Greyhound busses, casino bus services, as examples).

The City of Kalispell in cooperation with the Montana Department of Transportation (MDT) is in the process of updating the Kalispell Area Transportation Plan, titled Move 2040. Move 2040 will establish a set of existing and projected conditions for transportation in the Kalispell area.[71] It is highly recommended that member(s) of the fire department participate in this working group.

Summary and Observations:

- Some traffic issues have been mitigated by the recent alternative Highway 93 project. Still, roadways are busy, especially at peak times, creating hazards for emergency responders to navigate traffic.
  - KFD should participate in the area transportation plan (Move 2040).
  - Technology exists, such as emergency vehicle streetlight preemption systems, to provide emergency vehicles the right of way.[72] Working with the City's Street Department, these technologies should be explored when updating intersections within the city.

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FIRE AND FIRE-RELATED INCIDENT RISK

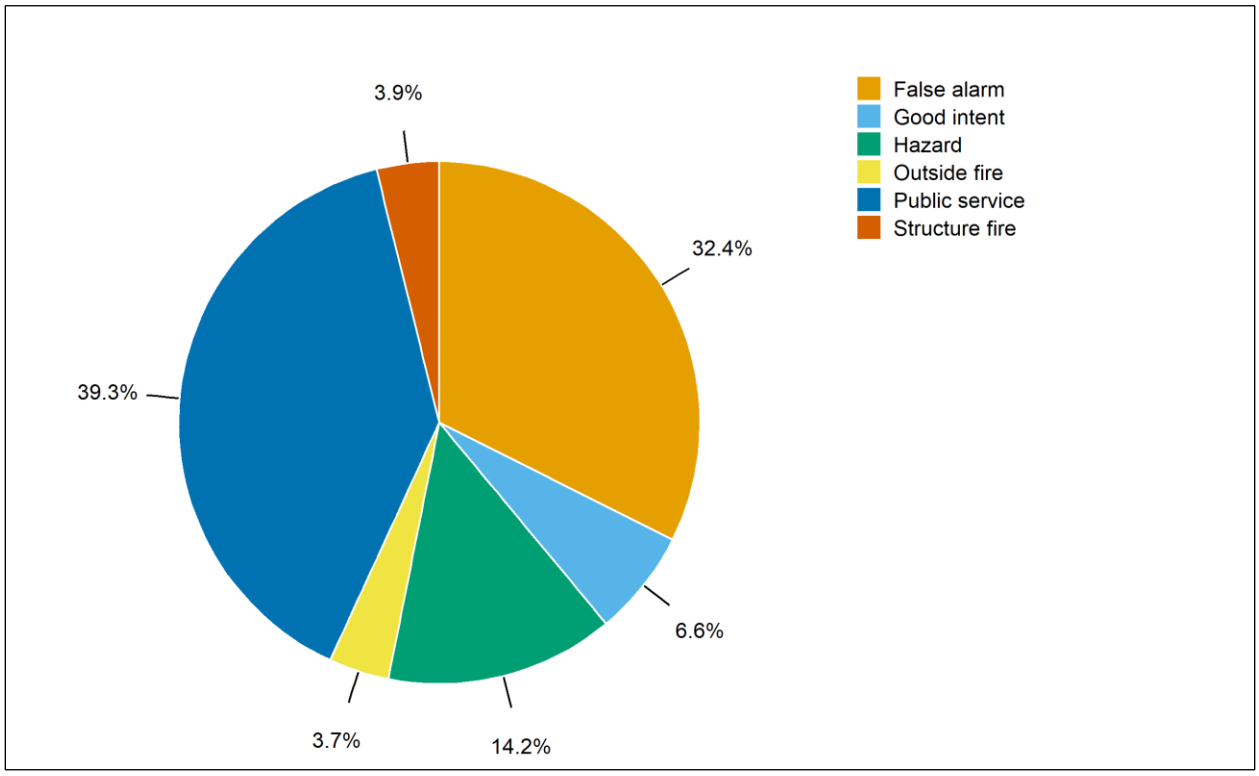
An indication of the community's fire risk is the type and number of fire-related incidents the fire department responds to. CPSM conducted a data analysis for this project that analyzed KFD's incident responses and workload. The following table details the call types and call type totals for these types of fire-related risks.

71. https://kalispellmove2040.com
72. https://tsmowa.org/category/intelligent-transportation-systems/traffic-signal-priority-preemption

TABLE 3-8: Fire Call Types

Call Type	Total Calls	Calls per Day
False alarm	217	0.6
Good intent	44	0.1
Hazard	95	0.3
Outside fire	25	0.1
Public service	263	0.7
Structure fire	26	0.1
Fire Total	**670**	**1.8**

FIGURE 3-18: Fire Call Types Based on Percent



Observations:

- Fire calls for the year totaled 670 (16 percent of all calls), an average of 1.8 per day.
- Public service calls were the largest category of fire calls at 39 percent of fire calls, an average of 0.7 calls per day.
- False alarm calls made up 32 percent of fire calls, an average of 0.6 calls per day.
- Structure and outside fire calls combined made up eight percent of fire calls, an average of 0.1 calls per day, or one call every seven days.

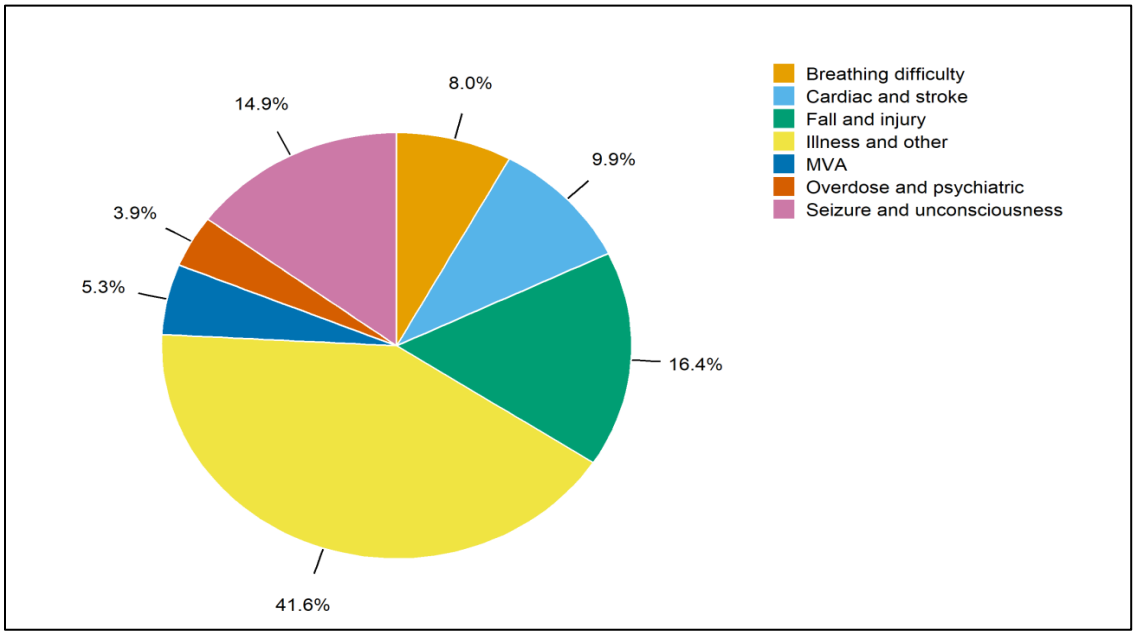
EMS RISK

As with fire risks, an indication of the community's pre-hospital emergency medical risk is the type and number of EMS calls to which the fire department responds. The following table outlines the call types and call type totals in the KPD for these types of EMS risks.

TABLE 3-9: EMS Call Types

Call Type	Total Calls	Calls per Day
Breathing difficulty	244	0.7
Cardiac and stroke	304	0.8
Fall and injury	502	1.4
Illness and other	1,276	3.5
MVA	164	0.4
Overdose and psychiatric	121	0.3
Seizure and unconsciousness	456	1.2
EMS Total	**3,067**	**8.4**

FIGURE 3-19: EMS Calls Based on Percent



Observations:

- EMS calls for the year totaled 3,067 (71 percent of all calls), an average of 8.4 per day.
- Illness and other calls were the largest category of EMS calls at 42 percent of EMS calls, an average of 3.5 calls per day.
- Cardiac and stroke calls made up 10 percent of EMS calls, an average of 0.8 calls per day.
- Motor vehicle accidents made up five percent of EMS calls, an average of 0.4 calls per day.

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COMMUNITY LOSS AND SAVE INFORMATION

Fire loss is an estimation of the total loss from a fire to the structure and contents in terms of replacement. Fire loss includes contents damaged by fire, smoke, water, and overhaul. Fire loss does not include indirect loss, such as business interruption. In a 2021 report published by the National Fire Protection Association on trends and patterns of U.S. fire losses, it was determined that home fires still cause the majority of all civilian fire deaths, civilian injuries, and property loss due to fire. Key findings from this report include:[73]

Public fire departments respond to 1,338,500 fires in 2020, a 7.5 percent increase from the previous year.

- 490,500 fires occurred in structures (37 percent). Of these fires, 379,500 occurred in residential structures and 86,000 occurred in apartment or multifamily structures.
- 2,230 civilian fire deaths occurred in residential fires, and 350 deaths occurred in apartments or multifamily structures.
- Home fires were responsible for 11,500 civilian injuries.
- An estimated $21.9 billion in direct property damage occurred as a result of fire in 2020 (includes fires in the California wildland-urban interface and a large-loss naval ship fire in California).

The following table shows overall fire loss in Kalispell in terms of dollar value for the data study year, and over a five year period (2018-2022 . This information should be reviewed regularly and discussed in accordance with response times to actual fire incidents, company level training, effectiveness on the fireground, and effectiveness of incident command.

TABLE 3-10: Total Fire Loss Above and Below $25,000

Call Type	No Loss	Under $25,000	$25,000 plus	Total
Outside fire	22	2	1	25
Structure fire	19	5	2	26
Total	**41**	**7**	**3**	**51**

TABLE 3-11: Property Loss 2018-2022

2018	2019	2020	2021	2022
$1,033,385	$876,205	$830,575	$1,035,050	$139,200

Summary and Observations:

- Over the five-year period, property ebbs and flows with 2022 having a significantly lower property loss dollar value. As a note, property value loss is recorded by the person completing the fire report, and typically estimates.
- 22 outside fires and 19 structure fires had no recorded losses.

73. Fire loss in the United States (NFPA 2020).

- One outside fire and two structure fires had $25,000 or more in recorded losses.
- Structure fires:
  - The highest total loss for a structure fire was $105,000.
  - The average total loss for all structure fires was $6,622.
  - Five structure fires recorded content losses with a combined $60,120 in losses.
  - Out of 26 structure fires, seven had recorded property losses, with a combined $112,050 in losses.
- Outside fires:
  - The highest total loss for an outside fire was $32,000.
  - The average total loss for all outside fires was $1,488.
  - One outside fire recorded content loss with a combined $2,000 in losses.
  - Out of 25 outside fires, three had recorded property losses, with a combined $35,200 in losses.

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FIRE AND EMS INCIDENT DEMAND

Analyzing where the fire and EMS incidents occur, and the demand density of fire and EMS incidents, helps to determine adequate fire management zone resource assignment and deployment. The following figures illustrate fire and EMS demand density within the city.

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FIGURE 3-20: Fire Demand Density in Kalispell, All Fire Calls

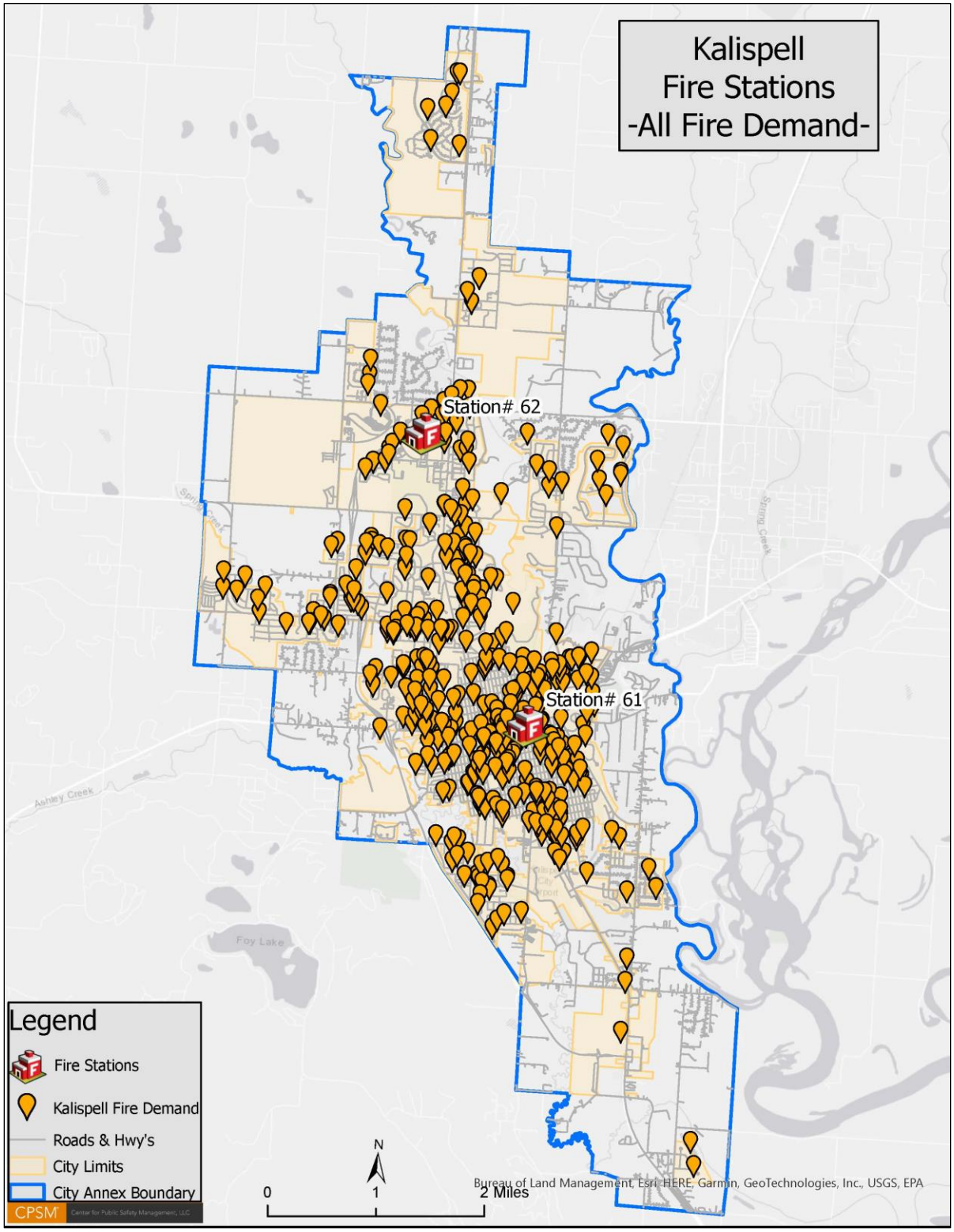


FIGURE 3-21: Fire Demand Density in Kalispell, Structure and Outside Fires

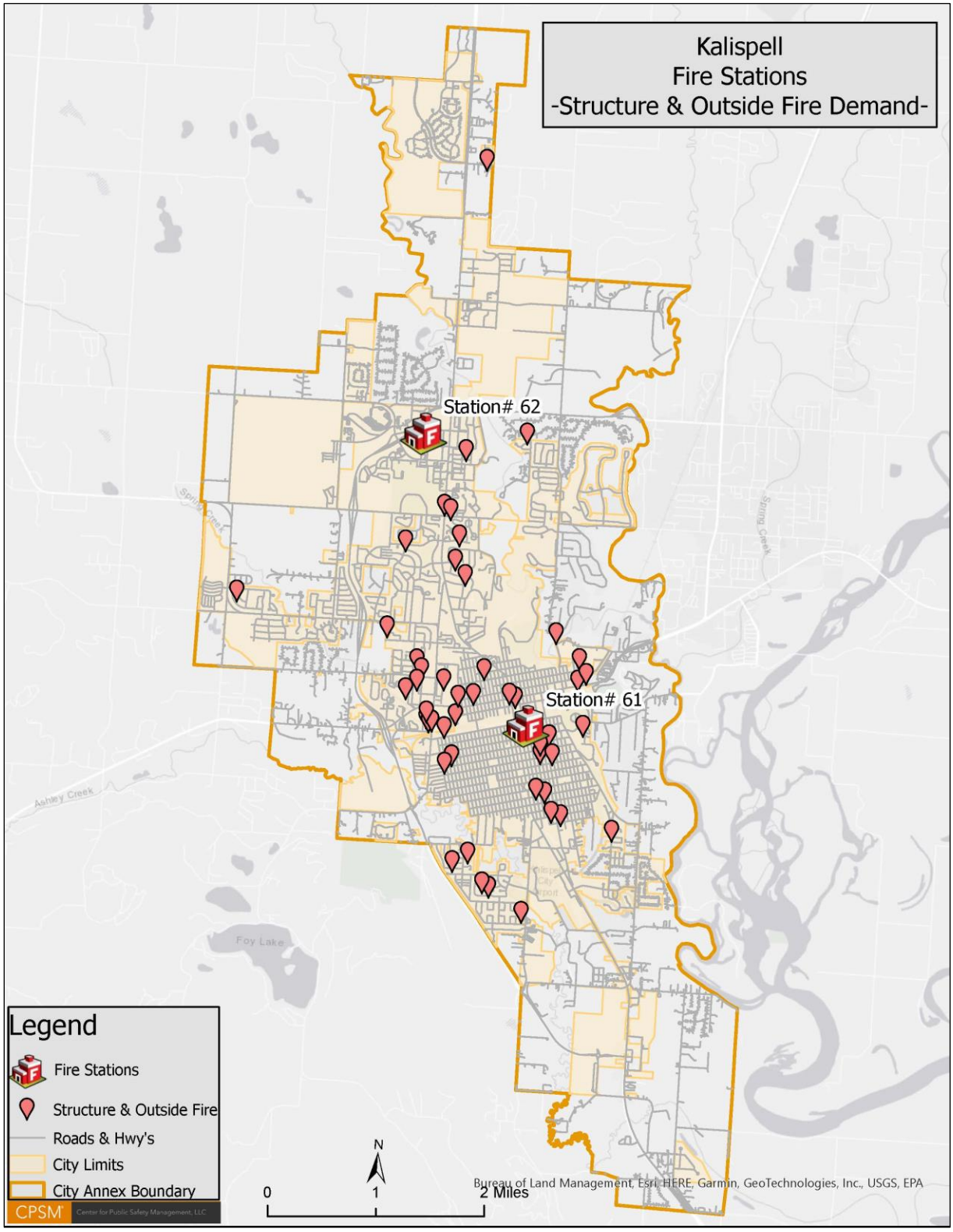
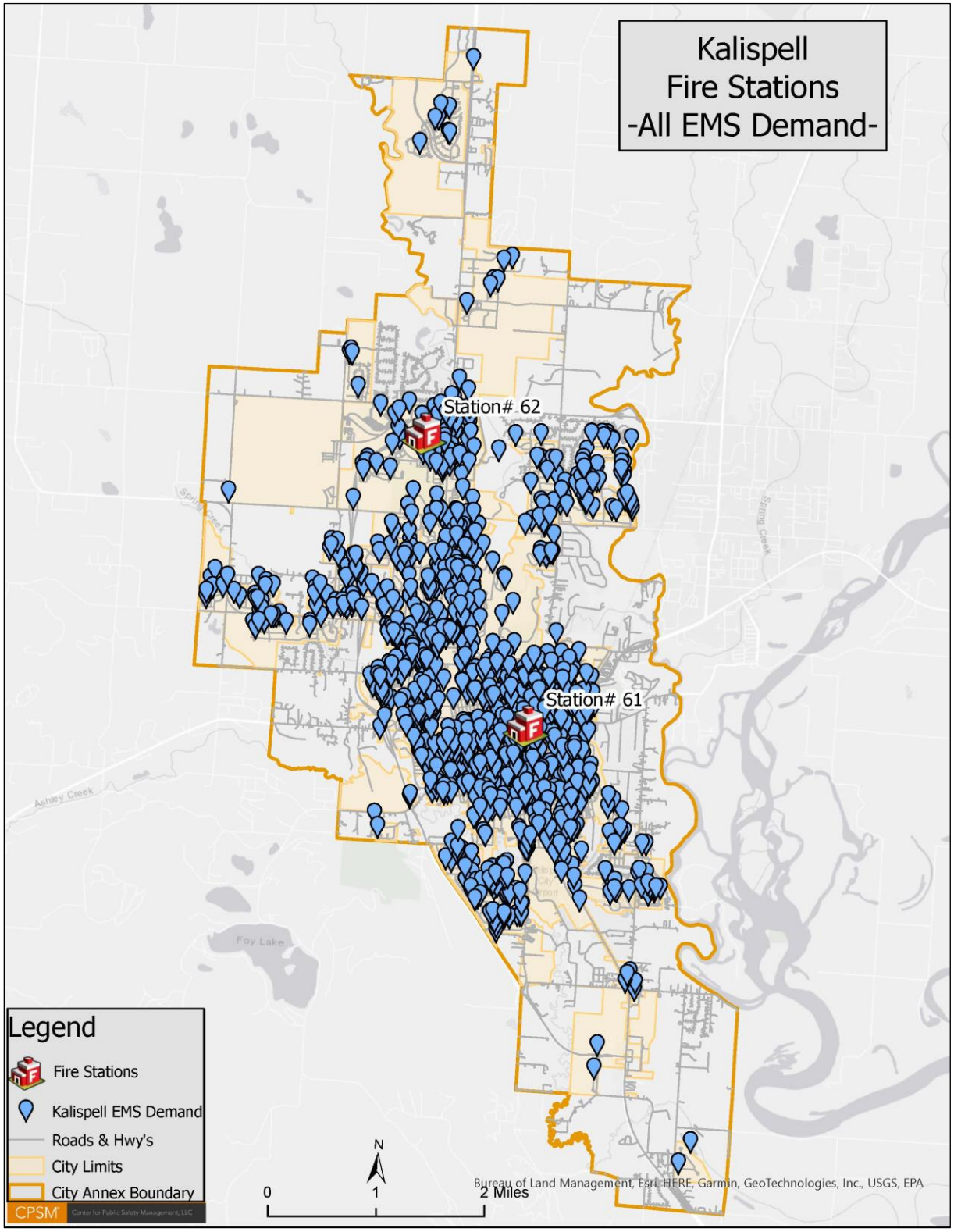


FIGURE 3-22: EMS Demand Density in Kalispell, All EMS Calls



Summary and Observations

Fire and EMS demand is more concentrated in Station 61's area than Station 62's area (62 percent and 38 percent, respectively). This is about the same as when CPSM performed its last review. This is largely due to population density in Station 61's area. However, there has been significant commercial and residential growth in Station 62's area (see Population and Community Growth report above). Current and planned densification, particularly to the northern end of Kalispell, will continue to add to this demand for fire and EMS service.

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RESILIENCY

Resiliency is defined as "*An organization's ability to quickly recover from an incident or events, or to adjust easily to changing needs or requirements*."[74] Greater resiliency can be achieved by constant review and analysis of the response system and focuses on three key components:

- Resistance: The ability to deploy only resources necessary to control an incident and bring it to termination safely and effectively.
- Absorption: The ability of the agency to quickly add or duplicate resources necessary to maintain service levels during heavy call volume or incidents of high resource demand.
- Restoration: The agency's ability to quickly return to a state of normalcy.

Resistance is controlled by the KFD through staffing and response protocol, and with KFD resources dependent on the level of staffing and units available at the time of the alarm.

Absorption is accomplished through availability to respond by KFD units and through regional automatic and mutual aid resources.

Restoration is managed by the city's availability as simultaneous calls occur, the availability of regional automatic and mutual aid resources, recall of personnel to staff fire units during campaign events when warranted, and backfilling city stations as needed.

Absorption is accomplished through availability to respond by KFD units and through regional mutual and automatic aid resources.

Restoration is managed by KFD unit availability as simultaneous calls occur, the availability of regional automatic and mutual aid resources, recall of personnel to up-staff fire units during campaign events when warranted, and backfilling PFD stations when needed through the computer-aided dispatch at the fire dispatch center.

The following tables and figure analyze KFD resiliency. In this analysis, CPSM included all 4,293 calls for service for January 2022 to December 2022.

74. The Center for Public Safety Excellence (CPSE), in the *Fire and Emergency Service Self-Assessment Manual* (FESSAM), Ninth Edition.

TABLE 3-12: Runs and Workload by Station and KFD Units

Station	Unit	Unit Type	Minutes per Run	Total Hours	Total Percent	Minutes per Day	Total Runs	Runs per Day
61	621	ALS Ambulance	37.8	414.1	13.6	68.1	657	1.8
	631	Engine	21.9	822.5	27.1	135.2	2,254	6.2
	Subtotal		**25.5**	**1,236.6**	**40.8**	**203.3**	**2,911**	**8.0**
62	622	ALS Ambulance	36.2	1,286.3	42.4	211.4	2,132	5.8
	624	ALS Ambulance	35.7	447.6	14.8	73.6	752	2.1
	642	Ladder	34.0	60.0	2.0	9.9	106	0.3
	682	Wildland Unit	31.8	3.7	0.1	0.6	7	0.0
	Subtotal		**36.0**	**1,797.6**	**59.2**	**295.5**	**2,997**	**8.2**
Total			**30.8**	**3,034.2**	**100.0**	**498.8**	**5,908**	**16.2**

TABLE 3-13: Station Availability to Respond to Calls

First Due Area	Calls in Area	First Due Responded	Percent Responded	First Due Arrived	Percent Arrived	First Due First	Percent First
61	2,489	1,927	77.4	1,875	75.3	1,739	69.9
62	1,321	1,107	83.8	1,095	82.9	1,041	78.8
Total	**3,810**	**3,034**	**79.6**	**2,970**	**78.0**	**2,780**	**73.0**

Note: For each station, we count the number of calls within its first due area where at least one unit arrived. Next, we focus on units from the first due station to see if any unit responded, arrived, or arrived first.

FIGURE 3-23: Calls by Hour of Day

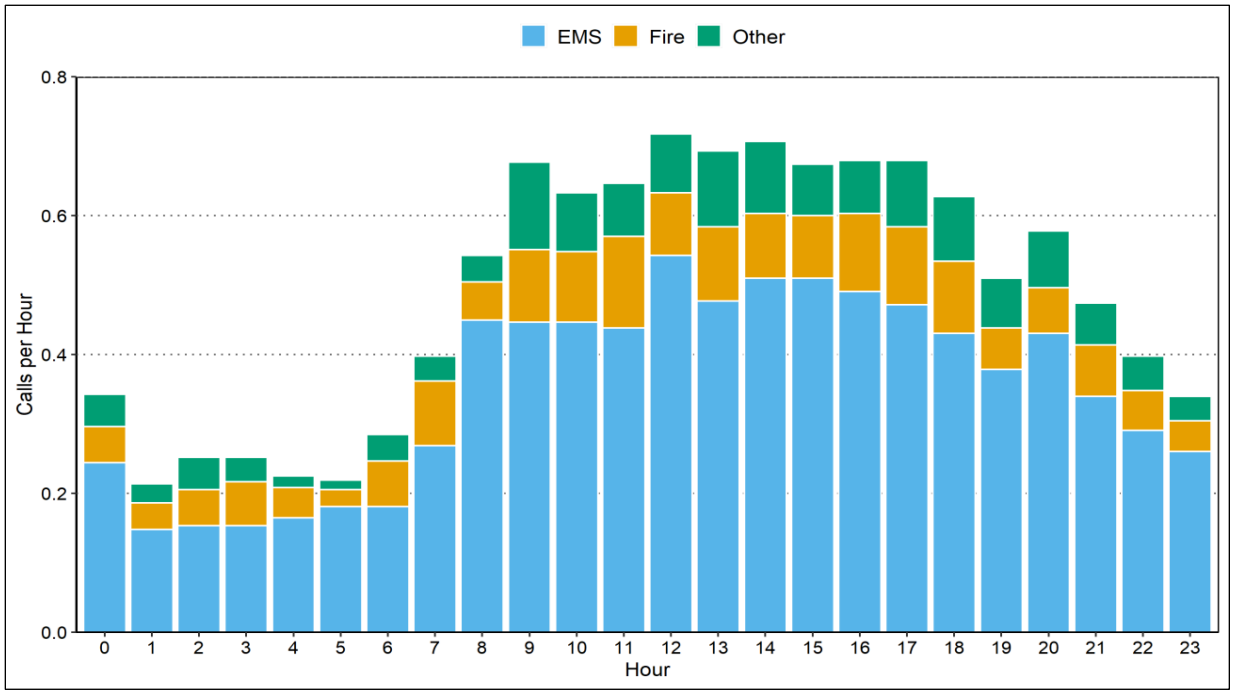

TABLE 3-14: Frequency of Overlapping Calls by First Due Station Area

First Due Area	Scenario	Number of Calls	Percent of Calls	Total Hours
61	No overlapped call	2,215	83.8	1,290.2
	Overlapped with one call	392	14.8	119.0
	Overlapped with two calls	37	1.4	6.3
62	No overlapped call	1,291	91.4	735.3
	Overlapped with one call	120	8.5	35.6
	Overlapped with two calls	1	0.1	0.1

Note: 237 mutual aid calls outside KFD's fire district were not included.

TABLE 3-15: Frequency Distribution of the Number of Calls

Calls in an Hour	Frequency	Percentage
0	5,478	62.5
1	2,462	28.1
2	653	7.5
3	145	1.7
4+	22	0.3
Total	**8,760**	**100.0**

TABLE 3-16: Top 10 Hours with the Most Calls Received

Hour	Number of Calls	Number of Runs	Deployed Hours
11/2/2022, 6:00 a.m. to 7:00 a.m.	6	6	1.5
1/5/2022, 11:00 a.m. to noon	4	7	3.7
7/7/2022, 4:00 p.m. to 5:00 p.m.	4	7	3.1
1/19/2022, 3:00 p.m. to 4:00 p.m.	4	7	3.0
10/6/2022, 3:00 p.m. to 4:00 p.m.	4	7	2.7
4/10/2022, 8:00 p.m. to 9:00 p.m.	4	7	2.3
7/23/2022, 2:00 a.m. to 3:00 a.m.	4	6	3.6
12/5/2022, 9:00 a.m. to 10:00 a.m.	4	6	3.4
11/7/2022, 5:00 p.m. to 6:00 p.m.	4	6	2.5
9/2/2022, 4:00 p.m. to 5:00 p.m.	4	6	2.3

Note: Total deployed hours are a measure of the total time spent responding to calls received in the hour and may extend into the next hour or hours. The number of runs and deployed hours were calculated based on all response units.

The following tables break down the workload of KFD by each station's first due station area or by external fire district where the calls occurred and provides further detail on the workload associated with structure and outside fire calls, also broken down by fire district.

TABLE 3-17: Annual Workload by District

District / Station Area	Calls	Percent Calls	Runs	Runs Per Day	Minutes Per Run	Work Hours	Percent Work	Minutes Per Day
KFD Station 61	2,644	61.6	3,880	10.6	29.9	1,936.3	63.8	318.3
KFD Station 62	1,412	32.9	1,764	4.8	30.9	908.3	29.9	149.3
Evergreen FD	65	1.5	68	0.2	49.5	56.1	1.8	9.2
Smith Valley FD	17	0.4	18	0.0	41.9	12.6	0.4	2.1
South Kalispell FD	58	1.4	67	0.2	33.0	36.8	1.2	6.1
West Valley FD	83	1.9	97	0.3	48.2	77.9	2.6	12.8
Other*	14	0.3	14	0.0	27.1	6.3	0.2	1.0
Total	**4,293**	**100.0**	**5,908**	**16.2**	**30.8**	**3,034.2**	**100.0**	**498.8**

Note: *The 14 calls that occurred in "Other" districts include five calls in Whitefish, two calls in Creston, and one call each in Badrock North, Bigfork, C. Falls, Glacier, Hungry Horse, the South Kalispell / Kalispell corner quadrant, and Somers fire districts, respectively.

TABLE 3-18: Runs for Structure and Outside Fires by District

District / Station Area	Structure Fires		Outside Fires		Combined	
	Runs	Minutes per Run	Runs	Minutes per Run	Annual Hours	Percent Work
KFD Station 61	36	76.7	28	36.3	63.0	62.9
KFD Station 62	10	29.4	4	23.2	6.5	6.5
Evergreen FD	12	108.0	0	NA	21.6	21.6
Smith Valley FD	4	64.0	0	NA	4.3	4.3
South Kalispell FD	0	NA	1	26.4	0.4	0.4
West Valley FD	2	130.0	0	NA	4.3	4.3
Total	**64**	**76.1**	**33**	**34.4**	**100.1**	**100.0**

This analysis of the KFD's resiliency to respond to calls tells us:

- KFD has about 16.2 runs per day.
- The overall peak call time is 7:00 a.m. to 9:00 p.m., with a concentrated peak time between the hours of 10:00 a.m. and 4:00 p.m.
- Ambulance 622 has the highest workload in terms of runs (5.8 a day), followed by Ambulance 624 and 621 (2.1 and 1.8 runs, respectively).
- Of the 16.2 runs a day, 23.3 percent are overlapped with one other run. 1.5 percent of the runs are overlapped by two or more simultaneous calls.

It was noted by the CPSM team in 2018 that the KFD had a moderate resiliency issue.

The KFD continues to have a moderate resiliency issue as detailed above. The KFD's ability to absorb multiple calls and restore response capabilities to a state of normalcy can be challenging at certain times, which include multiple EMS calls that result in a transport, a single working structure fire or multi-unit fire call in the city that ties up both fire units for extended time periods, or lastly when a single fire unit and/or EMS unit is tied up for an extended period.

RISK CATEGORIZATION

The risks that the department faces can be natural or manufactured and may be affected by the changing demographics of the community served. Risk is often categorized in three ways: 1) the probability the event will occur in the community; 2) consequence of the event on the community; and 3) the impact upon the fire department.

A comprehensive risk assessment is a critical aspect of creating standards of cover and can assist the City of Kalispell in quantifying the risks that it faces. Once those risks are known, the department is better equipped to determine if the current response resources are sufficiently staffed, equipped, trained, and positioned.

In this component, the factors that drive the service needs are examined and then link directly to discussions regarding the assembling of an effective response force (ERF) and when contemplating the response capabilities needed to adequately address the existing risks, which encompasses the component of critical tasking. The risks that the department faces can be natural or manufactured and may be affected by the changing demographics of the community served. Risk is often categorized in three ways:

- The probability the event will occur in the community.
- Consequence of the event on the community.
- The impact on the fire department.

The following tables look at the probability of the event occurring within the City of Kalispell, ranging from unlikely to frequent; The consequence of the event on the community, ranging from insignificant to catastrophic; and the impact on the fire department, which also ranges from insignificant to catastrophic.

TABLE 3-19: Event Probability

Probability	Chance of Occurrence	Description	Risk Score
Unlikely	2% to 25%	Event may occur only in exceptional circumstances	**2**
Possible	26% to 75%	Event could occur at some time and/or recorded incidents.	**4**
Highly Probable	76% to 90%	Event will probably occur and/or regular recorded incidents and strong anecdotal evidence. Considerable opportunity, means, reason to occur.	**8**
Likely, Frequent	91% to 100%	Event is expected to occur. High level of recorded 10 incidents and/or very strong anecdotal evidence.	**10**

TABLE 3-20: Consequence to Community Matrix

Impact	Consequence Categories	Description	Risk Score
Insignificant	Life Safety	■ 1 or 2 people affected, minor injuries, minor property damage, and no environmental impact.	**2**
Minor	Life Safety Economic and Infrastructure Environmental	■ Small number of people affected, no fatalities, and small number of minor injuries with first aid treatment. Minor displacement of people for <6 hours and minor personal support required. ■ Minor localized disruption to community services or infrastructure for <6 hours. Minor impact on environment with no lasting effects.	**4**
Moderate	Life Safety Economic and Infrastructure Environmental	■ Limited number of people affected (11 to 25), no fatalities, but some hospitalization and medical treatment required. Localized displacement of small number of people for 6 to 24 hours. Personal support satisfied through local arrangements. Localized damage is rectified by routine arrangements. ■ Normal community functioning with some inconvenience. Some impact on environment with short-term effects or small impact on environment with long-term effects.	**6**
Significant	Life Safety Economic and Infrastructure Environmental	■ Significant number of people (>25) in affected area impacted with multiple fatalities, multiple serious or extensive injuries, and significant hospitalization. ■ Large number of people displaced for 6 to 24 hours or possibly beyond. External resources required for personal support. Significant damage that requires external resources. Community only partially functioning, some services unavailable. Significant impact on environment with medium- to long-term effects.	**8**
Catastrophic	Life Safety Economic and Infrastructure Environmental	■ Very large number of people in affected area(s) impacted with significant numbers of fatalities, large number of people requiring hospitalization; serious injuries with long-term effects. General and wide-spread displacement for prolonged duration; extensive personal support required. Extensive damage to properties in affected area requiring major demolition. ■ Serious damage to infrastructure. Significant disruption to, or loss of, key services for prolonged period. ■ Community unable to function without significant support. ■ Significant long-term impact on environment and/or permanent damage.	**10**

TABLE 3-21: Impact on the Kalispell Fire Department

Impact	Impact Categories	Description	Risk Score
Insignificant	Personnel and Resources	One apparatus out of service for period not to exceed one hour.	**2**
Minor	Personnel and Resources	More than one but not more than two apparatus out of service for a period not to exceed one hour.	**4**
Moderate	Personnel and Resources	More than 50 percent of available resources committed to incident for over 30 minutes.	**6**
Significant	Personnel and Resources	More than 75 percent of available resources committed to an incident for over 30 minutes.	**8**
Catastrophic	Personnel, Resources, and Facilities	More than 90 percent of available resources committed to incident for more than two hours or event which limits the ability of resources to respond.	**10**

The City of Kalispell is responsible for providing four core services: fire response, medical response (ALS / Transport), rescues, and hazardous materials response. The three-axis risk methodology considers the probability of those occurrences, the likely consequence, and the impact on fire department resources. CPSM then looks at the minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments.[75]

The following sections contain an analysis of the various risks considered in the city. In this analysis, information presented and reviewed in this section (All-Hazards Risk Assessment of the Community) have been considered. In the past, risk analysis has only evaluated two factors of risk: probability and consequence. Contemporary risk analysis considers the impact of each risk to the organization, thus creating a three-axis approach to evaluating risk as depicted in the following figure. Risk is categorized as Low, Moderate, High, or Special.

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75. NFPA 1710.

CPSM uses the three-axis risk assessment formula:

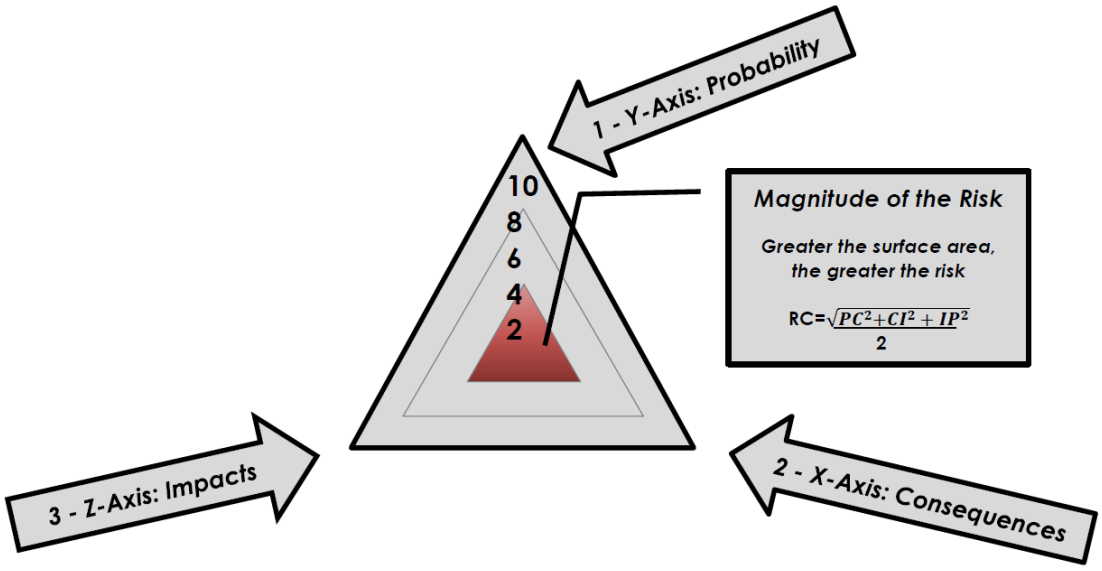
P = Probability (Y-Axis): Probability is associated with the frequency of an incident type.

C = Consequences (X-Axis): Consequence is the measure of the outcome of an incident type by identifying and categorizing community hazards. Risk factors then quantify the degree of potential danger the hazard presents.

I = Impact (Z-Axis): Impact describes a fire department's ability to provide ongoing services to the remaining areas of a community and what plan is in place for both the current incident, but also overall high-volume demand areas. It is important to have a plan in place to relocate response resources, use mutual or automatic aid, as an examples, to ensure the best coverage possible.

The following graphs should help illustrate:

FIGURE 3-24: Three-Axis Risk Calculation



The following factors/hazards were identified and considered:

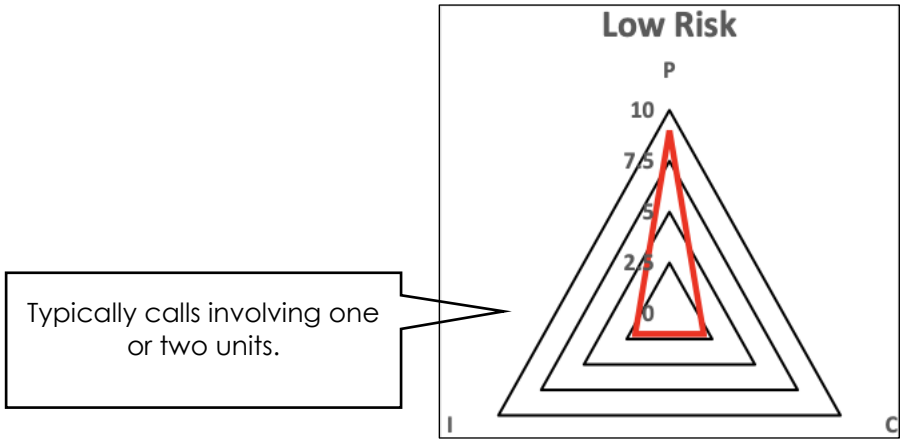
- **Demographic factors** such as age, socio-economic, vulnerability.
- **Environmental hazards** such as major weather events, snow and ice events, wind events.
- **Manufactured hazards** such as rail lines, roads and intersections, target hazards.
- **Structural/building risks.**
- **Fire and EMS incident numbers and density.**

The assessment of each factor and hazard as listed below took into consideration the likelihood of the event, the impact on the city itself, and the impact on the fire department's ability to deliver emergency services. The list is not all inclusive but includes categories most common or that may present to the city.

Low Risk

- Automatic fire/false alarms.
- Low acuity-BLS EMS Incidents.
- Low-risk environmental event.
- Motor vehicle accident (MVA), with no entrapment or multiple patients.
- Good intent/hazard/public service fire incidents with no life-safety exposure.
- Outside fires such as grass, rubbish, dumpster, vehicle with no structural/life-safety exposure.

FIGURE 3-25: Low Risk



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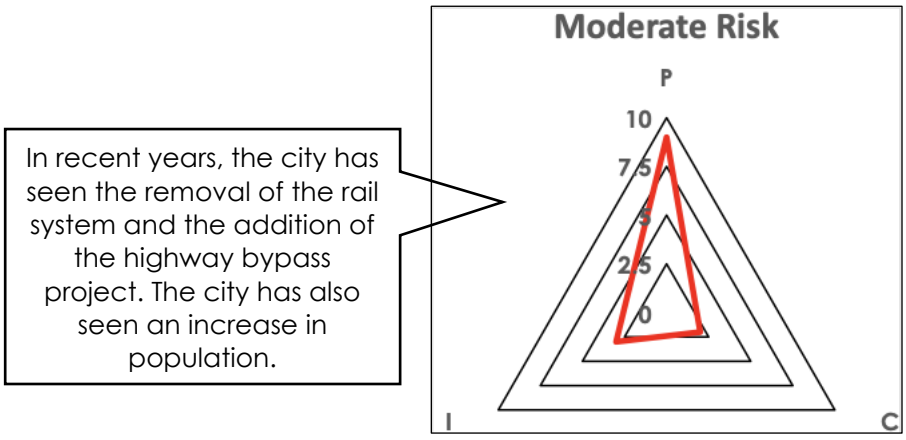
Moderate Risk

- Fire incident in a single-family dwelling where fire and smoke or smoke is visible, indicating a working fire.
- Suspicious substance investigation involving multiple fire companies and law enforcement agencies.
- ALS EMS incident.
- MVA with entrapment.
- Small aircraft incident.
- Low-angle rescue involving ropes and rope rescue equipment and resources.
- Surface water rescue.
- Good intent/hazard/public service fire incidents with life-safety exposure.
- Rail event with no release of product or fire, and no threat to life safety.

FIGURE 3-26: Moderate Risk



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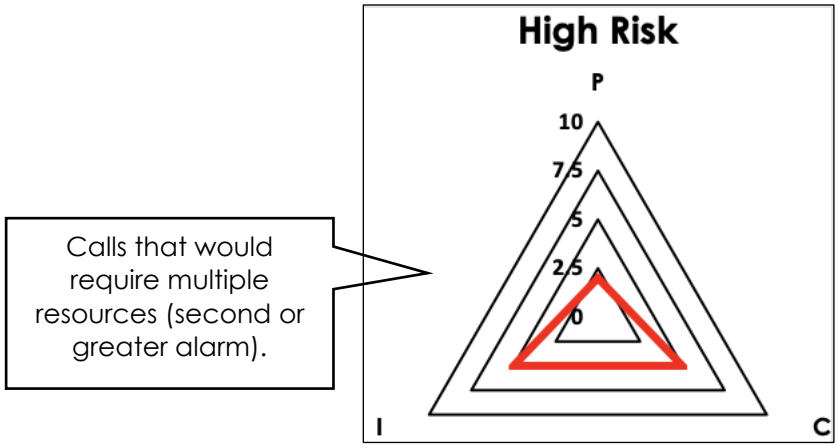
High Risk

- Working fire in a target hazard.
- Cardiac arrest.
- Mass casualty incident of more than 10 but less than 24 patients.
- Confined space rescue.
- Structure collapse involving life-safety exposure.
- High-angle rescue involving ropes and rope rescue equipment.
- Trench rescue.
- Suspicious substance incident with multiple injuries.
- Industrial leak of hazardous materials that causes exposure to persons or threatens life safety.
- Weather events that create widespread flooding, heavy winds, building damage, and/or life-safety exposure.
- Hazardous materials spill or leak.

FIGURE 3-27: High Risk



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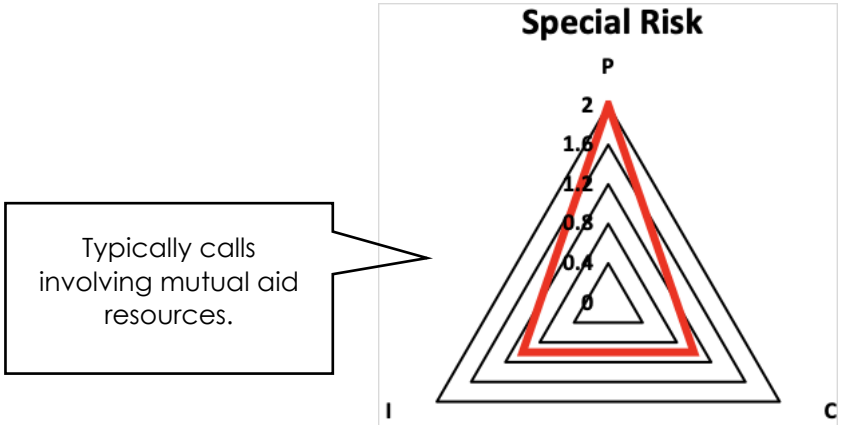
Special Risk

- Working fire in a structure of more than three floors.
- Fire at an industrial building or complex with hazardous materials.
- Fire in an occupied targeted hazard with special life-safety risks such as age, medical condition, or other identified vulnerabilities.
- Mass casualty incident of more than 25 patients.
- Aircraft incident, re-routed commercial airliner, miliary aircraft that causes mass casualty.
- Rail or transportation incident that causes life-safety exposure or threatens life safety through the release of hazardous smoke or materials and evacuation of residential and business occupancies.
- Explosion in a building that causes exposure to persons or threatens life safety or outside of a building that creates exposure to occupied buildings or threatens life safety.
- Massive river/estuary flooding, fire in a correctional or medical institution, high-impact environmental event, pandemic.
- Mass gathering with threat fire and threat to life safety or other civil unrest, weapons of mass destruction release.

FIGURE 3-28: Special Risk



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All-Hazards Risk Assessment Recommendations:

- KFD should address the wildland threat from surrounding WUI areas. This should include working with the county on evacuation systems (zones, maps, notifications, evacuation centers, etc.), staffing policies for high fire periods (Red Flag weather), review of mutual and automatic aid agreements, etc. (Recommendation No. 33.)
- KFD should conduct regional mutual aid agency drills that address issues such as mass shootings. (Recommendation No. 34.)
- CPSM recommends fire staff attend and participate in Move the 2040 committee and be an active voice on street improvement initiatives. (Recommendation No. 35.)
- CPSM recommends the city consider pre-emption emergency vehicle right-of-way street light technology. (Recommendation No. 36.)

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SECTION 4. FIRE AND EMS OPERATIONS, DEPLOYMENT, AND PERFORMANCE

Fire and Emergency Medical Services is the operational branch of KFD that provides emergency response to calls for assistance. In addition to normal fire and emergency medical responses at the ALS level, the department provides mutual aid to neighboring jurisdictions and has personnel trained to handle complex technical rescues, ice rescues, and to support the Kalispell Police Special Response Team. The department is host to the Northwest Hazardous Materials Response Team. Operations personnel also perform company level training, fire prevention including limited company level inspections, fire preplanning, fire hydrant inspections, and community-based programs.

Fire, rescue, and emergency medical system (EMS) incidents, and the fire department's ability to respond to, manage, and mitigate them effectively, efficiently, and safely, are mission-critical components of the emergency services delivery system. In fact, fire, rescue, and EMS operations provide the primary, and certainly most important, basis for the very existence of the fire department.

Nationwide, fire departments are responding to more EMS calls and fewer fire calls, particularly fire calls that result in active firefighting operations by responders. This is well-documented in both national statistical data as well as CPSM fire studies. Kalispell is mostly consistent with these trends based upon the data we collected numbers. Those facts notwithstanding, improved building construction, code enforcement, automatic sprinkler systems, and aggressive public education programs have contributed to a decrease in serious fires and, more importantly, fire deaths among civilians.

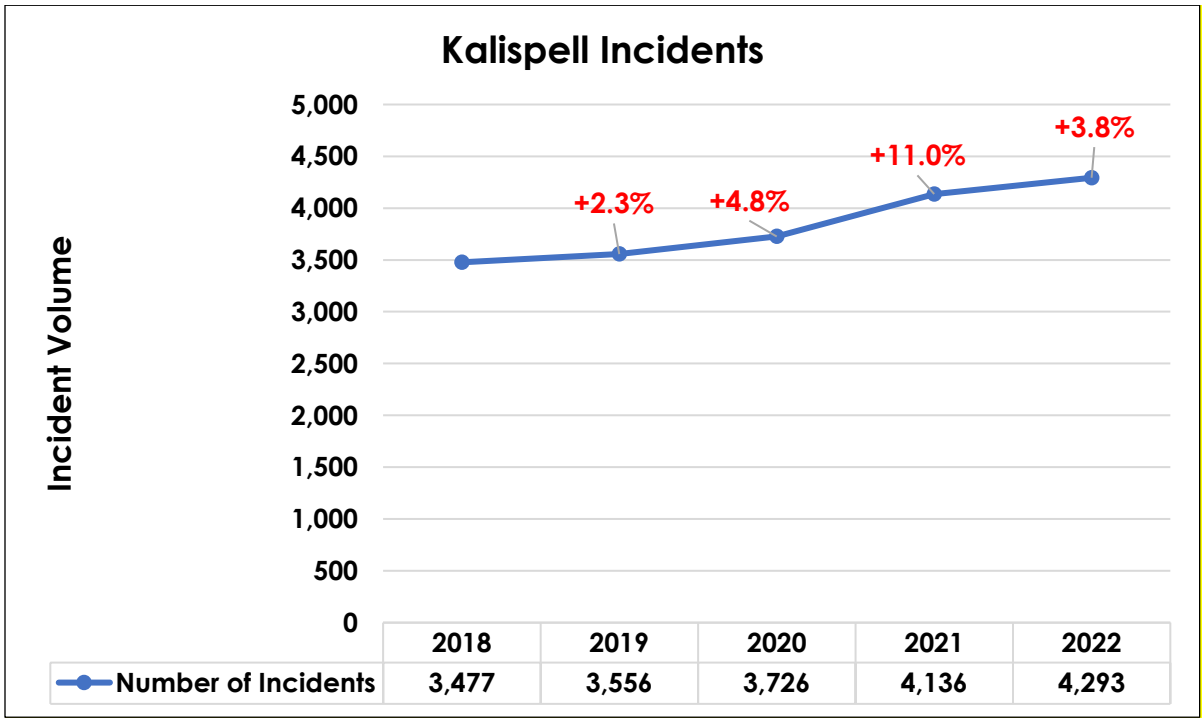
Despite trends and improvements in the overall fire protection system, fires still do occur, and the largest percentage of those occur in residential occupancies where they place the civilian population at risk. Although they occur with less frequency than they did several decades ago, when they occur today, they grow much quicker and burn more intensely than they did in the past. As will be discussed later in this section, it is imperative that the fire department is able to assemble an effective response force (ERF) within a reasonable time period in order to successfully mitigate these incidents with the least amount of loss possible.

Fire and EMS Incident Increase, 2018–2023

The fire and EMS delivery system in Kalispell is an integrated one where the KFD provides all services. Other surrounding emergency services providers will occasionally help with major incidents or during times of heavy incident activity. Since the previous analysis CPSM conducted for the Kalispell Fire Department, fire and EMS incidents have increased as follows:

- Total call volume increased 23.5 percent over a five-year period from 3,477 in 2018 to 4,293 in 2022.
- EMS calls increased **19 percent** from 2,567 in 2018 to 3,067 in 2022.
- Fire calls increased **32 percent** from 506 in 2018 to 670 in 2022.
- Other calls (canceled and mutual aid combined) increased **38 percent** from 404 in 2018 to 556 in 2022.

FIGURE 4-1: KFD Incident Increase, 2018–2022



CURRENT KFD FIRE OPERATIONAL STAFFING AND SERVICE DELIVERY MODEL

When exploring staffing and deployment of a fire department it is prudent to design an operational strategy around the actual circumstances that exist in the community and the fire and risk problems that are identified. The strategic and tactical challenges presented by the widely varied hazards that a department protects against need to be identified and planned for through a community risk analysis planning and management process, as completed in this report. It is ultimately the responsibility of elected officials to decide the level of risk that is acceptable to their community. Once the acceptable level of risk has been decided, then operational service goals can be established. Whether looking at acceptable risk, or level of service goals, it would be imprudent, and probably very costly, to build a deployment strategy that is based solely on response times and emotion.

The staffing of fire and EMS units is a never-ending focus of attention among fire service and governmental leadership. While NFPA 1710 and OSHA provide guidelines (and to some extent the law, specifically OSHA in OSHA states) as to the level of staffing and response of personnel, the adoption of these documents varies from state to state, and department to department. NFPA 1710 addresses the recommended staffing in terms of specific types of occupancies and risks. The needed staffing to conduct the critical tasks for each specific occupancy and risk are determined to be the *Effective Response Force* (ERF). The ERF for each type of occupancy is detailed in NFPA 1710 (2020 edition), section 5.2.4, Deployment.

One of the factors that has helped the fire service in terms of staffing is technology. The fire service continues to benefit from technological advances that help firefighters extinguish fires more effectively. More advanced equipment in terms of nozzles, personal protective gear,

thermal imaging systems, advancements in self-contained breathing apparatus, incident command strategies, drones with infrared cameras, and devices used to track personnel air supply are some of the technologies and techniques that help firefighters extinguish fires faster and manage the fireground more effectively and safely. While some of these technologies do not reduce the staffing or workforce needed, they do have an impact on firefighter safety, property loss, and crew fatigue.

Even with the many advances in technology and equipment, the fireground is an unforgiving and dynamic environment where firefighters must complete critical tasks simultaneously. Lightweight wood construction, truss roofs, dwellings and buildings with basements, increased setbacks that make accessibility to the building difficult, and large footprint commercial buildings and estate homes are examples of the challenges that firefighting forces are met with when mitigating structural fires. Kalispell is currently experiencing a significant amount of new residential and multifamily construction, and most newly constructed homes are larger than much of the older home stock. These homes tend to incorporate open floor plans, with large spaces that contribute to rapid fire spread. In addition, homes constructed since 1980—a significant portion of the housing stock in Kalispell—most likely incorporate lightweight construction which contributes to rapid fire spread and the potential for early collapse of the entire structure. Large commercial buildings present firefighters with different sets of hazards and risks. The challenge of rapid fire spread is exacerbated by the use of lightweight roof trusses, vinyl siding, and combustible sheathing. The result is that more personnel are required to mitigate the incidents safely and effectively in these structures. Providing adequate staffing through an ***Effective Response Force*** for these environments depends on many factors.

The operations necessary to successfully extinguish a structure fire, and do so effectively, efficiently, and safely, require a carefully coordinated and controlled plan of action where certain operations such as venting ahead of the advancing interior hose line(s) must be carried out with a high degree of precision and timing. Multiple operations, frequently where seconds count, such as search and rescue operations and trying to cut off a rapidly advancing fire, must also be conducted simultaneously. If there are not enough personnel on the incident initially to perform all the critical tasks, some tasks will, out of necessity, be delayed. This can result in an increased risk of serious injury or death to building occupants and firefighters, and increased property damage.

While staffing and deployment of fire services is not an exact science, CPSM has developed metrics it follows and recommends that communities consider when making recommendations about staffing and deployment of fire resources. While there are many benchmarks that communities and management use in justifying certain staffing levels, there are certain considerations that are data driven and presented through national consensus that serve this purpose as well. CPSM recommends that communities consider these factors when making decisions regarding staffing and deployment of fire resources.

Staffing is one component of these metrics and is linked to station location and what type of apparatus is responding, that is, the combination of engine, ladder, ambulance, or specialty apparatus. These joint factors help to determine what level of fire and EMS service is going to be delivered in terms of labor, response time, and resources.

Linked to these components of staffing and deployment are critical factors that drive various levels and models from which fire and EMS departments staff and deploy. These factors are:

All-Hazard Risk and Vulnerability of the Community: A fire department collects and organizes risk evaluation information about individual properties, and on the basis of the rated factors then derives a "fire risk score" for each property. The community risk and vulnerability assessment

evaluates the community as a whole, and with regard to property, measures all property and the risk associated with that property and then segregates the property as either a high-, medium-, or low-hazard depending on factors such as the life and building content hazard, and the potential fire flow, staffing, and apparatus types required to mitigate an emergency in the specific property. Factors such as fire protection systems are considered in each building evaluation. Included in this assessment should be both a structural and nonstructural (weather, wildland-urban interface, transportation routes, etc.) analysis. All factors are then analyzed and the probability of an event occurring, the impact on the fire department, and the consequences on the community are measured and scored.

Population, Demographics, and Socioeconomics of a Community: Population and population density drives calls for local government service, particularly public safety. The risk from fire is not the same for everyone, with studies telling us age, gender, race, economic factors, and what region in the country one might live in contribute to the risk of death from fire. Studies also tell us these same factors affect demand for EMS, particularly population increase and the more frequent use of hospital emergency departments as many uninsured or underinsured patients rely on EDs for their primary and emergent care, utilizing prehospital EMS transport systems as their entry point.

Call Demand: Demand is made up of the types of calls to which units are responding and the location of the calls. This drives workload and station location considerations. Higher population centers with increased demand require more resources.

Workload of Units: This factor involves the types of calls to which units are responding and the workload of each unit in the deployment model. This defines what resources are needed and where; it links to demand and station location, or in a dynamic deployed system, the area(s) in which to post units.

Travel Times from Fire Stations: Analyzes the ability to cover the fire management zone/response district in a reasonable and acceptable travel time when measured against national benchmarks such as NFPA 1710, and the ISO-FSRS engine and ladder company grading parameters. This metric links to demand, risk assessment, unit workload, and resiliency.

NFPA Standards, ISO, OSHA requirements (and other national benchmarking).

EMS Demand: Community demand; demand on available units and crews; hospital off-load wait times; demand on non-EMS transport units responding to calls for service (fire/police units); availability of crews in departments that utilize cross-trained EMS staff to perform fire suppression.

Critical Tasking: On-scene capabilities to control and mitigate emergencies are determined by staffing and deployment of certain resources for low-, medium-, and high-risk responses. Critical tasking involves the individual or team-level tasks that are required to be performed by on-scene personnel based on the type of incident the firefighting and EMS force is responding to. Critical tasks are to the greatest extent performed simultaneously for a more effective operation aimed at increased firefighter and the public's safety. Those risks/incidents requiring more critical tasks to be performed simultaneously drive a larger response force. An example of the importance of simultaneous critical tasking is a search and rescue crew and a ventilation crew operating while a crew or crews are advancing attack lines.

Effective Response Force: The ability of the jurisdiction to assemble the necessary personnel on the scene to perform the critical tasks necessary in rapid sequence to mitigate the emergency. The speed, efficiency, and safety of on-scene operations are dependent upon the number of firefighters performing the tasks. If fewer firefighters are available to complete critical on-scene

tasks, those tasks will require more time to complete and impact overall operations and the safety of firefighters and the public.

Innovations in Staffing and Deployable Apparatus: The fire department's ability and willingness to develop and deploy innovative apparatus (combining two apparatus functions into one to maximize available staffing, as an example). Deploying quick response vehicles (light vehicles equipped with medical equipment and some light fire suppression capabilities) on those calls (typically the largest percentage) that do not require heavy fire apparatus.

Community Expectations: The gathering of input and feedback from the community, then measuring, understanding, and developing goals and objectives to meet community expectations.

Ability to Fund: The community's understanding of, and its ability and willingness to fund fire and EMS services, while considering how budgetary revenues are divided up to meet all of a community's expectations.

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While each component presents its own metrics of data, consensus opinion, and/or discussion points, aggregately they form the foundation for informed decision-making geared toward the implementation of sustainable, data- and theory-supported, effective fire and EMS staffing and deployment models that fit the community's profile, risk, and expectations. The City of Kalispell had not updated the comprehensive analysis of these elements from the 2018 study prior to this analysis. However, part of CPSM's work and analysis involved the completion of an updated community fire risk and target hazard analysis based upon the city's rapid growth the past five years.

The KFD currently has an authorized staff of 35 personnel. Of these, 34 are sworn emergency response personnel, with 32 assigned to fire and EMS operations positions while the remaining two, the Fire Chief and Assistant Fire Chief, perform a variety of administrative and support functions. The single non-uniformed person is an office Administrative Assistant position who performs a variety of roles for the department.

Each department shift (except D Shift) has a total of 10 personnel assigned, including two Captains, two Engineers, and six firefighters, with an allowance for up to three personnel off per shift. D Shift, which is between 7:00 a.m. and 7:00 p.m. daily, is staffed with two firefighters. One of these personnel is on duty each day. Twenty-four of the department's operations personnel are certified paramedics (EMT-P); the remainder are Advanced Emergency Medical Technicians (AEMTs). CPSM was informed that in 2006 when Station 62 opened, and the city's population and call volume were much lower, each shift had 11 personnel assigned.

The minimum staffing specified by the contract is five personnel on duty. The KFD normally tries to have a minimum of seven personnel on duty from 7:00 a.m. to 7:00 p.m. and six on duty from 7:00 p.m. to 7:00 a.m. By contract up to three personnel can be off on scheduled leave at one time.

The department delivers field operations and emergency response services through a clearly defined division of labor that includes middle managers/first-line operational supervisors

(Captains), technical specific staff (Engineers), and firefighters. Currently, the entire city is considered a single operational unit and is commanded each day by the senior captain working. Field personnel work a three-platoon, 56-hour work week that is comprised of 24-hour long duty days. Personnel are on duty for 24 hours followed by 48 hours off duty. They work a 212-hour, 28-day cycle that includes Kelly Days. Some of the challenges associated with the number of Kelly Days that KFD members earn were discussed in Section 2 of this report.

The KFD currently operates out of two stations, staffing one engine, one quint/ladder, and multiple EMS units. The number and types of units staffed is dependent upon the on-duty staffing. The following figure illustrates KFD deployment at each staffing level.

TABLE 4-1: KFD Staffing Matrix

On-Duty Staffing Level	Station 61 Staffing	Unit(S) Staffed	Station 62 Staffing	Unit(S) Staffed
5 Personnel	3	Engine w/ 3	2	Ambulance w/ 2
6 Personnel	3	Engine w/ 3	3	Ladder w/ 3 or Ambulance w/ 3
7 Personnel	3	Engine w/ 3	4	Ladder w/ 4 and/or 2 Ambulances w/ 2
8 Personnel	5	Engine w/ 3 Ambulance w/ 2	3	Ladder w/ 3 or Ambulance w/ 3
9 Personnel	5	Engine w/ 3 Ambulance w/ 2	4	Ladder w/ 4 and/or 2 Ambulances w/ 2
10 Personnel	5	Engine w/ 3 Ambulance w/ 2	5	Ladder w/ 3 Ambulance w/ 2
11 Personnel	6	Engine w/ 4 Ambulance w/ 2	5	Ladder w/ 3 Ambulance w/ 2

The table above depicts various staffing levels and deployment models for the department. As discussed earlier, KFD assigns extra personnel on each shift to fill in for scheduled and unscheduled leave. The KFD, like many fire departments across the country, staffs through the minimum-staffing level model, meaning that on each shift there is a minimum number of staffed positions to be filled each day. When the number of positions vacated by scheduled or unscheduled leave drives the number of personnel available below minimum staffing levels, positions are then backfilled by overtime staffing.

The following figure illustrates the location of the KFD fire stations.

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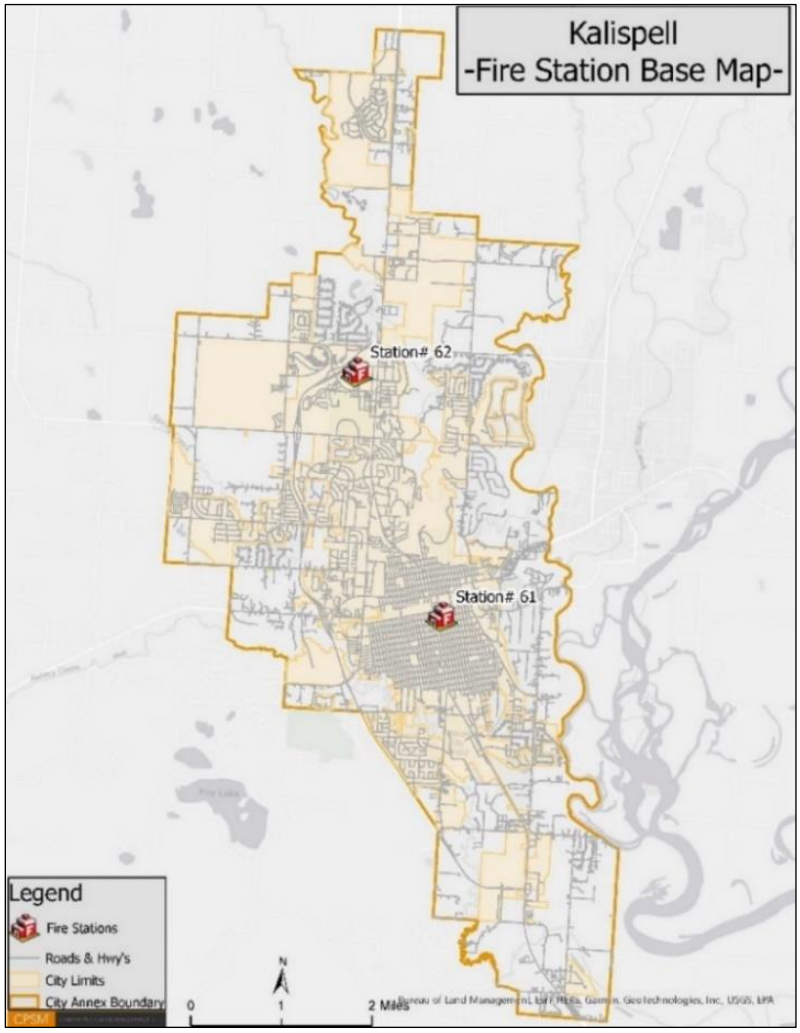
FIGURE 4-2: KFD Station Locations



FIRE OPERATIONS

With a population density estimated to be approximately 1,976 people per square mile, Kalispell is considered an urban community by the Census Bureau. Like many older communities that are now experiencing growth, the city has an assortment of commercial, industrial, and residential buildings it must protect, including a growing number of multifamily residential buildings and large commercial facilities. If a fire grows to an area in excess of 2,000 square feet, or extends beyond the building of origin, it is most probable that additional personnel and equipment will be needed, as initial response personnel will be taxed beyond their available resources. This is particularly true in the older, more densely developed areas of the city including the downtown business district.

From this perspective it is critical that KFD units respond quickly and initiate extinguishment efforts as rapidly as possible after notification of an incident. It is, however, difficult to determine in every case the effectiveness of the initial response in limiting the fire spread and fire damage. Many variables will impact these outcomes, including:

- The time of detection, notification, and ultimately response of fire units.
- The age and type of construction of the structure. Being primarily a community where significant development has occurred since the 1980s, many of the buildings in Kalispell will be of lightweight construction, which is prone to early collapse in a fire situation.
- The presence of any built-in protection (automatic fire sprinklers) or fire detection systems. Fortunately, the majority of the new commercial construction in Kalispell is equipped with automatic fire suppression systems.
- The contents that are stored in the structure and its flammability.
- The presence of any flammable liquids, explosives, or compressed gas canisters.
- Weather conditions and the availability of water for extinguishment.

Subsequently, in those situations in which there are extended delays in the extinguishment effort, or the fire has progressed sufficiently upon arrival of fire units, there is actually very little that can be done to limit the extent of damage to the entire structure and its contents. In these situations, suppression efforts may need to focus on the protection of nearby or adjacent structures (exterior exposures) with the goal being to limit the spread of the fire beyond the building of origin, and sometimes the exposed building. This is often termed ***protecting exposures***. When the scope of damage is extensive, and the building becomes unstable, firefighting tactics typically move to what is called a ***defensive attack***, or one in which hose lines and more importantly personnel are on the outside of the structure and their focus is to merely discharge large volumes of water until the fire goes out. In these situations, the ability to enter the building is very limited and if victims are trapped in the structure, there are very few safe options for making entry.

Today's fire service is actively debating the options of interior firefighting vs. exterior firefighting. These terms are self-descriptive in that an ***interior fire attack*** is one in which firefighters enter a burning building in an attempt to find the seat of the fire and from this interior position extinguish the fire with limited amounts of water. An ***exterior fire attack***, also sometimes referred to as a ***transitional attack***, is a tactic in which firefighters initially discharge water from the exterior of the building, either through a window or door and knock down the fire before entry in the building is made. The concept is to introduce larger volumes of water initially from the outside of the building, cool the interior temperatures, and reduce the intensity of the fire before firefighters enter the building. A transitional attack is most applicable in smaller structures, typically single family, one-story detached units which are smaller than approximately 2,500 square feet in total floor area. For fires in larger structures, the defensive-type, exterior attacks generally involve the use of master streams capable of delivering large volumes of water for an extended period of time.

Recent studies by UL have evaluated the effectiveness of interior vs. exterior attacks in certain simulated fire environments. These studies have found the exterior attack to be equally effective in these simulations.[76] This debate is deep-seated in the fire service and traditional tactical measures have always proposed an interior fire attack, specifically when there is a possibility that victims may be present in the burning structure. The long-held belief in opposition to an exterior attack is that this approach may actually push the fire into areas that are not burning or where

76. "Innovating Fire Attack Tactics," U.L.COM/News Science, Summer 2013.

victims may be located. The counterpoint supporting the exterior attack centers on firefighter safety.

The exterior attack limits the firefighter from making entry into those super-heated structures that may be susceptible to collapse. From CPSM's perspective, there is at least some likelihood that a single crew of three personnel will encounter a significant and rapidly developing fire situation. This situation can occur during times of high incident activity when other units may be committed on other emergencies, or, in fringe areas of the city where other units responding to the incident may have longer response times to arrive on the scene. It is prudent, therefore, that the KFD build at least a component of its training and operating procedures around the tactical concept of the exterior fire attack when the situation warrants such an approach.

Fire Operations Recommendations:

- The KFD should build at least a portion of its training regimens and tactical strategies around the exterior or transitional attack for when the fire scenario and the number of available units/responding personnel warrants this approach. (Recommendation No. 37.)
- In acknowledgement of the fact that the KFD operates in a minimal staffing mode and recognizing the potential for rapid fire spread, particularly in the more densely developed areas of the city, the KFD should equip all its apparatus with the appropriate appliances and hose and develop standardized tactical operations that will enable arriving crews to quickly deploy high-volume fire flows of 1,200 to 1,500 gallons per minute (if the water supply will permit this), utilizing multiple hose lines, appliances, and master stream devices. This flow should be able to be developed within four to five minutes after the arrival of an apparatus staffed with three personnel. (Recommendation No. 38.)

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Wildland-Urban Interface

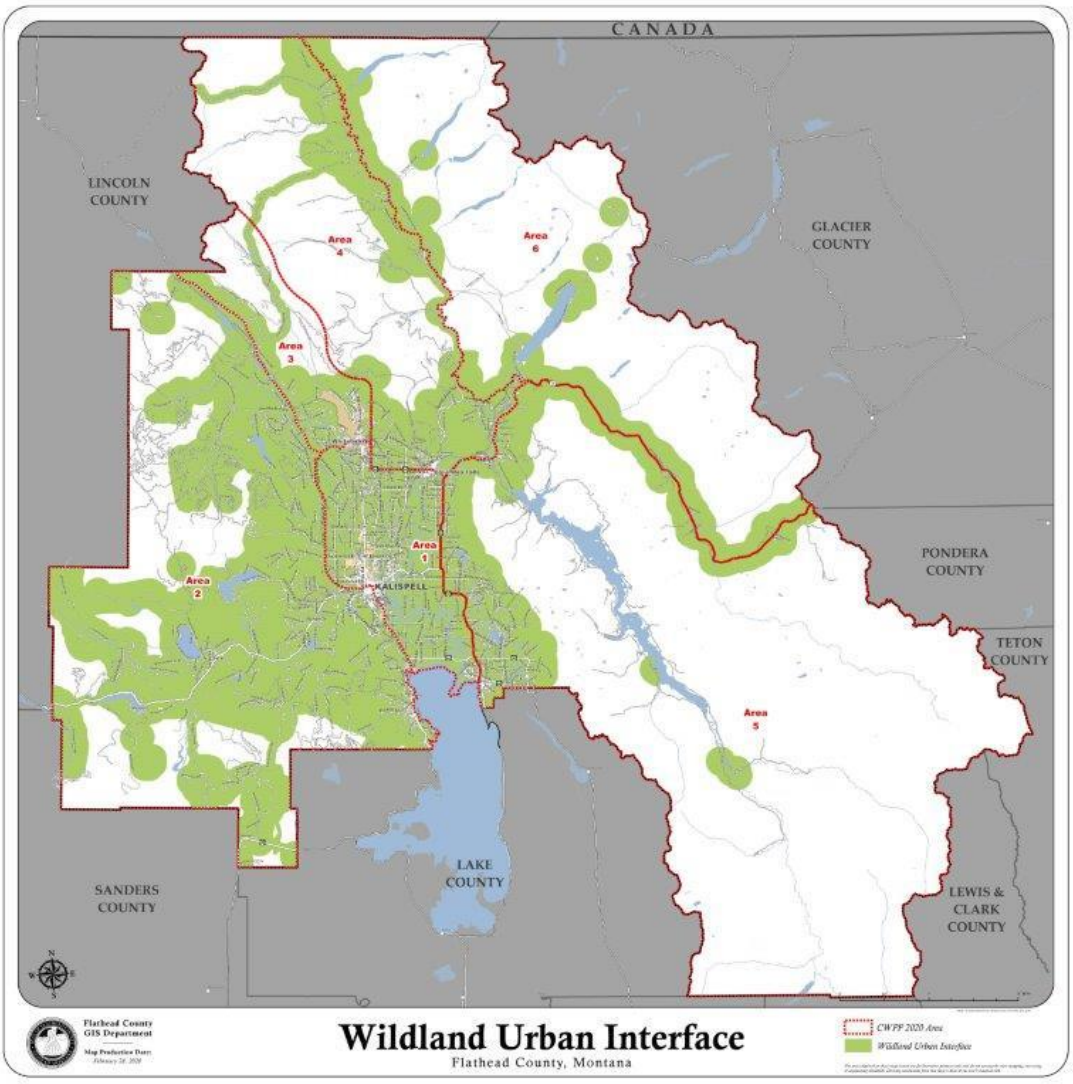
Wildland-urban interface (WUI) is a term commonly known in areas that experience wildfires. The WUI is the zone of transition between unoccupied land and human development. It is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. The expanding WUI has become a growing concern in many areas of the country as people leave urban, older, densely populated areas for what have traditionally been low-density rural areas or at a minimum fringe or outer ring suburbs. It appears this migration has accelerated since the arrival of COVID.

The challenges of the WUI are exacerbated in communities such as Kalispell that are undergoing rapid growth and development. These areas present some unique challenges to firefighters, especially those more accustomed to combating fires in urban or suburban areas. As the WUI continues to grow, these fires will become an increasing problem for fire departments across the

country. Any area that experiences brush fires, grass fires, forest fires or outdoor fires can experience WUI incidents. These fires can have the same impact when they occur close to homes, neighborhoods, and communities. Communities need to understand the risks and make changes to their environments to make them less susceptible to fire.

According to the U.S. Forest Service, the number of houses in the WUI relative to the total houses in Montana ranges between 60.1 percent and 82.6 percent of the houses.[77] As the next figure illustrates, Kalispell is considered surrounded by WUI. This is something that the city and KFD will need to maintain an awareness of.

FIGURE 4-3: Kalispell Area Wildland-Urban Interface



The KFD has taken some steps to address the WUI and wildland firefighting. Wildland/brush truck 682 responds from Station 62. All KFD personnel are trained and capable of wildland response.

77. https://www.usfa.fema.gov/wui/what-is-the-wui.html#:~:text=The%20WUI%20is%20the%20zone,undeveloped%20wildland%20or%20vegetative%20fuels.

This includes personnel who are Red Card-certified at Wildland Firefighter I and II levels. Some personnel are qualified as Crew Bosses (comparable to a KFD Captain).

As Kalispell continues to grow and develop, the city will need to maintain an awareness of its WUI. It should also consider becoming a fire-adapted community (FAC), which is one that collaborates to identify its wildfire risk and works collectively on actionable steps to reduce its risk of loss. This work protects property and increases the safety of firefighters and residents. Creating a FAC is a part of the National Cohesive Wildfire Management Strategy to keep communities safer during a wildfire event.

Wildland-Urban Interface Recommendations:

- The KFD should address the wildland threat from surrounding WUI areas. This should include working with the county on evacuation systems (zones, maps, notifications, evacuation centers, etc.), staffing policies for high fire periods (Red Flag weather), review of mutual and automatic aid agreements, etc. (Recommendation No. 39.)
- The City of Kalispell should consider becoming a fire-adapted community (FAC) collaborating to identify its wildfire risk and working collectively on actionable steps to reduce its risk of loss. Part of this process should include the creation of a written assessment of risks using a Community Wildfire Protection Plan (CWPP) or Natural Hazard Mitigation Plan.[78] (Recommendation No. 40.)

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Fire Preplanning

An important part of risk management in the fire service is pre-fire planning inspections by fire companies of large, high-hazard, and complex buildings in each fire response zone. A fire company's pre-fire surveys can have a significant impact by potentially reducing structural fire loss and reducing firefighter injuries. Pre-fire inspections can improve firefighters' understanding of complex building layouts, standpipe locations, etc., and they may be able to identify any structural changes and possible code violations. This will help improve suppression ground activities and prevent firefighter injuries.

The process of identifying target hazards and pre-incident planning are basic preparedness efforts that have been key functions in the fire service for many years. In this process, critical structures are identified based on the risk they pose. Then, tactical considerations are established for fires or other emergencies in these structures. Consideration is given to the activities that take place (manufacturing, processing, etc.), the number and types of occupants (elderly, youth, handicapped, imprisoned, etc.), and other specific aspects relating to the construction of the facility or any hazardous or flammable materials that are regularly found in the building. Target hazards are those occupancies or structures that are unusually dangerous when considering the potential for loss of life or the potential for property damage. Typically, these occupancies include hospitals, nursing homes, and high-rise and other large structures. Also included are arenas and stadiums, industrial and manufacturing plants, and other buildings or large complexes.

NFPA's 1620, *Recommended Practice for Pre-Incident Planning*, identifies the need to utilize both written narrative and diagrams to depict the physical features of a building, its contents, and

78. https://www.usfa.fema.gov/wui/communities/

any built-in fire protection systems. Information collected for pre-fire/incident plans includes, but is certainly not limited to, data such as:

- The occupancy type.
- Floor plans/layouts.
- Building construction type and features.
- Fire protection systems (sprinkler system, standpipe systems, etc.).
- Utility locations.
- Hazards to firefighters and/or firefighting operations.
- Special conditions in the building.
- Apparatus placement plan.
- Fire flow requirements and/or water supply plan.
- Forcible entry and ventilation plan.

The information contained in pre-incident fire plans allows firefighters and officers to have a familiarity with the building/facility, its features, characteristics, operations, and hazards, thus enabling them to conduct firefighting and other emergency operations more effectively, efficiently, and safely. Pre-incident fire plans should be reviewed regularly and tested by periodic table-top exercises and on-site drills for the most critical occupancies.

The members of the Kalispell Fire Department reported to CPSM that they have a formal, pre-fire/incident planning program that has resulted in development of plans for about 50 percent of commercial locations in the city. However, this does not include new construction that is occurring. Every Monday is "Pre-plan Day," when companies are supposed to go out to complete pre-plans. At the current time, due in part to security issues with the city's network, the plans are not available digitally to personnel on scene. The lack of pre-fire/incident plan availability on scene deprives responding personnel and commanders of important information that may be critical to effective and safe incident mitigation. The Chief reported that he is looking into obtaining tablets to provide on-scene access to the pre-plans.

An increasingly important part of fire department risk identification, assessment, and management is the identification of unsafe structures in the city that could pose an increased, and often unnecessary, risk to firefighters during a fire situation. Once these buildings have been identified they should be marked as being unsafe. In the event of a fire, unless the fire is still a small, incipient fire, which can be extinguished quickly and safely, operations at these structures should be limited to exterior, defensive operations.

Fire Preplanning Recommendations:

- CPSM recommends that as a planning objective, the KFD should continue to make pre-fire/incident plan development a high priority until such time as plans have been developed for all high- and medium-hazard occupancies located in the city, placing a high priority on those identified structures that are not protected by automatic sprinkler systems. In addition, pre-plans should be uploaded onto computers/tablets and the CAD system so they will be more readily available to personnel on the incident scene. (Recommendation No. 41.)

- The KFD should compile an inventory of the locations of vacant and unsafe structures throughout the city and mark them accordingly with regard to offensive or defensive-only fire suppression operations. (Recommendation No. 42.)

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NFPA 1710 AS A NATIONAL CONSENSUS STANDARD

National Fire Protection Association (NFPA) standards are consensus standards and not mandated nor are they the law. Many cites and countries strive to achieve these standards to the extent possible without an adverse fiscal impact to the community. Cities and communities must decide on the level of service they can deliver based on several factors as discussed herein, including budgetary considerations. Questions of legal responsibilities are often discussed in terms of compliance with NFPA Standards. Again, these are national consensus standards, representing best practices and applied science and research.

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*, 2020 edition (National Fire Protection Association, Quincy, Mass.), outlines organization and deployment of operations by career, and primarily career, fire, and rescue organizations.[79] It serves as a benchmark to measure staffing and deployment of resources to certain structures and emergencies.

NFPA 1710 was the first organized approach to defining levels of service, deployment capabilities, and staffing levels for substantial career departments. Research work and empirical studies in North America were used by NFPA committees as the basis for developing response times and resource capabilities for those services as identified by the fire department.[80] It is also the benchmark standard that the U.S. Department of Homeland Security utilizes when evaluating applications for staffing grants under the Staffing for Adequate Fire and Emergency Response (SAFER) grant program. The ability to get a sufficient number of personnel, along with appropriate apparatus, to the scene of a structure fire is critical to operational success and firefighter safety. Accomplishing this within the eight-minute time frame specified in NFPA 1710 is an important operational benchmark.

According to NFPA 1710, fire departments should base their capabilities on a formal all-hazards community risk assessment, as discussed earlier in this report, and taking into consideration:[81]

- Life hazard to the population protected.
- Provisions for safe and effective firefighting performance conditions for the firefighters.
- Potential property loss.
- Nature, configuration, hazards, and internal protection of the properties involved.
- Types of fireground tactics and evolutions employed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene.

79. NFPA 1710 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the State of Montana. It is a valuable resource for establishing and measuring performance objectives for the City of Kalispell but should not be the only determining factor when making local decisions about the city's fire services.
80. NFPA, Origin and Development of the NFPA 1710, 1710-1.
81. NFPA 1710, 5.2.1.1, 5.2.2.2.

The NFPA 1710 staffing configuration is designed to ensure a fire department can complete the critical tasking necessary on building fires and other emergency incidents simultaneously rather than consecutively, and efficiently assemble an effective response force for each risk they may encounter. NFPA 1710 permits fire departments to use established automatic aid and mutual aid agreements to comply with the assembling of on-scene personnel to complete critical tasks as outlined in the standard.

CODE OF FEDERAL REGULATIONS, NFPA 1500, TWO-IN/TWO-OUT

Another consideration, and one that links to critical tasking and assembling an Effective Response Force, is that of two-in/two-out regulations. Essentially, prior to starting any fire attack in an immediately dangerous to life and health (IDLH) environment [with no confirmed rescue in progress], the initial two-person entry team shall ensure that there are sufficient resources on-scene to establish a two-person initial rapid intervention team (IRIT) located outside of the building.

This critical tasking model has its genesis with the Occupational Safety and Health Administration, specifically 29 CFR 1910.134(g)(4). Montana establishes regulations for firefighters including the adoption of OSHA regulations and NFPA standards. Federal OSHA covers the issues not specifically covered by the Montana regulations. As such, the federal rule (29 CFR 1910.134(g)(4)) applies to the KFD.

According to CFR 1910.134: *Procedures for Interior Structural Firefighting*, the employer shall ensure that:

(i) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;

(ii) At least two employees are located outside the IDLH atmosphere; and

(iii) All employees engaged in interior structural firefighting use SCBAs.[82]

According to the standard, one of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.

NFPA 1500, *Standard on Fire Department Occupational Health, Safety, and Wellness*, 2018 Edition, has similar language as CFR 1910.134)g)(4) to address the issue of two-in/two-out, stating: *the initial stages of the incident where only one crew is operating in the hazardous area of a working structural fire, a minimum of four individuals shall be required consisting of two members working as a crew in the hazardous area and two standby members present outside this hazard area available for assistance or rescue at emergency operations where entry into the danger area is required*.[83]

NFPA 1500 also speaks to the utilization of the two-out personnel in the context of the health and safety of the firefighters working at the incident. *The assignment of any personnel including the incident commander, the safety officer, or operations of fire apparatus, shall not be permitted*

82. CFR 1910.134 (g) 4
83. NFPA 1500, 2018, 8.8.2.

as standby personnel if by abandoning their critical task(s) to assist, or if necessary, perform rescue, this clearly jeopardizes the safety and health of any firefighter working at the incident.[84]

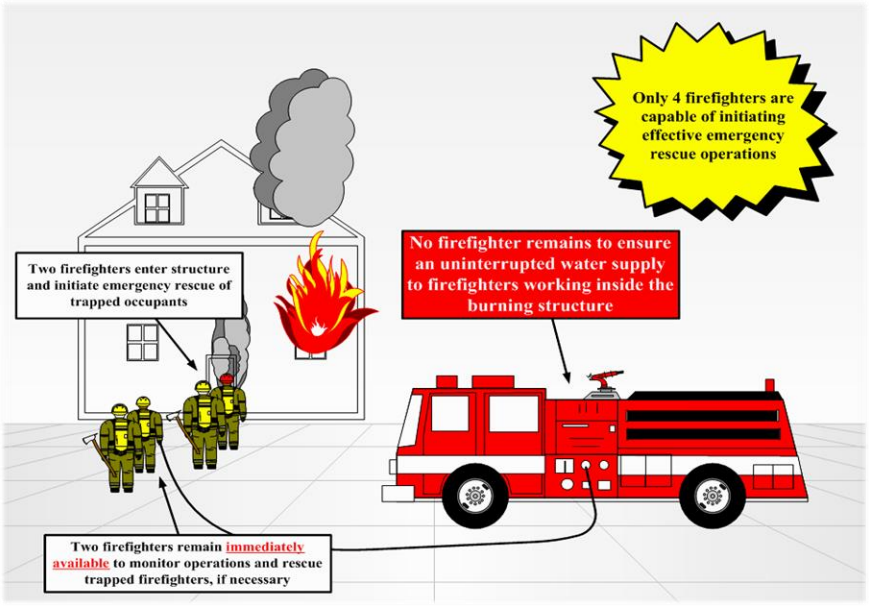
In order to meet CFR 1910.134(g)(4), and NFPA 1500, the KFD must utilize two personnel to commit to interior fire attack while two firefighters remain out of the hazardous area or immediately dangerous to life and health (IDLH) area to form the IRIT, while attack lines are charged, and a continuous water supply is established. In most cases this will require a minimum of either two fire suppression units, or an engine and medic unit to commence operations.

However, NFPA 1500 allows for fewer than four personnel under specific circumstances. It states: *Initial attack operations shall be organized to ensure that if on arrival at the emergency scene, initial attack personnel find an imminent life-threatening situation where immediate action could prevent the loss of life or serious injury, such action shall be permitted with fewer than four personnel.*[85]

CFR 1910.134(g)(4) also states that nothing in section (g) is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.[86]

It is also important to note that the OSHA standard (and NFPA 1710) specifically references "interior firefighting." Firefighting activities that are performed from the exterior of the building are not regulated by this portion of the OSHA standard. However, in the end, the ability to assemble adequate personnel, along with appropriate apparatus, on the scene of a structure fire, is critical to operational success and firefighter safety.

FIGURE 4-4: Two-In/Two-Out Interior Firefighting Model



The OSHA requirement has two key provisions that allow considerable flexibility regarding staffing:

84. NFPA 1500, 2018, 8.8.2.5.
85. NFPA 1500, 2018 8.8.2.10.
86. CFR 190.134, (g).

- One provision specifies that the four personnel who engage in interior firefighting are required at the incident (assembled) and are not a staffing requirement for the individual responding unit(s).
- The second provision is that an exception is provided when crews are performing rescue operations where there is the **potential** for serious injury or death of the occupants. In this case the standard allows the entry of two personnel to conduct the rescue activity without two firefighters outside immediately available to monitor operations and rescue trapped firefighters, if necessary.

The KFD responds initially to reported structural fires with no specified minimum number of personnel. The initial staffing is determined by the number of personnel working, whether all personnel are available for response at the time of dispatch, and the number of personnel who respond from surrounding mutual aid departments. Under this response model, the KFD hopes to provide the minimum number of firefighters on the initial response in order to comply with CFR 1910.134(g)(4), regarding two-in/two-out rules and an initial rapid intervention team (IRIT). In most cases this will require a minimum of two fire suppression units or an engine and medic unit on scene to commence operations. In addition, when staffed at lower levels, particularly if there are one or more incidents already in progress that have one or more medic units and their personnel committed on other incidents, the KFD will be unable to provide sufficient staffing to comply with CFR 1910.134—for interior structural firefighting—until the arrival of a responding KFD chief officer or mutual aid unit.

It was consistently reported to CPSM that the KFD does try to follow the provisions of the OSHA Two-In/Two-Out regulation regarding waiting to initiate an interior fire attack until four personnel are assembled when there are no rescues to be made. The department is to be commended for this adherence.

EFFECTIVE RESPONSE FORCE AND CRITICAL TASKING

Critical tasks are those activities that must be conducted on time and preferably simultaneously by responders at emergency incidents to control the situation and minimize/stop loss (property and life-safety). Critical tasking for fire operations is the minimum number of personnel needed to perform the tasks needed to effectively control and mitigate a fire or other emergency. To be effective, critical tasking must assign enough personnel so that all identified functions can be performed simultaneously. However, it is important to note that initial response personnel may manage secondary support functions once they have completed their primary assignment. Thus, while an incident may end up requiring a greater commitment of resources or a specialized response, a properly executed critical tasking assignment will provide adequate resources to immediately begin bringing the incident under control.

The specific number of people required to perform all the critical tasks associated with an identified risk or incident type is referred to as an ***Effective Response Force*** (ERF). The goal is to deliver an ERF within a prescribed period. NFPA 1710 provides the benchmarks for effective response forces.

NFPA 1710 addresses standards for an ERF across several types of occupancies. An effective ERF is defined as the minimum number of firefighters and equipment that must reach a specific emergency incident location within a maximum prescribed travel [driving] time. The maximum prescribed travel time acts as one indicator of resource deployment efficiency.

NFPA 1710 provides a staffing deployment model and critical tasking guidelines for four specific occupancies. These occupancies are:

- Single-Family Dwelling.
- Open-Air Strip Mall/Commercial.
- Garden Style Apartment.
- High-Rise.

The Center for Public Safety Excellence (CPSE) has also established benchmarks regarding staffing and deployment. CPSE sets standards for agencies desiring accreditation through the Commission on Fire Accreditation International (CFAI). CFAI uses standards set forth in the *Community Risk Assessment Manual: Standards of Cover*, 10th edition, to provide guidance in staffing and deployment to agencies desiring accreditation through Core Competencies.

> *Core Competency 2C.4*
>
> *A critical task analysis of each category and risk class has been conducted to determine the first due and effective response force capabilities, and a process is in place to validate and document the results. Core competency 2C.4 requires that the agency conduct a critical task analysis of each risk category and risk class to determine the first-due and effective response force capabilities, and to have a process in place to validate and document the results. The process considers the number of personnel needed to perform the necessary emergency scene operations. Completion of the process also helps to identify any gaps in the agency's emergency scene practices.*

As currently staffed, the KFD will not be able to handle even most fires that occur in one- and two-family residential occupancies, unless they are limited in size and intensity, without the need for significant mutual aid assistance. This is particularly true at the department's lower staffing levels. Fire incidents in larger structures—multifamily dwellings/apartments, commercial buildings, factories and warehouses, high-rise buildings—require additional personnel and resources to successfully mitigate. Critical staffing necessary to successfully mitigate various types of incidents will be discussed in detail later in this section of the report.

The achievability of the KFD being able to handle any significant structure fire without the need for significant mutual aid is limited and will most likely remain so, at least for the near future. Those capabilities will improve in the future should the city implement recommendations contained within this report to incrementally increase the number of personnel and resources that are deployed throughout the city. Even in this case, fires occurring when there are few other incidents in progress that will significantly reduce the immediately available number of personnel, and the fire department can arrive at the fire incident and take definitive action to mitigate the situation prior to flashover occurring, will impact how effectively and quickly incidents can be mitigated. If flashover has occurred, holding the fire to the building of origin is highly achievable as well.

To effectively respond to and mitigate requests for emergency services, an agency must have a thorough understanding of its community's risk factors, both fire and EMS. Once identified and understood, each category or level of risk is associated with the necessary resources and actions required to mitigate it. This is accomplished through a critical task analysis. The exercise of matching operational asset deployments to risk, or critical tasking, considers multiple factors including national standards, achievement of benchmark performance measures, and the safety of responders.

During fire incidents, to be effective, critical tasking must assign enough personnel so that all identified functions can be performed simultaneously. However, it is important to note that initial response personnel may handle secondary support functions once they have completed their primary assignment. Thus, while an incident may end up requiring a greater commitment of resources or a specialized response, a properly executed critical task analysis will provide adequate resources to immediately begin bringing the incident under control.

Regarding the implementation of an ERF and its aggregate effect on fireground operations, there has been much research done by a number of fire departments on the effects of various staffing levels. These studies have consistently confirmed that company efficiency and effectiveness decrease substantially, and injuries increase when company staffing falls below four personnel. A comprehensive yet scientifically conducted, verified, and validated study titled *Multiphase Study on Firefighter Safety and the Deployment of Resources* was performed by the National Institute of Standards and Technology (NIST) and Worcester Polytechnic Institute (WPI), in conjunction with the International Association of Fire Chiefs, the International Association of Fire Fighters, and the Center for Public Safety Excellence. For the first time, quantitative evidence was produced regarding the impact of crew size on accomplishing critical tasks. Additionally, continual research from UL has provided tactical insights that shed further light on the needs related to crew size and firefighter safety. This body of research includes:

- An April 2010 report on *Residential Fireground Field Experiments* from the National Institute of Standards and Technology (NIST).
- An April 2013 report on *High-Rise Fireground Field Experiments* from the National Institute of Standards and Technology (NIST-HR).
- A December 2010 report on the *Impact of Ventilation on Fire Behavior in Legacy and Contemporary Residential Construction* (UL).
- Additional collaborative efforts such as the Governor's Island and Spartanburg Burns continue to expand upon and reinforce the findings of NIST and UL.

As stated, some of these studies' findings have a direct impact on the exercise of critical tasking. For example, as UL studied the impact of ventilation on fire behavior, it was able to obtain empirical data about the effect of water application on fire spread and occupant tenability. The research clearly indicates that the external application of a fire stream, especially a straight stream, does not "push fire" or decrease tenability in any adjacent rooms. Therefore, during the deployment of resources for the critical task of fire attack, consideration must be given to the option of applying water to the fire from the exterior when able. This approach enables a fire attack that can begin prior to the establishment of an Initial Rapid Intervention Team (IRIT) as well as decreases the time to get water on the fire, which has the greatest impact on occupant survivability.

The NIST studies examined the impact of crew size and stagger on the timing of fireground task initiation, duration, and completion. Although each study showed crew size as having an impact on time-to-task, consideration must be given to what tasks were affected and to what extent. For example, four-person crews operating at a low-hazard structure fire completed all fireground tasks (on average) 5.1 minutes or 25 percent faster than three-person crews.

- Four-person firefighting crews were able to complete 22 essential firefighting and rescue tasks in a typical residential structure 30 percent faster than two-person crews and 25 percent faster than three-person crews.

- The four-person crews were able to deliver water to a similar sized fire 15 percent faster than the two-person crews and 6 percent faster than three-person crews, steps that help to reduce property damage and reduce danger/risks to firefighters. The latter time represents a 34-second difference.
- Four-person crews were able to complete critical search and rescue operations 30 percent faster than two-person crews and 6 percent faster than three-person crews. The latter time represents a 23-second difference. The "rescue time" difference from a four-person to a three-person crew is seven seconds.

When considering critical tasking for the deployment of an ERF for fire suppression operations, as currently staffed, the KFD will be unable to handle most incidents—even those involving residential occupancies (one- and two-family dwellings)—with just its own resources. For most significant structure incidents, the department will need to utilize resources from surrounding mutual aid partners.

It is also important to note that the impact of crew size as it relates to high-risk categories is greater than its low-risk implications and should be considered when staffing units that cover a greater amount of risk. As KFD's engine and truck companies are often staffed with just three personnel (providing there are no ambulance calls in progress), this will ultimately present some significant operational challenges and concerns (as it does in many other communities that utilize similar staffing models).

To be clear, there is no Montana or federal requirement that specifies staffing levels on fire apparatus. The closest thing that approaches a requirement for staffing levels is the OSHA 29 CFR 1910.134 standard that was previously discussed.

From a practical standpoint, staffing engines and ladders with three personnel rather than four forces the company officer (Captain) to be actively involved in hands-on tasks such as stretching a line, or raising a ladder, rather than performing size-up and other important initial fireground actions. Company officers are working supervisors. They form an integral part of their company, and it is often necessary for them to assume hands-on involvement in operations, particularly with companies that are minimally staffed, while simultaneously providing oversight and direction to their personnel. During structure fires and other dangerous technical operations, it is imperative that these officers accompany, and operate with, their crew to monitor conditions, provide situation reports, and assess progress toward incident mitigation. During structure fires they operate inside of the fire building. Company officers need to be able to focus on the completion of specific tasks that have been assigned to their respective companies, such as interior fire attack, rescue, ventilation, and/or water supply.

When engine companies are staffed with three rather than four personnel, the officer often needs to either function as the nozzle person while the other firefighter backs him/her up and helps with advancing the line, or, if the roles are reversed and the officer is assisting with line advancement they cannot monitor the conditions at the nozzle—and closest to the fire—as they should. Ideally, one firefighter should be the nozzle operator, the officer should be right alongside of, or behind the nozzle, providing direction and evaluating conditions, and the third firefighter can be further back assisting with advancing the line. This is particularly important for fires on the second and third floors of buildings where the lines must frequently be advanced up narrow and winding stairways. When short-staffed in fire conditions such as this, two companies—which could be the entire on-duty staffing contingent in Kalispell—often must be deployed to get a single line in service, which can then impact the completion of additional critical tasks.

CPSM advocates structural fire tactics and strategies that are both safe and effective, but sometimes staffing levels can make that dual goal difficult to achieve. Initiating offensive operations with fewer than four firefighters will place firefighters at a high level of risk; delaying operations until additional staffing arrives places occupants in greater danger and can increase property damage.

Ultimately, overall, on-duty fire department staffing is a local government decision. It is also important to note again that the OSHA standard (and NFPA 1500/1710/1720) specifically references "interior firefighting." Firefighting activities that are performed from the exterior of the building are not regulated by this portion of the OSHA standard. However, **in the end, the ability to assemble adequate personnel, along with appropriate apparatus to the scene of a structure fire, is critical to operational success and firefighter safety**. How and where personnel and resources are located, and how quickly they can arrive on scene, play major roles also.

All of these factors must be taken into consideration as Kalispell reaches consensus on the acceptable community fire safety risk level, affordable levels of expenditure for fire protection, and appropriate levels of staffing. The city will need to consider the cost-benefit of various deployment strategies, such as continuing the current staffing and deployment model, or adopting a modified one based upon options presented within this report.

For KFD, emergency responses are based on caller information provided to dispatchers at the Flathead Emergency Communication Center; responses depend on the nature and type of call for service. Since the city has, at most, two staffed fire suppression units on duty at a time, most fire responses receive an initial response of one or both these units provided there are not incidents in progress that already have part of the on-duty crew committed. KFD details out its response procedures through SOP 205 and a response plan in the dispatch center. For structure fire incidents the following are the normal responses:

- First Alarm:
  - One- and two-family residential occupancies: All KFD units plus one engine and chief from Evergreen FD, and one ambulance from Smith Valley FD.
  - Commercial and multifamily occupancies: All KFD units plus one quint and chief from Evergreen FD, one engine from Whitefish FD, and one ambulance and chief from Smith Valley FD.
- Second Alarm:
  - One- and two-family residential occupancies: Page out off-duty personnel—total recall (non-mandatory), plus one engine and chief from Smith Valley FD, one engine and chief from Whitefish FD, and Rehab unit and assistant chief from South Kalispell FD.
  - Commercial and multifamily occupancies: Page out off-duty personnel—total recall (non-mandatory), plus one engine and chief from Whitefish FD, one ladder from West Valley FD, Bad Rock FD assistant chief, and OES manager.
- Third Alarm:
  - One- and two-family residential occupancies: One engine and chief from Creston FD, one engine and chief from Bigfork FD, one engine from Somers FD.
  - Commercial and multi-family occupancies: One engine and chief from Creston FD, one engine and chief from Bigfork FD, one engine from Somers FD.

- Fourth Alarm:
  - One- and two-family residential occupancies: One engine and chief from Bad Rock FD, and one engine and chief from Columbia Falls FD.
  - Commercial and multifamily occupancies: One engine and chief from Bad Rock FD, one engine and chief from Columbia Falls FD, and one engine and chief from Marion FD.

The following table shows the workload of fire responses by number of units arriving at these incident types during the year studied. This table only includes calls where a unit from the KFD arrived. In this section, we limit ourselves to calls where a KFD unit arrives.

TABLE 4-2: Fire Calls by Call Type and Number of Arriving KFD Units

Call Type	Number of Units		
	One	Two	Three or More
False alarm	209	4	0
Good intent	35	2	0
Hazard	83	5	2
Outside fire	19	5	1
Public service	230	19	1
Structure fire	14	8	3
Fire Subtotal	**590**	**43**	**7**

Note: Only calls with arriving KFD units were considered. There were 288 calls where a KFD unit recorded an en route time but no unit recorded an arrival time. This included 30 fire calls.

A more in-depth analysis of the data in the above table tells us:

- On average, 1.1 units arrived per fire call.
- For fire calls, one unit arrived 92.2 percent of the time, two units arrived 6.7 percent of the time, and three or more units arrived 1.1 percent of the time.
- For outside fire calls, three or more units arrived 4.0 percent of the time.
- For structure fire calls, three or more units arrived 12.0 percent of the time.

The next table shows the duration of calls by type using four duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, and more than two hours.

TABLE 4-3: Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	Two or More Hours
False alarm	179	37	0	1
Good intent	39	4	0	1
Hazard	65	24	6	0
Outside fire	14	8	3	0
Public service	218	37	7	1
Structure fire	8	8	5	5

From looking at the data in this table we can determine that:

- On average, 0.1 fire calls per day lasted more than one hour, so about one every 10 days.
- A total of 641 fire calls (96 percent) lasted less than one hour, 21 fire calls (three percent) lasted one to two hours, and eight fire calls (one percent) lasted two or more hours.
- A total of 22 outside fire calls (88 percent) lasted less than one hour and three outside fire calls (12 percent) lasted one to two hours.
- A total of 16 structure fire calls (62 percent) lasted less than one hour. This suggests fires that were probably more minor in nature, or that the KFD arrived quickly and was able to mitigate quickly. Keep in mind also that these are fires that meet the NFIRS criterion for structure fires as they cause damage to the structure itself. There were most likely many other incidents that were dispatched as a structure fire based upon information received but were ultimately classified otherwise based upon the situation encountered.
- Five structure fire calls (19 percent) lasted one to two hours, and five structure fire calls (19 percent) lasted two or more hours. These times indicate more significant structure fires where the fire department was engaged for an extended period of time.

As already stated, for any given emergency to which KFD responds, there are critical tasks that must be completed. These tasks can range from the immediate rescue of trapped occupants within a burning structure to vehicle or water rescue when needed. A set of critical tasks have been developed in an effort to identify what resources are needed for each incident type. The following critical task analysis was performed independent of KFD policies; however, a comparison is provided.

The intent of the risk management process is for the department to develop a standard level of safety while strategically aligning its resources with requests for service. Thus, the critical tasking presented herein will consider the ERF in relation to either a low-, moderate-, or high-risk classification.

The following discussion and tables will outline how critical tasking and assembling an effective response force is first measured in NFPA 1710, and how the KFD is benchmarked against this standard for the building types existing in Kalispell. This discussion will cover critical tasking for the following incident types:

- Structure Fire–Low Risk.
- Structure Fire–Moderate Risk.
- Structure Fire–High Risk.
- Fire Alarm–Low Risk.
- Fire Alarm–Moderate Risk.
- Fire Alarm–High Risk.

KFD utilizes a standard alarm assignment for reported structure fire responses that includes the initial dispatch of all available on-duty personnel and resources along with the simultaneous dispatch of mutual aid resources as described previously. This means that an initial response to this type of incident includes the following:

- One- or two-family residential occupancies: two engines, one ladder/quint, one ambulance, three chief officers.

- Commercial and multifamily residential occupancies: two engines, two ladders/quints, one ambulance, four chief officers.

The number of personnel this response places on scene varies depending upon the staffing on duty in Kalispell that day, whether any other incidents are in progress, and the number of personnel responding on mutual aid resources.

If the alarm is upgraded to a second alarm or greater the KFD relies primarily on mutual aid resources (except for personnel returning to work on a recall), whose reliability cannot be guaranteed.

The initial full alarm assignment (ERF) to a structure fire in a typical 2,000 square-foot, two-story, single-family dwelling without a basement and with no exposures must provide for a minimum of 16 members (17 if an aerial device is used). The following table outlines the critical task matrix, and the subsequent figure illustrates it.

TABLE 4-4: Structure Fire: Single-Family Dwelling, Low-Risk

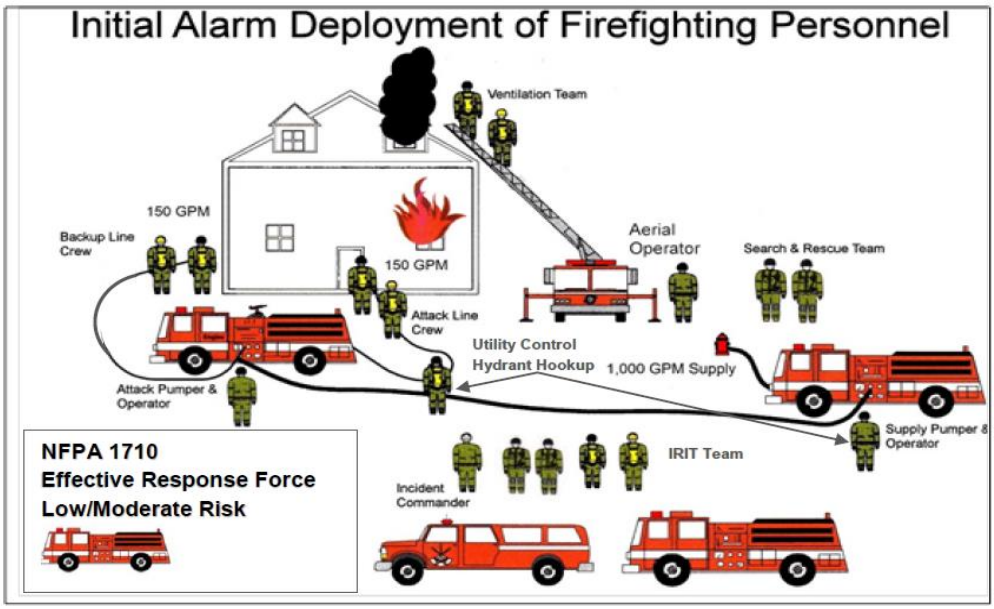
Critical Task	Needed Personnel
Incident Command	1
Continuous Water Supply/Pump Operator	1
Fire Attack via Two Handlines	4
Hydrant Hook-Up, Forcible Entry, Utilities	2
Primary Search and Rescue	2
Ground Ladders and Ventilation	2
Aerial Operator (if Aerial is Used)	1
Establishment of an IRIT (Initial Rapid Intervention Team)	2
Effective Response Force	**16/17**
KFD Initial Response Provided	**14***

Note: * Assumes all responding fire units are staffed with three personnel.

These tasks meet the minimum requirements of NFPA 1710 for the initial full alarm assignment to a typical low-risk, 2,000 square-foot, two-story residential structure. These are the proverbial "bread and butter" structural fire incidents that fire departments respond to, and which are, by far, the most common type of structure fire. Personnel requirements for fires involving large, more complex structures such as commercial facilities or multifamily residential occupancies will require a significantly greater commitment of personnel.

This serves as a good benchmark for critical tasking that needs to be accomplished to mitigate the most common type of structural fire incident, which is the single-family dwelling. The next figure illustrates how the Effective Response Force integrates simultaneously to accomplish these fireground goals.

FIGURE 4-5: Initial Deployment of Firefighting Personnel/ERF Recommendation: Single-family Dwelling



It should be emphasized that the suggested deployment of personnel for the effective response force is the minimum number of personnel required. Conversely, experienced chief officers know that the actual personnel need for these incidents are often higher depending upon the severity of the incident. In addition, a single fire even in a small single-family dwelling will end up stripping the city of all available fire and EMS resources. However, this is fairly common in smaller cities such as Kalispell and does not happen with great frequency.

It should also be noted at this point that at least a portion of the housing stock in Kalispell does not fit into this type of "typical" residential structure. Our observation was that many of the detached residential units, particularly in the older parts of the city, are larger and multistory, occupancies. In these types of structures, the fire challenges are going to be much more complex and conducive to rapid fire spread through such areas as attics and basements. Fire extension between closely spaced, wood-frame dwellings is also a significant concern. For this reason, a percentage of Kalispell's residential occupancies would be more in the moderate-risk category.

- The initial full alarm assignment (ERF) to a structural fire in a typical 1,200 square-foot apartment within a three-story, garden-style apartment building should provide for a minimum of 27 members (28 if an aerial device is used).
- The initial full alarm assignment (ERF) to a structural fire in a typical open-air strip center ranging from 13,000 square feet to 196,000 square feet in size should provide for a minimum of 27 members (28 if an aerial device is used).

The following table outlines the critical tasking matrix for this type of fire. This can also be typed as a commercial building fire response.

TABLE 4-5: Structure Fire – Moderate Risk

Critical Task	Needed Personnel
Incident Command	2
2 – Independent Water Supply Lines/Pump Operators	2
Fire Attack via Three Handlines	6
Support Firefighter for each Handline	3
2 - Search and Rescue Teams	4
2 - Ground Ladders and Ventilation Teams	4
Aerial Operator (if Aerial is Used)	1
Rapid Intervention Team (1 Officer/3 Firefighters)	4
EMS/Medical	2
Effective Response Force	**27/28**
KFD Initial Response Provided	**18***

Note: * Assumes all responding fire units are staffed with three personnel.

The following table identifies critical tasking for fires involving high-risk structures such as hospitals, nursing homes, and assisted living facilities.

TABLE 4-6: Structure Fire – High Risk

Critical Task	Needed Personnel
Incident Command	2
2 – Independent Water Supply Lines/Pump Operators	2
Investigation/Initial Fire Attack Line	3
Backup Line	3
Secondary Attack Line	3
3 - Search/Rescue Teams	6
2 – Ground Ladder and Ventilation teams	4
Water Supply/Fire Department Connection	2
Aerial Operators (if Aerials are Used)	2
Safety/Accountability	2
Rapid Intervention Team (1 Officer/3 Firefighters)	4
EMS/Medical	4
Effective Response Force	**35/37**
KFD Initial Response Provided	**18***

Note: * Assumes all responding fire units are staffed with three personnel.

It should be stressed that the responses of personnel that CPSM is illustrating based upon the recommended benchmark standards to establish an ERF based upon the hazard of the occupancy type (low, medium, and high hazard) are intended for instances where the caller(s) is reporting visible smoke or fire within the building. As part of a risk management strategy, for incidents within structures such as an appliance, a sparking electrical outlet, an odor, or smoke, etc., consideration should be given to the initial dispatch of a "Tactical Box" comprised of:

- 2 engines.
- 1 ladder truck.
- 1 command officer.

If additional information is received indicating an active fire in progress, the assignment can then be upgraded to a "Full Box." While achieving this level of ERF is not possible without the use of automatic/mutual aid, with the future implementation of recommendations for staffing and deployment contained within this report, the KFD should be able to do so as an intermediate to long-term goal.

The KFD dispatches a single engine company to fire alarm activations in residential occupancies, and two engines or one engine and one quint to those in commercial buildings and multifamily occupancies. These types of responses need to be considered in the context of risk assessment and management. On the one hand, consideration must be given to the potential risks, hazards, and even investigative complexity associated with various types of occupancies. Conversely, data and experience show that these system activations are rarely for an actual fire incident, and of those that are, they often backed up by a phone call reporting a fire. The following tables provide comparisons between KFD practice and recommended responses.

TABLE 4-7: Fire Alarm System – Low Risk

Critical Task	Needed Personnel
Incident Command	1
Investigation	3
Effective Response Force	**4**
KFD Response Provided	**3**

Based upon needed personnel for an ERF for a low-risk fire alarm system, consideration should be given to maintaining the current initial response of:

- 1 engine.

TABLE 4-8: Fire Alarm System – Moderate Risk (Apartment/Commercial)

Critical Task	Needed Personnel
Incident Command	1
Pump Operator	1
Investigation	4
Forcible Entry/Ventilation (if necessary)	2
Effective Response Force	**8**
KFD Response Provided	**6**

Note: * Assumes all responding fire units are staffed with three personnel.

Based upon needed personnel for an ERF for a moderate risk fire alarm system, in the future, consideration should be given to revising the current initial response to:

- 1 engine.
- 1 ladder/quint.
- 1 command officer.

TABLE 4-9: Fire Alarm System – High-Risk

Critical Task	Needed Personnel
Incident Command	1
Pump Operator	1
Water Supply/Fire Department Connection	1
Investigation	4
Search and Rescue (if necessary)	2
Annunciator Panel	2
Effective Response Force	**11**
K Response Provided	**6**

Note: * Assumes all responding fire units are staffed with three personnel.

Based upon needed personnel for an ERF for a high-risk fire alarm system, in the future, the KFD should consider an initial response of:

- 2 engines.
- 1 ladder/quint.
- 1 command officer.

Although risk management processes and appropriate call screening are important parts of determining the appropriate number of resources that should be initially dispatched to various types of emergency incidents, it is also important that enough personnel and resources be initially available to handle all critical tasks in a timely manner should they need to be performed. For this reason, it is the widespread practice in the fire service to send multiple resources to incidents that ultimately end up not being utilized if the incident turns out to be a minor one that is easily mitigated. Even today, within reason, this remains a prudent approach.

It is important to remember that the effective response force personnel needs contained in NFPA 1710 are the **minimum** number of personnel that are needed to be able to accomplish the critical tasking identified. They are not all-inclusive as to personnel needs. For instance, this tasking provides for two initial attack lines, not three, which are often needed for multistory dwellings. It also includes just two personnel on each line, which requires the officer to either be on the nozzle or advancing the line as a back-up rather than monitoring conditions, supervising the application of the water, and the coordination of other activities.

They may also include other clarifying factors. For instance, the low-hazard structure fire is based on a fire in a typical 2,000 square-foot, two-story, single-

family dwelling without a basement and with no exposures. It does not consider factors such as lightweight construction, and the fact that in many parts of the country homes have basements and often have multiple exposures close by. In addition, many of the new homes being constructed today are much larger than 2,000 square feet. Housing types such as townhouses and condominiums are also gaining popularity as "single-family" dwellings. All of these factors contribute to the knowledge that many experienced chief officers possess that the actual personnel needs are often higher depending upon the severity of the incident.

Fires involving large, more complex structures such as commercial facilities or multifamily residential occupancies will require a significantly greater commitment of personnel, which is acknowledged in NFPA 1710. For other types of specialized operations that can include incidents such as building collapses, hazardous materials incidents, technical rescue emergencies, maritime vessel fires, train derailments or fires, and aircraft incidents, the personnel needs can be very significant with a large number of personnel needed to support the technical response personnel working to mitigate the incident.

For these reasons, many fire departments have adopted response protocols that dictate the initial dispatch and response of a full "box" to all these types of incidents. A common configuration of this type of initial dispatch is:

- 4 engines.
- 2 ladders/quints.
- 1 rescue truck.
- 1 EMS unit.
- 2 command/chief officers.

Depending upon whether the fire suppression units are staffed with three or four personnel this response provides an initial response force of between 25 and 32 personnel. Additional personnel such as special operations personnel, multiple EMS units, or safety officers are sometimes also included in the initial dispatch and response depending upon the nature of the incident and the department's resources.

As fire departments in growing communities increase in size, their emergency scene operational structure and capabilities must expand also to keep pace with the increasing number of incidents, complexity of those incidents, and the availability of additional resources for incident mitigation. Generally, there are multiple agreed-upon levels of command qualification for fire and rescue service operations:

- Level 1 – Initial.
- Level 2 – Intermediate.
- Level 3 – Advanced.
- Level 4 – Strategic.

In CPSM's view, at the present time the KFD has Level 1 capabilities, which is the initial arriving officer on an incident, and Level 3, which is handled by the Fire Chief and Assistant Fire Chief.

It is mission critical that every emergency incident, no matter how small or large, has an Incident Commander (IC) who is the boss. In many cases, the company officer (Captain in the KFD) fulfills this role. On larger incidents, the Fire Chief and/or Assistant Fire Chief assume this role. The

Incident Commander is responsible for the overall management of the incident. The safety, welfare and accountability of personnel are taken into consideration when achieving the following incident priorities:

- Life safety.
- Incident stabilization.
- Property conservation.
- Environment protection.

The Incident Command System (ICS) is used to facilitate the completion of tactical priorities. The IC is the person who drives ICS towards that end. The IC is responsible for building an ICS organization that matches the organizational needs of the incident to achieve the completion of the tactical priorities for the incident.

The functions of command define standard activities that are performed by the IC to achieve tactical priorities. The functions of command at a structure fire include:

- Assume and announce command.
- Rapidly evaluate the situation (size up).
- Establish and announce the location of an effective operating position (Incident Command Post).
- Initiate, maintain, and control the communication plan.
- Identify the overall strategy, develop an Incident Action Plan, and assign companies and personnel to include RIC, consistent with plans and standard operating guidelines.
- Request appropriate resources, when necessary.
- Ensure accountability of all resources utilizing ICS 201 or other tactical worksheets.
- Ensure the utilization of a Time Clock when appropriate.
- Develop an effective ICS organization using divisions and/or groups to maintain the span of control.
- Provide tactical priorities and strategic objectives.
- Coordinate activities with other agencies and cooperators (Law Enforcement, Ambulance, Utilities, Building Department, etc.)
- Continuously assess incident conditions and review, evaluate, and revise the Incident Action Plan as needed.
- Provide for the continuity, transfer, and termination of command.

At least initially, the IC is responsible for all these functions. As command is transferred, so is the responsibility for these functions.

One of the IC's primary duties is to determine the life safety profile of the incident and apply the most appropriate level of risk to first responders. The IC should integrate principles of risk management into the functions of command. Risk management involves the identification and evaluation of risk, and the prioritization of actions followed by coordinated application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events

or to maximize the realization of opportunities. Risk management principles should be employed by supervisory personnel at all levels of the ICS. It must be remembered when evaluating risk that not only the severity of the risk but also the frequency of occurrence is of concern. High-risk events that occur infrequently pose the greatest threat to responders because of the likelihood they will have limited experience in dealing with such events.

There are a variety of actions that can be taken by the IC for management of emergency incident risk. Together these actions provide a solid framework for protecting responders from the risks involved in emergency operations. These actions include (but are not limited to):

- Have a well-defined Incident Action Plan that incorporates contingencies.
- Evaluate the situation and risk (size-up).
- Utilize full personal protective clothing.
- Provide effective incident management (Company Unity, Unity of Command, Appropriate Span of Control).
- Ensure effective communications.
- Establish safety procedures and utilize Safety Officers.
- Ensure adequate resources are available.
- Assign Rapid Intervention Crew/Company(ies).
- Provide for incident medical needs.
- Provide for rest and rehabilitation.
- Regularly evaluate the situation for changing conditions.

One of the most critical actions in managing risk is the evaluation of the situation and risks involved. Critical indicators that support gaining situational awareness and evaluating risk must be constantly evaluated. Beyond the specific emphasis on risk management and safety, the role of incident commander is a dynamic position and highly stressful position that has numerous critical responsibilities that must be handled simultaneously and, in a time, critical manner.

While the KFD normally has two chief officers responding on reported structure fires (provided they are available), which provides the Level 3 Advanced command level, in the future CPSM believes that the city will need to consider the implementation of a Level 2 Intermediate command level officer. This would be a designated shift commander. This concept is developed later in this section.

A critical component of the incident command system is the establishment of the role of safety officer to monitor conditions at fires and emergency incident scenes to ensure that appropriate safety procedures are being followed. The incident safety officer is an important member of the incident command team. The safety officer works directly under and with the incident commander to help recognize and manage the risks that personnel take at emergencies. These include:

- Incident recon.
- Assess the risk/benefit of operations.
- Assess and address safety concerns on the incident scene.
- Communicate and report safety issues to command.

- Intervene as necessary to provide safety.

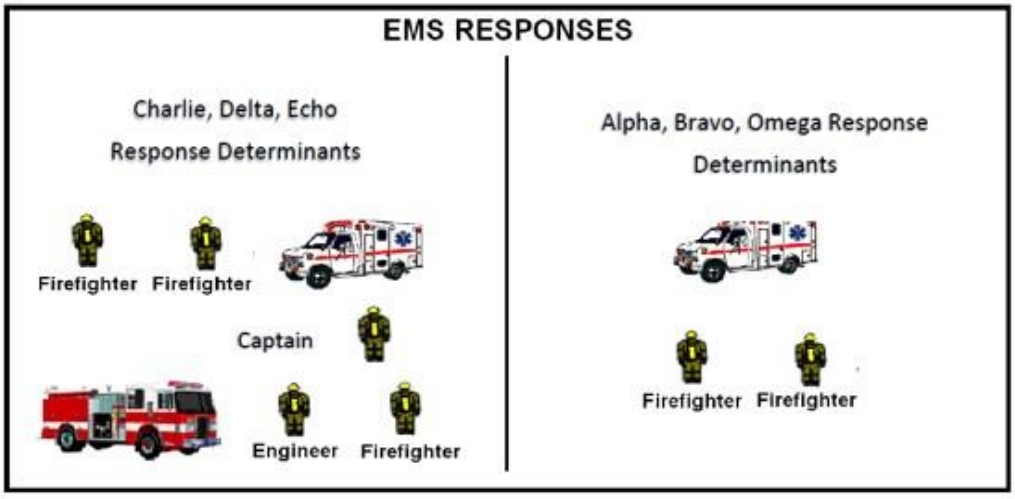
During larger-scale incidents, the safety officer reviews the incident action plan and specific details of the safety plan. As appropriate, the safety officer confirms that a safety plan is in effect, reviews it, and provides recommendations. The incident commander may request that the safety officer develop a proposed safety plan and recommendations for command.

CPSM was informed that the role of Safety Officer is usually filled as soon as possible on working fires and other significant incidents.

Establishing an ERF for medical emergencies is significantly less labor intensive than it is for fire incidents. NFPA 1710 provides guidance regarding staffing levels for units responding to EMS incidents; however, the provision does not specify a minimum staffing level for EMS response units. Instead, section 5.3.32 of the standard states: "EMS staffing requirements shall be based on the minimum levels needed to provide patient care and member safety." It further recommends that resources should be deployed to provide "for the arrival of a first responder with AED within a 240-second travel time to 90 percent of the incidents," and, "when provided, the fire department's EMS for providing ALS shall be deployed to provide for the arrival of an ALS unit within a 480-second travel time to 90 percent of the incidents provided a first responder with AED or BLS unit arrived in 240 seconds or less travel time."

EMS calls are typically managed with fewer personnel, and the majority of EMS calls can be handled with a single ambulance staffed with two personnel. During the call-screening process those calls that require additional personnel are typically identified at the dispatch level and additional personnel can be assigned when needed. These types of incidents could include cardiac and respiratory arrest, unconscious persons, and other incidents where the initial call seems to indicate a severe and imminent threat to life. NFPA 1710 suggests for these types of emergencies that "personnel deployed to ALS emergency responses shall include a minimum of two members trained at the emergency medical technician-paramedic level and two members trained at the emergency medical technician-basic level arriving on scene within the established travel time." However, these types of emergencies constitute a small percentage of overall EMS incidents as identified herein.

FIGURE 4-6: Typical EMS ERF



Left = Advanced Life Support (ALS) **Right = Basic Life Support (BLS)**

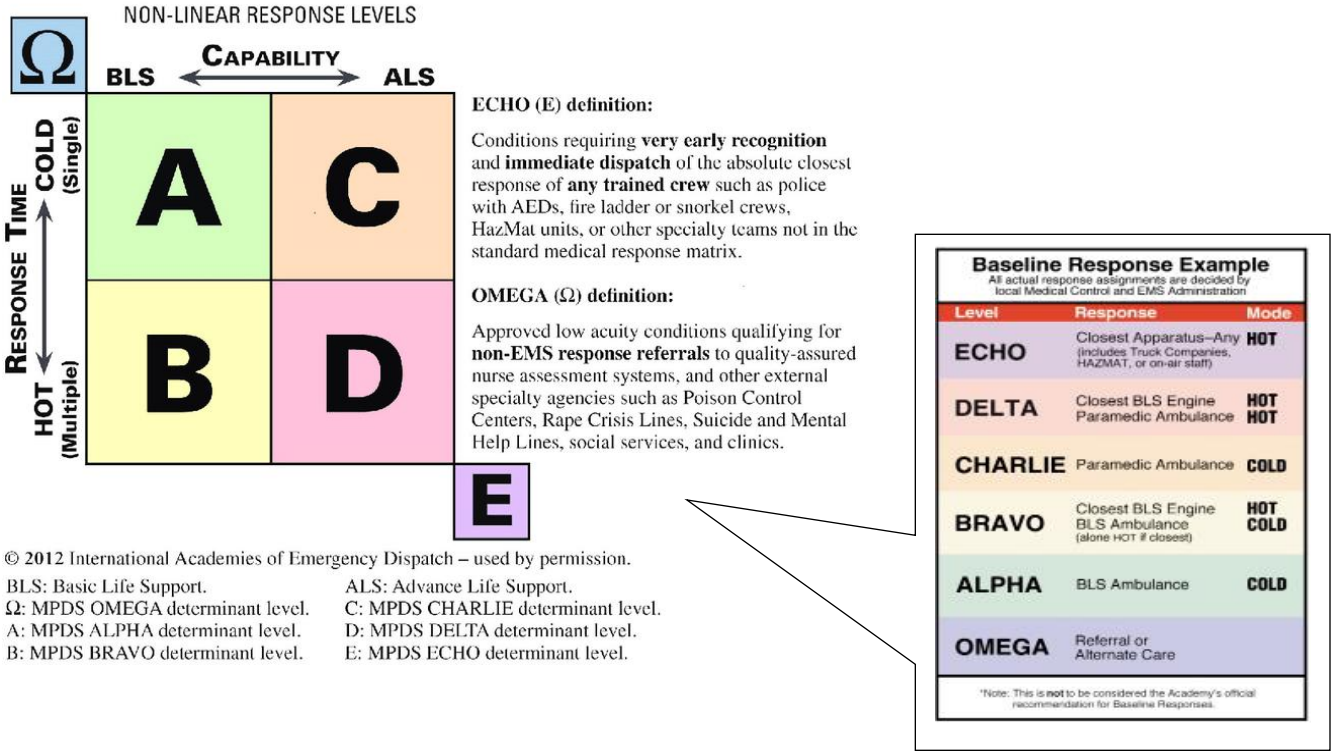
Critical tasks by specific call type for fire responses to EMS incidents are not always as well defined as those critical tasks in the fire discipline. Notwithstanding, critical tasking in EMS is typical of that in the fire service in that there are certain critical tasks that need to be completed either in succession or simultaneously. EMS on-scene service delivery is based primarily on a focused scene assessment, patient assessment, and then followed by the appropriate basic and advanced clinical care through established medical protocols. EMS critical tasking is typically developed (in fire-based EMS Standards of Cover documents) in accordance with the U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services (CMS), as:

- Basic Life Support (BLS).
- Advanced Life Support, Level 1 (ALS1).
- Advanced Life Support, Level 2 (ALS2).
- Specialty Care Transport (SCT).

Initial fire department first responder intervention is generally not needed for either BLS- or SCT-type incidents unless there is an extended delay in the arrival of an ambulance. The current recommendations also do not include fire department response for ALS1 calls; however, that is more a matter of local level of service determination as these types of incidents can be life-threatening in certain instances.

The majority of the incidents the KFD responds to are medical emergencies and result in the dispatch of the closest available fire department unit along with an ambulance if the ambulance is not closest. The following figure illustrates one model for EMS response based upon call type (severity).

FIGURE 4-7: Typical EMS Response Matrix/Algorithm



KFD FIRE RESPONSE TIMES

Response times are typically the primary measurement for evaluating fire and EMS services. Response times can be used as a benchmark to determine how well a fire department is currently performing, to help identify response trends, and to predict future operational needs. Achieving the quickest and safest response times possible should be a fundamental goal of every fire department.

However, the actual impact of a speedy response time is limited to very few incidents. For example, in a full cardiac arrest, analysis shows that successful outcomes are rarely achieved if basic life support (CPR) is not initiated within four to six minutes of the onset. However, cardiac arrests occur very infrequently; on average they are 1 percent to 1.5 percent of all EMS incidents.[87] There are also other EMS incidents that are truly life-threatening, and the time of response can clearly impact the outcome. These involve cardiac and respiratory emergencies, full drownings, obstetrical emergencies, allergic reactions, electrocutions, and severe trauma (often caused by gunshot wounds, stabbings, and severe motor vehicle accidents, etc.). Again, the frequencies of these types of calls are limited.

An important factor in the whole response time question is what we term "**detection time**." This is the time it takes to detect a fire or a medical situation and notify 911 to initiate the response. In many instances, particularly at night or when automatic detection systems (fire sprinklers and smoke detectors) are not present or inoperable, the detection process can be extended. Fires that go undetected and are allowed to expand in size become more destructive and are difficult to extinguish.

For the purpose of this analysis, ***response time*** is a product of three components: ***dispatch time***, ***turnout time***, and ***travel time***.

- ***Dispatch time*** is the time interval that begins when the alarm is received at the initial public safety answering point (PSAP) or communications center and ends when the response information begins to be transmitted via voice and/or electronic means to the emergency response facility or emergency response units or personnel in the field.
- ***Turnout time*** is the time interval that begins when the notification process to emergency response facilities and emergency response personnel and units begins by an audible alarm and/or visual announcement and ends at the beginning point of travel time. The fire department has the greatest control over these segments of the total response time.
- ***Travel time*** is the time interval that initiates when the emergency response unit is actually moving in response to the incident and ends when the unit arrives at the scene.
- ***Response time***, also known as **total response time**, is the time interval that begins when the call is received by the primary dispatch center and ends when the dispatched unit(s) arrives on the scene of the incident to initiate action.

For this study, and unless otherwise indicated, response times and travel times measure the first arriving unit only.

87. Myers, Slovis, Eckstein, Goodloe et al. (2007)." Evidence-based Performance Measures for Emergency Medical Services System: A Model for Expanded EMS Benchmarking." *Pre-hospital Emergency Care*.

According to NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments*, 2020 Edition:

- **Alarm processing time or dispatch time** should be less than or equal to 60 seconds 90 percent of the time.
- **Turnout time**, which is under the control of the fire department, should be less than or equal to 60 seconds for EMS incidents, and 80 seconds (1.33 minutes) for fire and special operations 90 percent of the time. As noted above, turnout time is the segment of total response time that the fire department has the most ability to control through employee behavior and station layout (time to travel by foot from day/night areas to apparatus) primarily.
- **Travel time** shall be:
  - Less than or equal to 240 seconds for the first arriving engine company to a fire suppression incident 90 percent of the time.
  - Less than or equal to 360 seconds for the second arriving engine company to a fire suppression incident 90 percent of the time.
  - The initial first alarm assignment should be assembled on scene in 480 seconds, 90 percent of the time for low/medium hazards, and 610 seconds for high-rise or high hazards.

For EMS incidents, the standard (NFPA 1710) is less than or equal to 240 seconds for the first arriving engine company with automated external defibrillator (AED) or higher-level capability, and 480 seconds or less travel time of an Advanced Life Support (ALS) unit at an EMS incident where the service is provided by the fire department provided a first responder with an AED or basic life support unit arrived in 240 seconds or less travel time.

It should be noted that the NFPA 1710 response time criterion is a nationally accepted benchmark for service delivery but not necessarily a CPSM recommendation. However, CPSM was informed that the City of Kalispell desires to meet the NFPA 1710 recommended benchmarks as much as possible and that maintaining acceptable response times are an important priority for the city's leaders.

The following figures provide: 1) an overview of response time performance and identifies responsibility for key components of the emergency communications center and the fire and rescue department, and 2) provides an overview of the fire department incident cascade of events.

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FIGURE 4-8: Response Time Performance Measures

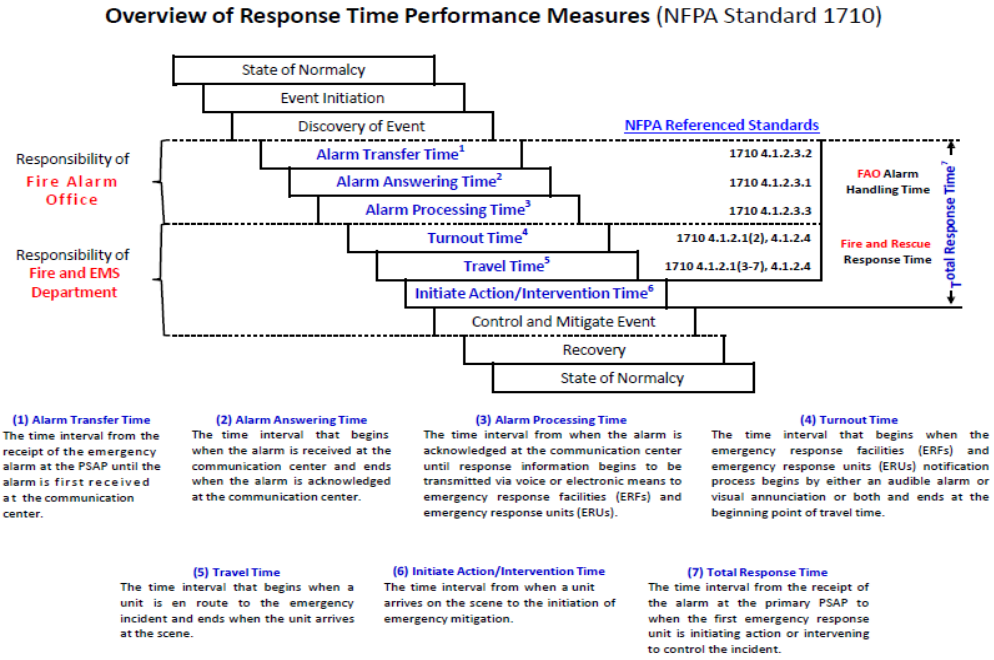
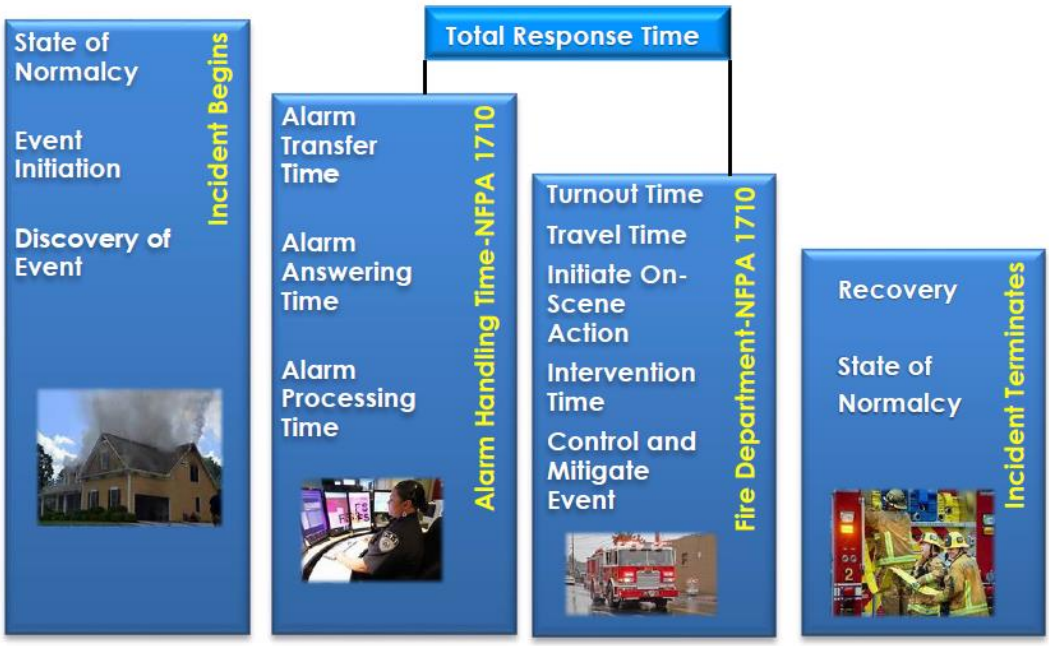


FIGURE 4-9: Incident Cascade of Events



Regarding response times for fire incidents, the criterion is linked to the concept of **"flashover."** This is the state at which super-heated gases from a fire are released rapidly, causing the fire to burn freely, and become so volatile that the fire reaches an explosive state (simultaneous ignition of all the combustible materials in a room). In this situation, usually after an extended period (often eight to twelve minutes after ignition but at times as quickly as five to seven minutes), and a combination of the right conditions (fuel and oxygen), the fire expands rapidly

and is much more difficult to contain. When the fire does reach this extremely hazardous state, initial firefighting forces are often overwhelmed, larger and more destructive fire occurs, the fire escapes the room and possibly even the building of origin, and significantly more resources are required to affect fire control and extinguishment.

Flashover occurs more quickly and more frequently today and is caused at least in part by the introduction of significant quantities of plastic- and foam-based products into homes and businesses (e.g., furnishings, mattresses, bedding, plumbing and electrical components, home and business electronics, decorative materials, insulation, and structural components). These materials ignite and burn quickly and produce extreme heat and toxic smoke.

NFPA 1710 outlines recommended organization and deployment of operations by career, and primarily career, fire, and rescue organizations.[88] It is the benchmark standard that the U.S. Department of Homeland Security utilizes when evaluating applications for staffing grants under the Staffing for Adequate Fire and Emergency Response (SAFER) grant program.

As a benchmark, paragraph 4.1.2.1(3) of NFPA 1710 recommends the first arriving engine at a fire suppression incident have **a travel time of 240 seconds or less**. Paragraph 4.1.2.1(4) recommends that other than for a high-rise incident, **the entire initial response of personnel be on scene within eight minutes (480 seconds) travel time.** It is also important to keep in mind that once units arrive on scene, they will need to get set up to commence operations. NFPA 1710 recommends that units be able to commence an initial attack within two minutes of arrival, 90 percent of the time.

Although trying to reach the NFPA benchmark for travel time may be laudable, the question is, at what cost? What is the evidence that supports such recommendations? NFPA 1710's travel times are established for two primary reasons: (1) the fire propagation curve; and (2) sudden cardiac arrest, where brain damage and permanent brain death occurs in four to six minutes.

The following figure shows the fire propagation curve relative to fire being confined to the room of origin or spreading beyond it and the percentage of destruction of property by the fire.

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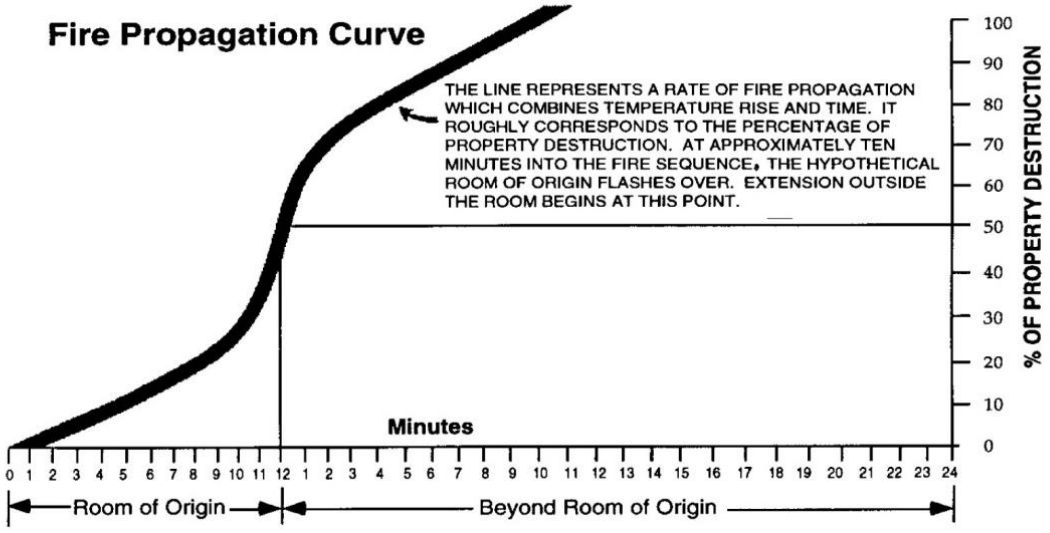
88. NFPA 1710 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the State of Montana. It is a valuable resource for establishing and evaluating agency performance.

FIGURE 4-10: Fire Propagation Curve



Source: John C. Gerard and A. Terry Jacobsen, "Reduced Staffing: At What Cost?" *Fire Service Today* (September 1981), 15–21.

According to fire service educator Clinton Smoke, the fire propagation curve establishes that temperature rise and time within in a room on fire corresponds with property destruction and potential loss of life if present.[89] At approximately the eight- to ten-minute mark of fire progression, the fire flashes over (due to superheating of room contents and other combustibles) and extends beyond the room of origin, thus increasing proportionately the destruction to property and potential endangerment of life. The ability to quickly deploy adequate fire staff prior to flashover thus limits the fire's extension beyond the room or area of origin.

Regarding the risk of flashover, the authors of an International Association of Firefighters (IAFF) report conclude:

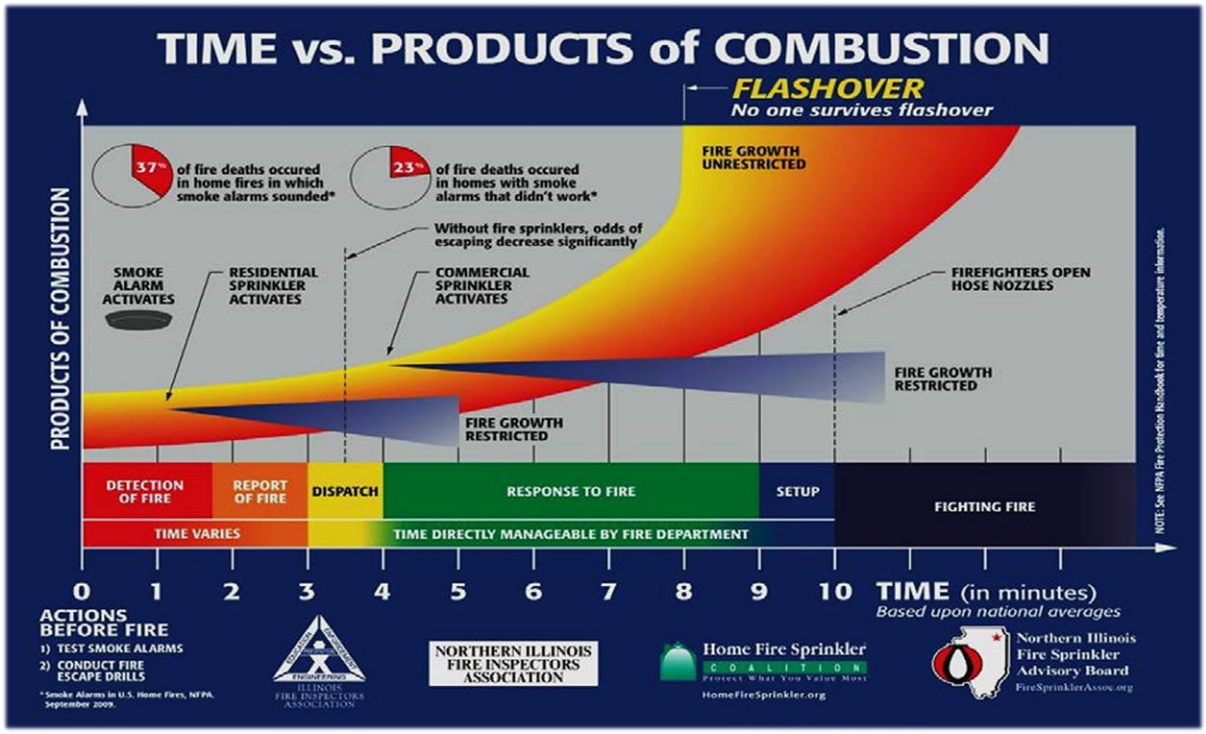
> *Clearly, an early aggressive and offensive initial interior attack on a working structural fire results in greatly reduced loss of life and property damage. Consequently, given that the progression of a structural fire to the point of "flashover" (the very rapid spreading of the fire due to super-heating of room contents and other combustibles) generally occurs in less than 10 minutes, two of the most important elements in limiting fire spread are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of its origin as possible.*[90]

The following figure illustrates the time progression of a fire from inception through flashover. Flashover occurs at eight to ten minutes (***or less dependent on fuel***), allowing the fire to extend beyond the room of origin. The time versus products of combustion curve shows activation times and effectiveness of residential sprinklers (approximately one minute), commercial sprinklers (four minutes), flashover (eight to ten minutes), and firefighters applying first water to the fire after notification, dispatch, response, and set up (ten minutes). It also illustrates that the fire

89. Clinton Smoke, *Company Officer*, 2nd ed. (Clifton Park, NY: Delmar, 2005).
90. *Safe Fire Fighter Staffing: Critical Considerations*, 2nd ed. (Washington, DC: International Association of Fire Fighters), 5.

department's response time to the fire is one of the only aspects of the timeline that the fire department can exert direct control over.

FIGURE 4-11: Fire Growth from Inception to Flashover[91]



EMS response times are measured differently than fire service response times. Where the fire service uses NFPA 1710 and 1720 as response time benchmarking documents, EMS' focus is and should be directed to the evidence-based research relationship between clinical outcomes and response times. Much of the current research suggests response times have little impact on clinical outcomes outside of a small segment of call types. These include cerebrovascular accidents (stroke), injury or illness compromising the respiratory system, injury or illness compromising the cardiovascular system to include S-T segment elevation emergencies, and certain obstetrical emergencies. Each requires rapid response times, rapid on-scene treatment and packaging for transport, and rapid transport to the hospital.

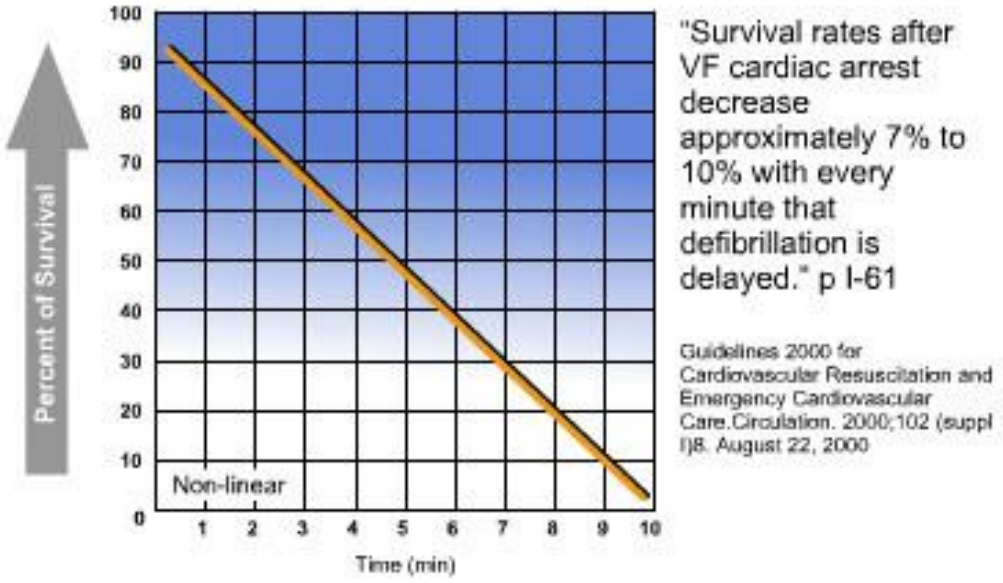
Paragraph 4.1.2.1(7) of NFPA 1710 recommends that for EMS incidents a fire unit with first responder or higher-level trained personnel and equipped with an AED should arrive on scene within four minutes of travel time (time after call is processed, dispatched, and the unit turns out). An advanced life support (ALS) unit should arrive on scene within eight minutes travel time, provided the fire department responded first with first responder or higher-level trained personnel and equipped with an AED. According the NFPA 1710, "*This requirement is based on experience, expert consensus, and science. Many studies note the role of time and the delivery of early defibrillation in patient survival due to heart attacks and cardiac arrest, which are the most time-critical, resource-intensive medical emergency events to which fire departments respond.*"

The next figure illustrates the chance of survival from the onset of cardiac arrest, largely due to ventricular fibrillation in terms of minutes without emergency defibrillation delivered by the public

91. Source: Northern Illinois Fire Sprinkler Advisory Board.

or emergency responders. The chance of survival has not changed over time since this graphic was published by the American Heart Association in 2000.

FIGURE 4-12: Cardiac Arrest Survival Probability by Minute



Typically, a low percentage of 9-1-1 patients have time-sensitive and advanced life support (ALS) needs. But, for those patients that do, time can be a critical issue of morbidity and mortality. For the remainder of those calling 9-1-1 for a medical emergency, though they may not have a medical necessity, they still expect rapid customer service. Response times for patients and their families are often the most important measurement of the EMS department. Regardless of the service delivery model, appropriate response times are more than a clinical issue; they are also a customer service issue and should not be ignored.

In addition, a true emergency is when an illness or injury places a person's health or life in serious jeopardy and treatment cannot be delayed. Examples include severe trauma with cardiovascular system compromise, difficulty breathing, chest pain with S-T segment elevation (STEMI), a head injury, or ingestion of a toxic substance.[92] The next figure illustrates the out-of-hospital chain of survival for a stroke emergency, which is a series of actions that, when put in motion, reduce the mortality of a stroke emergency.

FIGURE 4-13: Cerebrovascular Emergency (Stroke) Chain of Survival

Source: https://nhcps.com/lesson/acls-acute-stroke-care/

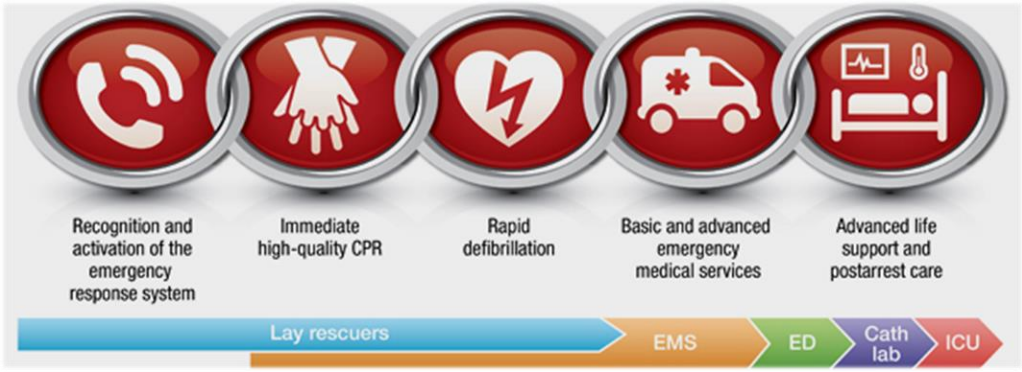
92. Mills-Peninsula Health Blog, Bruce Wapen, MD.

If a person is experiencing severe pain, that is also an indicator of an emergency. Again, the frequencies of these types of calls are limited as compared to the routine, low-priority EMS incident responses. In some cases, these emergencies often make up no more than 5 percent of all EMS calls.[93]

Cardiac arrest is one emergency for which EMS response times were initially built around. Science tells us that the brain begins to die without oxygenated blood flow at the four- to six-minute mark. Without immediate cardiopulmonary resuscitation (CPR) and rapid defibrillation, the chances of survival diminish rapidly at the cessation of breathing and heart pumping activity. For every minute without CPR and/or defibrillation, chances of survival decrease 7 to 10 percent. Further, only 10 percent of victims who suffer cardiac arrest outside of the hospital survive.[94]

The following figure illustrates the out-of-hospital chain of survival, which is a series of actions that, when put in motion, reduce the mortality of sudden cardiac arrest. Adequate EMS response times coupled with community and public access defibrillator programs potentially can impact the survival rate of sudden cardiac arrest victims by deploying early CPR, early defibrillation, and early advanced life support care provided in the prehospital setting.

FIGURE 4-14: Sudden Cardiac Arrest Chain of Survival



From: "Out of Hospital Chain of Survival," http://cpr.heart.org/AHAECC/CPRAndECC/AboutCPRFirstAid/CPRFactsAndStats/UCM_475731_Out-of-hospital-Chain-of-Survival.jsp

The primary focus of the following part of this section is the dispatch and response time of the first arriving units for calls responded to with lights and sirens (Code 3).

In this analysis, which covers the one-year time period from January 1, 2022, thru December 31, 2022, CPSM included all calls within the City of Kalispell to which at least one non-administrative unit arrived. However, calls with a total response time exceeding 30 minutes were excluded. Finally, we focused on units that had complete time stamps, that is, units with all components recorded, so that we could calculate each segment of response time. In this analysis, calls with "1-High," "2-Structure," and "3-Medium" priority levels were identified as emergency calls.

Based on the methodology described above, for the 4,293 calls in the studied period, the data analysis team eliminated 319 canceled calls, 237 mutual aid calls, 105 non-emergency calls, 69 calls where no units recorded a valid on-scene time, and 60 calls with a total response time

93. www.firehouse.com/apparatus/article/10545016/operations-back-to-basics-true-emergency-and-due-regard
94. American Heart Association. *A Race Against the Clock, Out of Hospital Cardiac Arrest*. 2014

exceeding 30 minutes. As a result, in this section, a total of 3,503 calls are included in the analysis.

The following table provides the average and 90th percentile dispatch, turnout, travel, and total response times for the first arriving unit to each call in Kalispell's response area. The 90th percentile measurement is a more conservative and stricter measure of total response time. Simply explained, for 90 percent of calls, the first unit arrived within a specified time, and if measured, the second and third units. For example, the table shows an overall 90th percentile response time of 14.3 minutes, which means that 90 percent of the time a call had a response time of no more than 14.3 minutes.

TABLE 4-10: Average and 90th Percentile Response Time of First Arriving Unit, by Call Type (Minutes)

Call Type	Average Response Time, Min.				90th Percentile Response Time, Min.			
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total
Breathing difficulty	1.8	1.5	5.3	8.6	3.0	2.6	8.2	11.9
Cardiac and stroke	1.9	1.6	5.2	8.8	2.8	2.4	8.2	12.6
Fall and injury	2.3	1.6	6.1	9.9	3.6	2.5	9.9	14.4
Illness and other	2.7	1.5	5.9	10.0	4.7	2.5	9.6	15.0
MVA	2.4	1.6	4.8	8.8	4.4	2.6	7.0	12.5
OD*	3.3	1.8	6.1	11.2	6.8	2.8	10.3	17.9
Seizure and UNC**	2.0	1.4	5.3	8.7	3.3	2.3	8.5	12.4
EMS Subtotal	**2.4**	**1.5**	**5.7**	**9.6**	**3.9**	**2.5**	**9.2**	**14.0**
False alarm	1.8	2.0	6.6	10.4	2.6	3.5	9.8	14.0
Good intent	2.0	1.8	5.6	9.4	2.9	2.7	9.4	13.5
Hazard	2.3	1.8	6.8	11.0	3.9	3.0	10.7	16.5
Outside fire	2.0	1.8	6.3	10.2	3.3	3.4	10.5	14.5
Public service	2.4	1.9	6.7	11.0	4.0	3.0	11.4	16.9
Structure fire	1.8	1.7	5.0	8.5	3.2	3.2	7.2	12.3
Fire Subtotal	**2.1**	**1.9**	**6.5**	**10.6**	**3.5**	**3.2**	**10.4**	**15.3**
Total	**2.3**	**1.6**	**5.8**	**9.7**	**3.9**	**2.6**	**9.6**	**14.3**

Observations and analysis of the above table tells us:

- The average dispatch time for all calls was 2.3 minutes.
- The average turnout time for all calls was 1.6 minutes.
- The average travel time for all calls was 5.8 minutes.
- The average total response time for all calls was 9.7 minutes.
- The average total response time was 9.6 minutes for EMS and 10.6 minutes for fire calls.
- The average total response time was 10.2 minutes for outside fires and 8.5 minutes for structure fires.
- The table shows an overall 90th percentile response time of 14.3 minutes, which means that 90 percent of the time a call had a total response time of no more than 14.3 minutes.

- Overall 90th percentile dispatch time was 3.9 minutes. This included 3.9 minutes for EMS incidents, and for fire calls was 3.5 minutes. Calls for overdoses were 6.8 minutes. These times are well above the NFPA benchmark standard of 60 seconds 90 percent of the time. This situation is inadequate and needs to be addressed. However, this part of the response time equation is out of the control of the KFD.
- Overall 90th percentile turnout time was 2.6 minutes. For EMS calls the time was 2.5 minutes, nearly triple the NFPA recommended benchmark. For fire calls the time was 3.2 minutes, more than double the benchmark standard. **Remember, this is the one aspect of total response time the fire department has the most direct impact on**.
- Aggregate fire and EMS 90th percentile travel time was 9.6 minutes, more than double the NFPA 1710 benchmark. Both fire (10.4 minutes) and EMS (9.2) travel times are well above the recommended NFPA benchmark of 240 seconds. Travel times are dictated by the road network and accessibility to local streets, time of day when traffic congestion is heaviest, weather, and station location with respect to the incident.
- The 90th percentile total response time for all calls was 14.3 minutes, more than double the NFPA 1710 benchmarks of 6.0 (EMS incidents) and 6.33 (fire incidents) minutes, respectively. For fire, the aggregate total response time was 15.3 minutes, while for EMS calls it was 14.0 minutes. Both of these are inadequate and need to be addressed. Other than station location(s) and turnout time, this is out of the control of the KFD. However, as will be illustrated in the next part of this section, the current KFD station configuration does not support the extended response times found in the data. Conversely, the implementation of recommendations contained within this report on staffing, deployment, and the addition of a third station should all assist with improving these response times.
- The 90th percentile response time was 14.5 minutes for outside fires and 12.3 minutes for structure fires.

Response Metrics and Response Time Recommendations:

- The KFD should work with the Flathead County Emergency Communications leadership to identify and attempt to correct the reasons for the extended dispatch times shown in the study year data. (Recommendation No. 43.)
- The KFD should aggressively take whatever steps are necessary to significantly improve turnout times for both fire and EMS incidents. This will serve to reduce and improve overall response times to emergency incidents. (Recommendation No. 44.)

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Travel Time

Travel time is key to understanding how fire and EMS station location influences a community's aggregate response time performance. In fact, where these facilities are located is the single most important factor in determining overall response times. Travel time can be mapped from existing and proposed station locations. The location of responding units is one key factor in response time; reducing response times, which is typically a key performance measure in determining the efficiency of department operations, often depends on this factor. The goal of placement of a single fire station or creating a network of responding fire stations in a single community is to optimize coverage with short travel distances, when possible, while giving special attention to natural and manmade barriers, and response routes that can create

response-time problems.[95] This goal is generally budget-driven and based on demand intensity of fire and EMS incidents, response times, and identified risks.

As already discussed, KFD normally responds from two stations.

NFPA and ISO have established different indices in determining fire station distribution. The ISO Fire Suppression Rating Schedule, section 560, indicates that first-due engine companies should serve areas that are within a 1.5-mile travel distance. The placement of fire stations that achieves this type of separation creates service areas that are approximately 4.5 square miles in size, depending on the road network and other geographical barriers (rivers, lakes, railroads, limited access highways, etc.). NFPA references the placement of fire stations in an indirect way. It recommends that fire stations be placed in a distribution that achieves the desired minimum response times. NFPA Standard 1710, section 4.1.2.1(3) and (6), suggests an engine placement that achieves a 240-second (four-minute) travel time for the first arriving unit. Using an empirical model called the "piece-wise linear travel time function" the Rand Institute has estimated that the average emergency response speed for fire apparatus is 35 mph. At this speed, the distance a fire engine can travel in four minutes is approximately 1.97 miles.[96] A polygon based on a 1.97-mile travel distance results in a service area that, on average, is 7.3 square miles.[97]

It is important to note several aspects of the polygon models and the associated travel distances and times. First, the model often assumes that resources are distributed equally throughout the service area, which is generally not the case. In addition, the road network, and geographical barriers such as a railroad or limited access highways, can impact the distance units can cover over a given amount of time. That said, the formulas do provide a useful reference when attempting to benchmark travel distances and response times.

This section expands on the travel times outlined above, depicting how travel times of 240, 360, and 480 seconds look when mapped from the current fire station locations. Illustrating response time is important when considering the location from which assets should be deployed. When historical demand is coupled with risk analysis, a more informed decision can be made about station numbers and locations.

As discussed above, travel time (aka: response time) is key to understanding how fire facility location influences a community's aggregate response time performance. NFPA sets benchmark travel times for first arriving fire units as:[98]

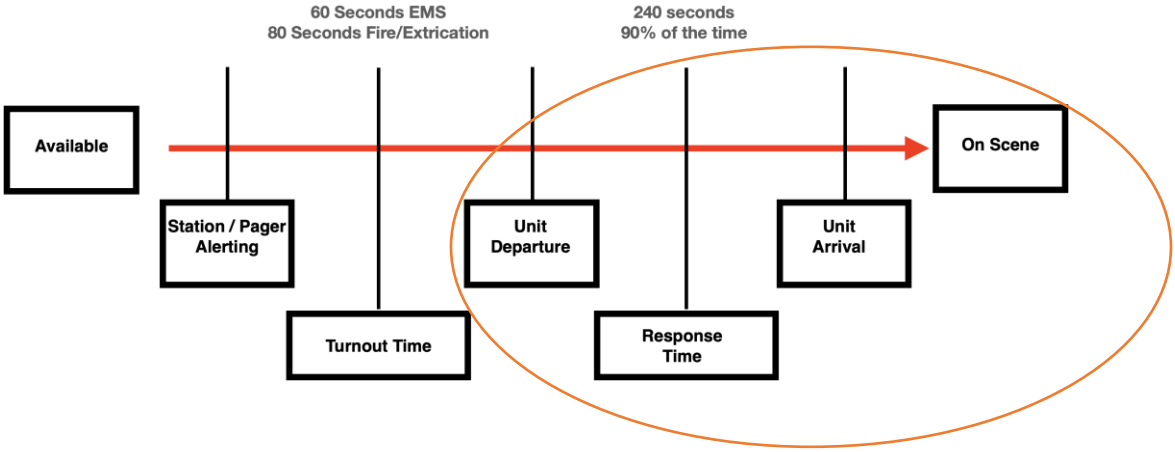
- ≤ 240 seconds for the first arriving engine company to a fire suppression incident 90 percent of the time.
- ≤ 240 seconds for the first arriving engine company with automated external defibrillator (AED) or higher-level capability to an EMS incident.

The NFPA also benchmarks the travel time of the second arriving unit on a fire incident, and the travel time to assemble the first alarm assignment of apparatus and staff on low/medium hazards as:

95. NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments*, 2010 Edition, 122.
96. University of Tennessee Municipal Technical Advisory Service, "Clinton Fire Location Station Study," Knoxville, TN, November 2012. p. 8.
97. Ibid., p. 9.
98. 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*.

- ≤ 360 seconds for the second company 90 percent of the time.
- ≤ 480 seconds to assemble the initial first alarm assignment on scene 90 percent of the time for low/medium hazard.

FIGURE 4-15: Fire Service Response Time Algorithm – Response Time to On Scene



As we said, the location of responding units is one key factor in reducing response times and is a key performance measure in determining the efficiency of department operations.

Likewise, current demand and potential for future demand for service is a consideration for the siting of fire facilities. Demand is the number and types of calls for services provided by the entire fire department. When demand is evaluated, it is important the number of incidents is not confused with the number of unit responses. An emergency call may require the response of more than one unit, but only one incident number is generated. This is a direct accelerator of demand.

The following figures use GIS mapping to illustrate 240-second, 360-second, and 480-second travel time bleeds, using the existing street network from the current KFD stations.

The GIS data for streets includes speed limits for each street segment and allows for "U-turns" for dead-end streets and intersections, as well as other travel obstacles.

It is, however, important to note that while GIS-drawn, theoretical travel times do reflect favorably on the adequacy of station facilities and their corresponding locations within the city to support efficient fire and EMS response to the current built upon areas. Keep in mind, the benefits of favorable travel time findings are only meaningfully realized when apparatus can be predictably staffed for response and have aggressive turnout times.

It is important to understand that measuring and analyzing response times and response time coverage are measurements of performance. Earlier when we discussed community risk, we noted that the KFD, like most other fire departments in the nation, is an all-hazards response agency. Linking response data to community risks lays the foundation for future fire department planning in terms of fire station location, the need for additional fire stations, and staffing levels. Managing fire department response capabilities to the identified community's risk focuses on three components which are:

- Having a full understanding of the total risk in the community and how each impacts the fire department in terms of resiliency, what the consequences are to the community and fire

department should a specific risk or combination of two or more occur, and preparing for and understanding the probability that the risk may occur.

- Linking risk to the deployment of resources to effectively manage every incident. This includes assembling an Effective Response Force for the response risk in measurable times benchmarked against NFPA standards, deploying the appropriate apparatus (engines, ladders, heavy rescues, ambulances), and having a response force trained to combat a specific risk.
- Understanding that each element of response time plays a role in the management of community risk. Low response times of the initial arriving engine and low time to assemble an Effective Response Force on fire and other incidents are associated with positive outcomes.

The next table provides detail on the average and 90th percentile response times to calls that occurred in different parts of the KFD's response area. These can then be compared with the GIS-generated response time bleeds for those areas.

TABLE 4-11: Average and 90th Percentile Response Time of First Arriving Unit, by Area

Area	Average Response Time, Min.				90th Percentile Response Time, Min.			
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total
K61-SK 4Corner	3.7	1.6	7.9	13.1	14.0	2.5	13.2	26.3
KS61 Commercial	2.6	1.5	5.0	9.1	4.5	2.6	8.5	13.8
KS61 Residential	2.3	1.6	6.2	10.1	3.8	2.6	10.0	14.8
Station 61 Subtotal	**2.4**	**1.6**	**5.7**	**9.7**	**4.0**	**2.6**	**9.4**	**14.4**
KS62 Commercial	2.2	1.6	5.3	9.1	3.7	2.6	8.2	13.2
KS62 Residential	2.1	1.7	6.7	10.5	3.4	2.7	10.5	14.6
Station 62 Subtotal	**2.2**	**1.6**	**6.1**	**9.9**	**3.4**	**2.7**	**9.8**	**14.0**
Total	**2.3**	**1.6**	**5.8**	**9.7**	**3.9**	**2.6**	**9.6**	**14.3**

The following figure compares the projected 240-second response from the current KFD stations. It also shows fire and EMS demand.

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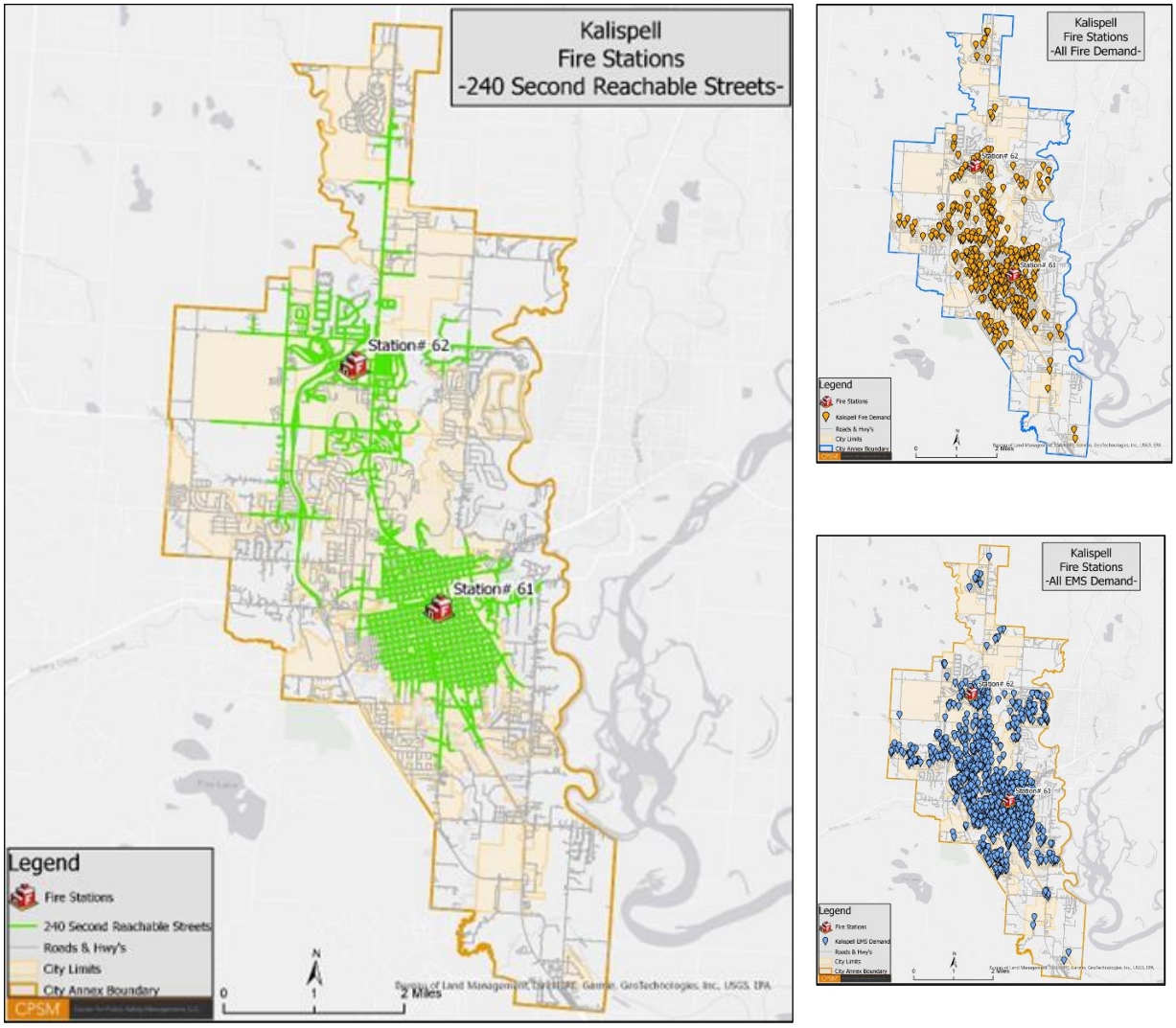
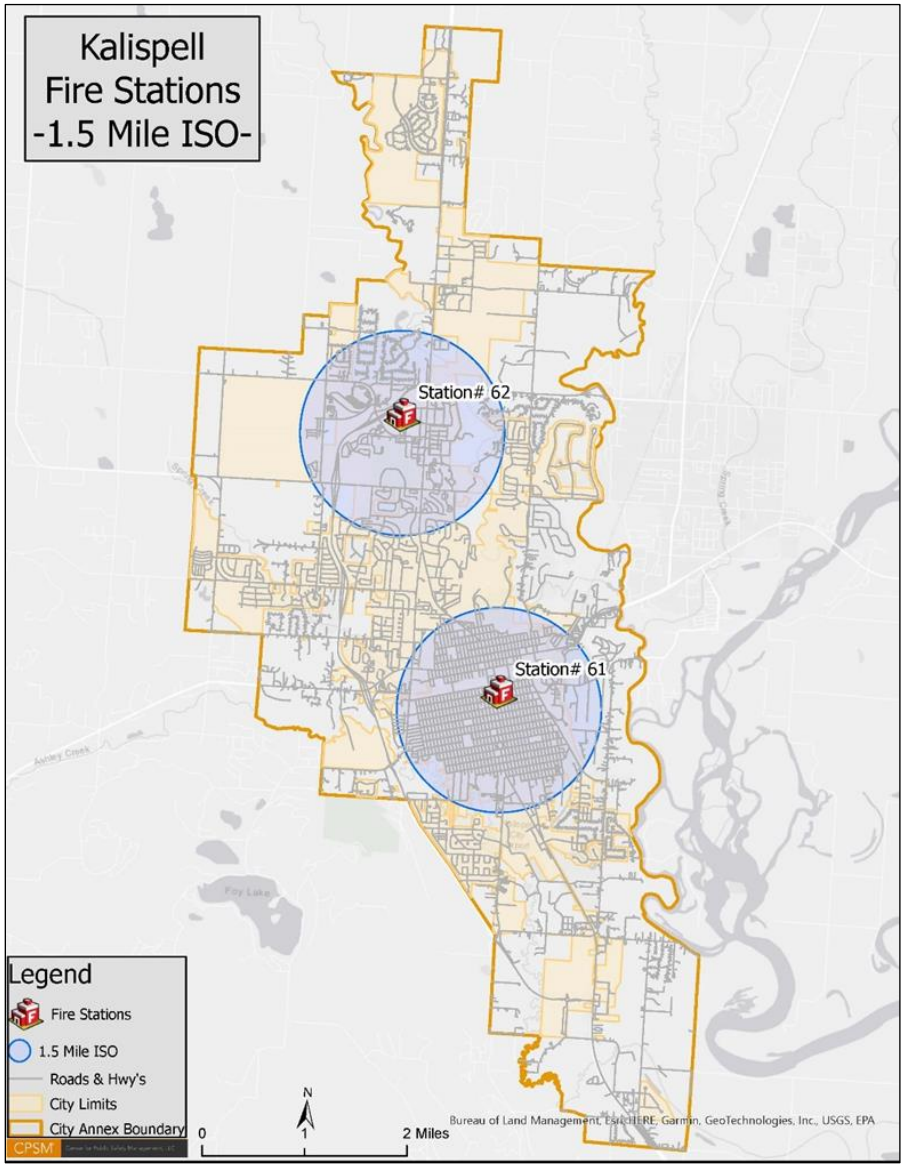
FIGURE 4-16: Travel Time of 240 Seconds from KFD Stations



It can be seen in this figure that, at 240 seconds, the KFD stations can cover less than 50 percent of city; however, the older, more densely populated sections are covered. As can be seen, there are significant gaps in coverage in various areas of the city, particularly the west and south sides. However, in some cases, those gaps also indicate a lack of accessible roads. Even with those gaps, the city should have better compliance with the NFPA's recommended response time benchmarks than the data indicates. Conversely, an important takeaway from this figure is the fact that the areas of the city that fall outside of the 240-second first unit response zone have lower population density and relatively lower call volume when compared to other areas of the city. As well, it is important to understand that although the city does not have 240-second coverage to all of the fire management zones, the 240-second benchmark is at the 90th percentile, not the 100th percentile. Actual travel times were discussed earlier in this section; however, **they do not meet compliance with the NFPA 1710 benchmark at the 90th percentile.**

The next figure illustrates the 1.5-mile ISO-FSRS coverage circles for engine company response throughout the city. Coverage is similar.

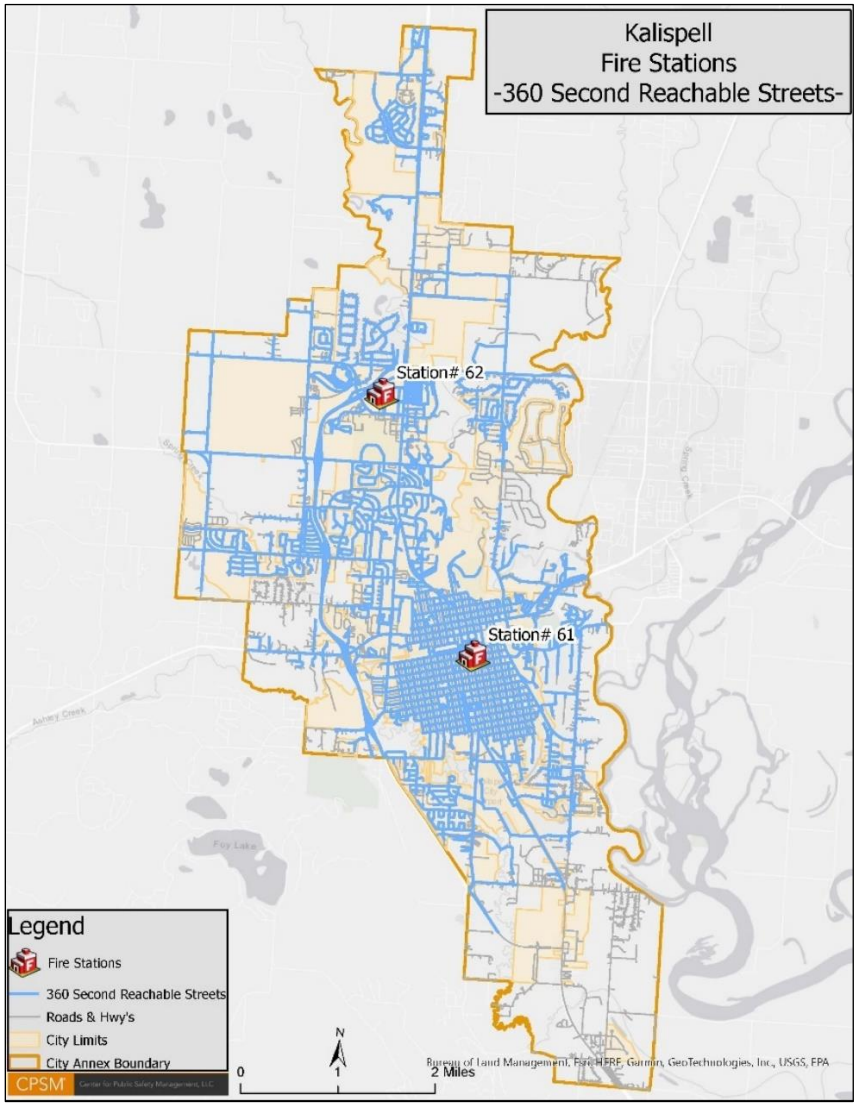
FIGURE 4-17: ISO-FSRS 1.5-Mile Response Circles for Engine Companies



The next figure looks at the 360-second response bleeds, which in the NFPA 1710 standard is the time benchmark for the second due engine to arrive on the scene in less than or equal to 360 seconds 90 percent of the time. This standard links to the two-in/two-out OSHA and NFPA 1500 standards (which were discussed earlier), as well as the initial critical tasking and the early assembling of the Effective Response Force for the incident.

This figure tells us that much of the city is covered by KFD fire stations. However, there are still areas in the far southern sections of the city that are not covered even at 360 seconds. The areas that are outside of the 360-second travel time have no call volume and probably few, if any, reachable streets.

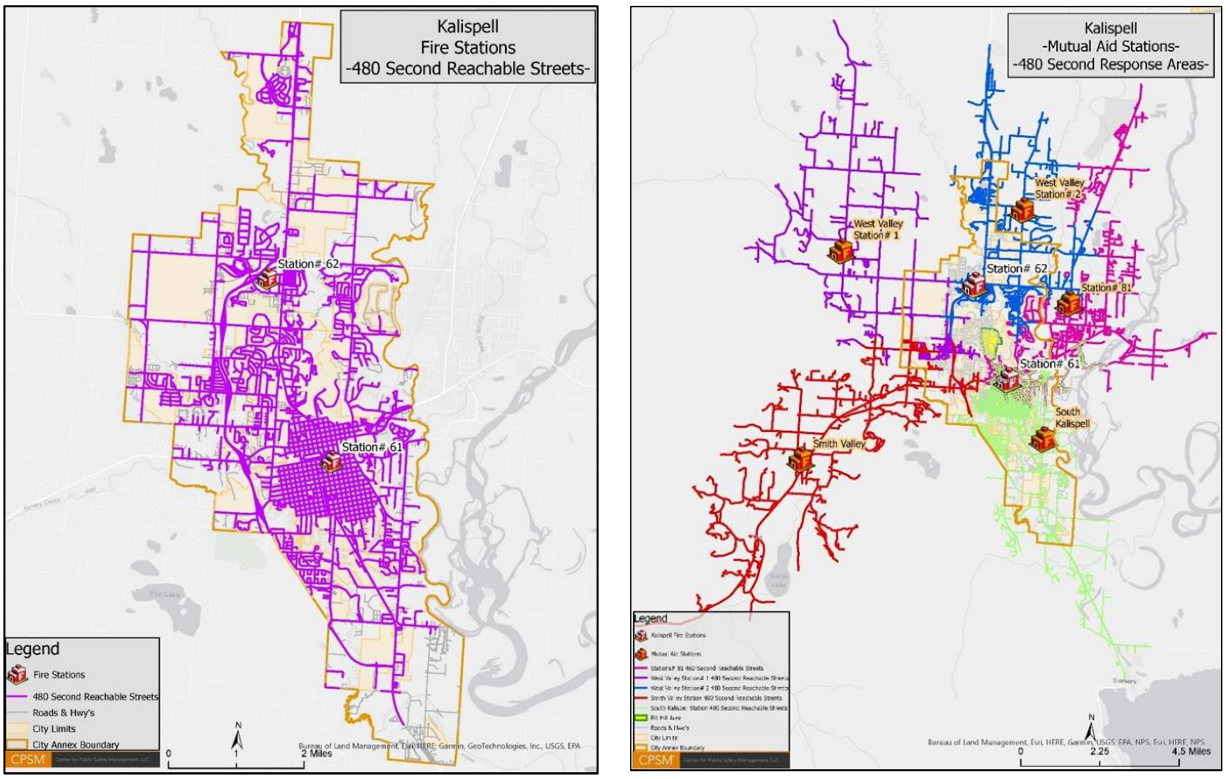
FIGURE 4-18: Travel Time of 360 Seconds from KFD Stations



The next figure looks at the 480-second response bleeds, which in the NFPA 1710 standard is the time benchmark for the assembling of the initial first alarm assignment on scene in 480 seconds or less, 90 percent of the time for low/medium hazards. This standard links to the incident critical tasking and the assembling of the Effective Response Force for the incident.

This figure tells us that the fire management zone (City of Kalispell) is mostly covered with the existing fire stations. However, the city's heavy reliance on automatic/mutual aid for all reported structure fires will impact the arrival time of the entire first alarm assignment. The mutual aid response time map is also provided for comparison. This shows that most of the mutual aid can get into at least sections of Kalispell with 480 seconds travel time. However, with unknown turnout times for non-staffed stations and depending upon where in the city the incident is, will make it very difficult for Kalispell to meet this benchmark. However, this is not unusual in small island cities that are surrounded by volunteer or on-call fire departments.

FIGURE 4-19: Travel Time of 480 Seconds from KFD and Mutual Aid Stations



One final note here, the ISO Fire Suppression Rating Schedule also indicates that first-due ladder companies should serve areas that are within a 2.5-mile travel distance. The placement of fire stations that achieves this type of separation creates service areas that are approximately 6.25 square miles in size, depending on the road network and other geographical barriers. The next figure illustrates a circle designating a 2.5-mile travel circle around Fire Station 2, from which the city's only ladder is deployed. It should be noted that the downtown area is outside of the acceptable ISO travel distance, which results in points deduction in the department's ISO rating.

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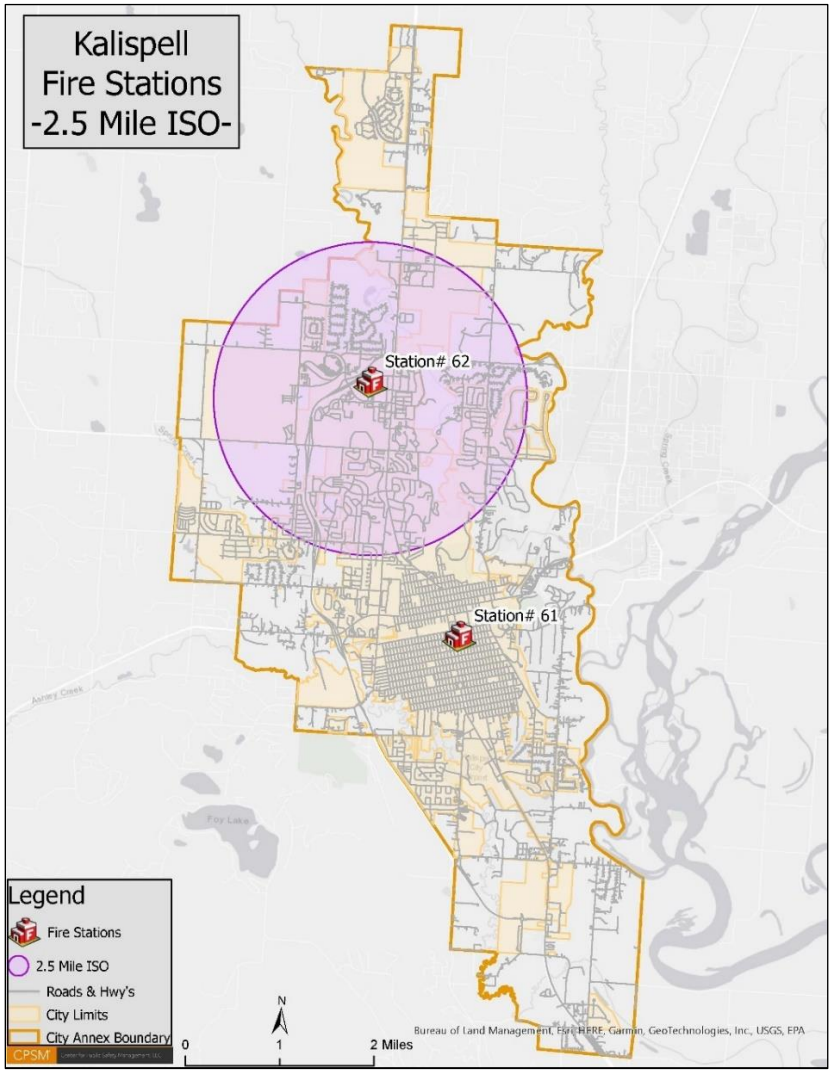
FIGURE 4-20: ISO-FSRS 2.5-Mile Response Circle for Ladder Company at Station 2



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KFD EMS SERVICE DELIVERY MODEL

Emergency medical service (EMS) operations are an important component of the comprehensive emergency services delivery system in any community. Together with the delivery of police and fire services, it forms the backbone of the community's overall public safety net. As will be noted in several sections of this report, the KFD, like many, if not most, fire departments respond to significantly more emergency medical incidents and low acuity incidents than actual fires or other types of emergency incidents.

The EMS component of the emergency services delivery system is more heavily regulated than the fire side. In addition to National Fire Protection Association (NFPA) Standard 1710, *Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (2020 Edition), NFPA 450 *Guidelines for Emergency Medical Services (EMS) and Systems*, (2009 edition), provides a template for local stakeholders to evaluate an EMS system and to make improvements based on that evaluation. The Commission on Accreditation of Ambulance Services (CAAS)[99] also promulgates standards that are applicable to their accreditation process for ambulance services. In addition, the State of Montana Department of Health and Human Services EMS and Trauma Systems Section[100] regulates EMS agencies; certain federal Medicare regulations are also applicable.

As a percentage of overall incidents responded to by the emergency agencies in most communities, it could be argued that EMS incidents constitute the greatest number of "true" emergencies, where intervention by trained personnel does truly make a difference, sometimes literally between life and death.

Heart attack and stroke victims require rapid intervention, care, and transport to a medical facility. The longer the time duration without care, the less likely the patient is to fully recover. Numerous studies have shown that irreversible brain damage can occur if the brain is deprived of oxygen for more than four minutes. In addition, the potential for successful resuscitation during cardiac arrest decreases exponentially with each passing minute that cardiopulmonary resuscitation (CPR), or cardiac defibrillation, is delayed (see next figure).

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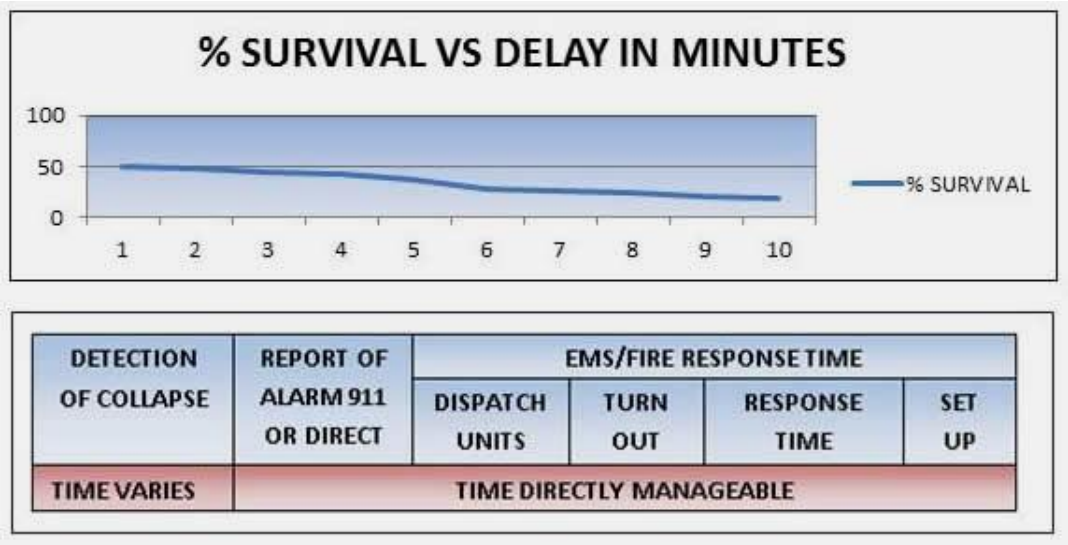
99. The Commission on Accreditation of Ambulance Services (CAAS) is an independent commission that has established a comprehensive series of standards for the ambulance service industry.
100. https://dphhs.mt.gov/publichealth/EMSTS/ems/servicelicensing

FIGURE 4-21: Cardiac Arrest Survival Timeline



The figure illustrates that the potential for successful resuscitation during cardiac arrest decreases exponentially, by 7 percent to 10 percent, with each passing minute that cardio-pulmonary resuscitation (CPR) or cardiac defibrillation and advanced life support intervention is delayed. The figure also illustrates that few attempts at resuscitation after 10 minutes are successful.

Emergency medical services (EMS) for the City of Kalispell are provided at the advanced life support (ALS)/paramedic level by the KFD. Advanced life support or ALS-level care refers to prehospital interventions that can be brought into the field by paramedics. Typically, this service level includes the ability to bring much of the emergency room capability to the patient. Paramedics can administer intravenous fluids, manage a patient's airway, provide drug therapy, utilize the full capabilities of a 12-lead cardiac monitor, and provide a vital communication link to the medical control physician who can provide specific medical direction based on the situation.

Of the KFD's current sworn personnel, 24 (70.6 percent) possess paramedic certification, with the remainder possessing advanced EMT certification. Current department policy is that every fire unit in the department is staffed at all times with a minimum of one paramedic, meaning that currently there are always at least two on duty. All KFD fire suppression units (engine and the ladder when it is in service) are also equipped with ALS capabilities that allow them to provide critical lifesaving interventions, when necessary, while awaiting the arrival of an ambulance transport unit. The department maintains three fully equipped ALS-capable ambulances.

Depending upon the department's staffing level each day, there is often not a crew that is dedicated strictly to the ambulance. When staffing levels are at either five, six, or seven personnel, the ambulance is staffed from Station 62; however, except when staffing is at five personnel, the personnel are cross staffing the ambulance along with the ladder truck. In the period from January 1, 2022, through December 31, 2022, the department operated at these staffing levels 302 days (82.7 percent of the time). It is not until the on-duty staffing is eight or more that a two-person crew is dedicated to staffing the primary ambulance. The practical implication of this is that when staffing is at six or seven, and there is a fire call in progress, there may be no ambulance staffed for immediate response. In this case, a fire suppression unit may respond to provide initial care while a mutual aid ambulance responds for transport.

Even when staffing levels are sufficient to assign a crew that is dedicated to the ambulance, when a significant structure fire occurs, it is likely these personnel will still be unavailable for immediate response due to the department's limited overall staffing. However, this situation occurs infrequently in Kalispell and is not uncommon in similar sized communities.

As was previously discussed, Kalispell utilizes a priority dispatch system to classify emergency medical calls as to their severity.

Medical direction for the KFD's EMS program is coordinated countywide through the Flathead County Office of Emergency Services. There is a memorandum of understanding and a county assessment of 2 mils that funds provision of EMS services throughout the county. The medical director also controls the issuance of EMS provider licenses.

CPSM was informed by the medical director that the influx of new residents following the COVID-19 pandemic has shocked the EMS system throughout the county, but particularly in Kalispell. In addition, the normal tourist influx during the summer months strains many county services. It is his opinion that the system, as currently structured, cannot sustain services given the current growth rate.

A KFD Captain serves as the department's part-time EMS coordinator. As such, he is still assigned to work as an officer on a shift. He handles his EMS coordinator responsibilities as an ancillary duty. He is authorized overtime, when necessary, to complete these duties. As was previously discussed in Section 2, as the city and department grow, and the number of EMS calls continue to increase, the time is drawing near when this position should be a full-time staff position.

To cope with the increasing call volume and shortage of EMS personnel, recent protocol changes allow lower acuity (less serious) EMS calls to be "stacked." In other words, minor EMS calls may not generate an immediate response by an ambulance or other emergency responder. If a call is coded BLS Yellow and the KFD is out of resources but will be able to respond within 10 minutes, then no mutual aid is activated and the response is delayed until a KFD ambulance is available, The call is placed into a queue to be handled when there is a unit available. This is a concept that is growing in acceptance as EMS systems try to cope with a crushing workload.

The next table and figure show the EMS call totals for the 12-month period evaluated for this study, including number of calls by type, average calls per day, and the percentage of calls that fall into each call type category.

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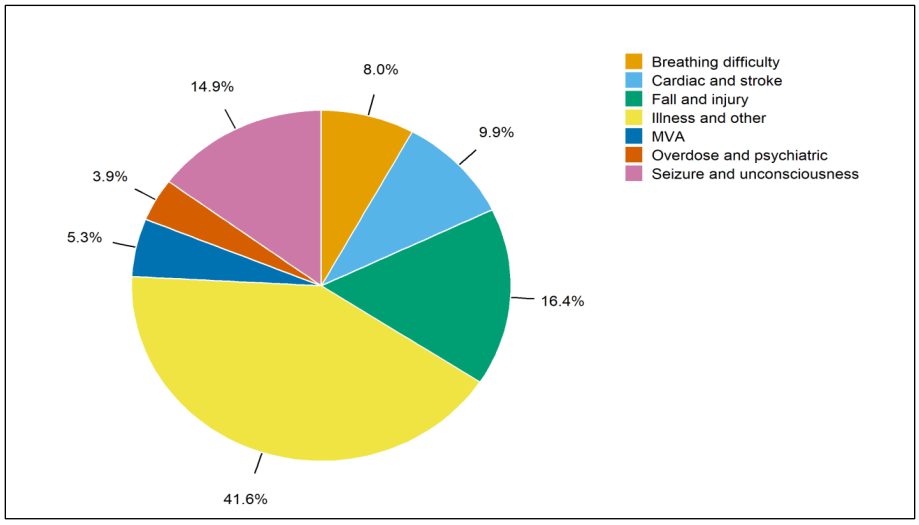
TABLE 4-12: EMS Calls by Type and Number, and Percent of All Calls

Call Type	Total Calls	Calls per Day	Call Percentage
Breathing difficulty	244	0.7	5.7
Cardiac and stroke	304	0.8	7.1
Fall and injury	502	1.4	11.7
Illness and other	1,276	3.5	29.7
MVA	164	0.4	3.8
Overdose and psychiatric	121	0.3	2.8
Seizure and unconsciousness	456	1.2	10.6
EMS Subtotal	**3,067**	**8.4**	**71.4**
False alarm	217	0.6	5.1
Good intent	44	0.1	1.0
Hazard	95	0.3	2.2
Outside fire	25	0.1	0.6
Public service	263	0.7	6.1
Structure fire	26	0.1	0.6
Fire Subtotal	**670**	**1.8**	**15.6**
Canceled	319	0.9	7.4
Mutual aid*	237	0.6	5.5
Total	**4,293**	**11.8**	**100.0**

FIGURE 4-22: EMS Calls by Type



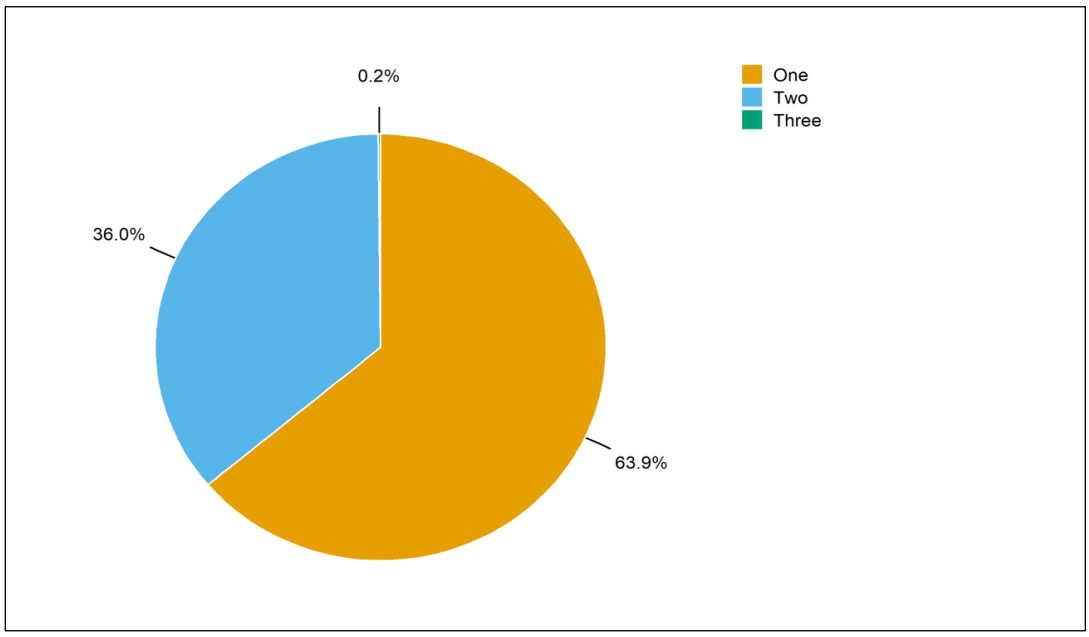
The EMS call data tells us:

- EMS calls for the year totaled 3,067 (71.4 percent of all calls), an average of 8.4 per day.
- Illness and other calls were the largest category of EMS calls at 41.6 percent of EMS calls, an average of 3.5 calls per day.

- Cardiac and stroke calls made up 9.9 percent of EMS calls, an average of 0.8 calls per day.
- Motor vehicle accidents made up 5.3 percent of EMS calls, an average of 0.4 calls per day.

The following figure shows the workload of EMS responses by number of units arriving at these incident types during the year studied. This figure only includes calls where a unit from the KFD arrived.

FIGURE 4-23: Calls by Number of Units Arriving – EMS



The information in this figure tells us that:

- On average, 1.4 units arrived per EMS call.
- For EMS calls, one unit arrived 63.9 percent of the time, two units arrived 36.0 percent of the time, and three units arrived 0.2 percent of the time.

One of the main factors to consider when analyzing EMS service operations is the transport component of that service. Factors such as the percentage of incidents that result in either a transport or a refusal, travel time to the nearest medical facility or facilities, and turnaround time (the time from when the ambulance arrives at the hospital until they transfer care to hospital staff and can be available for another emergency) at the medical facility all play roles in the number of resources that are needed, and how well they can meet established benchmarks. The latter factor (turnaround time) is a growing problem in many areas of the country with overused and understaffed emergency departments.

The data in the next table shows the number of calls by call type broken out by transport and non-transport calls. Transport calls were identified by requiring that at least one responding medical unit had recorded both a "beginning to transport" time and an "arriving at the hospital" time.

TABLE 4-13: Transport Calls by Call Type

Call Type	Number of Calls			Conversion Rate
	Non-transport	Transport	Total	
Breathing difficulty	63	181	244	74.2
Cardiac and stroke	88	216	304	71.1
Fall and injury	178	324	502	64.5
Illness and other	455	821	1,276	64.3
MVA	134	30	164	18.3
Overdose and psychiatric	35	86	121	71.1
Seizure and unconsciousness	178	278	456	61.0
EMS Subtotal	**1,131**	**1,936**	**3,067**	**63.1**
Fire & Other	1,120	106	1,226	8.6
Total	**2,251**	**2,042**	**4,293**	**47.6**

The information in this table tells us that:

- Overall, 63.1 percent of EMS calls in Kalispell involved transporting one or more patients.
- On average, there were 8.4 EMS calls per day, and 5.3 involved transporting one or more patients.
- Breathing difficulty calls had the highest transport rate, averaging 74.2 percent.
- Motor vehicle accidents had the lowest transport rate, averaging 18.3 percent.

The next table shows the average duration of transport and non-transport EMS calls by call type.

TABLE 4-14: Time Component Analysis for Ambulance Transport Runs by Call Type

Call Type	Average Time Spent per Run, Minutes				Number of Runs
	On Scene	Traveling to Hospital	At Hospital	Deployed	
Breathing difficulty	14.1	7.0	19.0	48.4	181
Cardiac and stroke	14.5	6.8	19.4	48.2	216
Fall and injury	15.7	6.1	17.8	47.7	324
Illness and other	13.6	6.7	19.1	47.5	821
MVA	15.5	8.0	21.1	51.1	32
Overdose and psychiatric	14.2	6.5	16.6	45.7	86
Seizure and unconsciousness	16.3	6.7	18.5	49.6	278
EMS Total	**14.6**	**6.7**	**18.7**	**48.0**	**1,938**
Fire & Other Total	16.4	11.3	20.7	59.5	106
Total	**14.7**	**6.9**	**18.8**	**48.6**	**2,044**

Note: Average unit deployed time per run is lower than the average call duration for some call types because call duration is based on the longest deployed time of any of the units responding to the same call, which may include an engine or ladder. Total deployed time is greater than the combination of on-scene, transport, and hospital wait times as it includes turnout, initial travel, and hospital return times.

The information in this table tells us that:

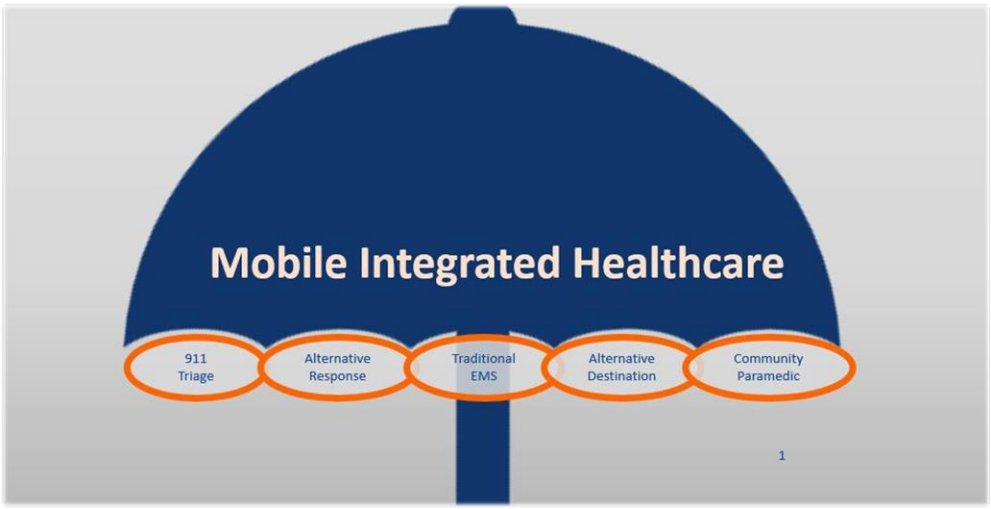
- The average time spent on-scene for a transport EMS call was 14.6 minutes.
- The average travel time from the scene of the EMS call to the hospital was 6.7 minutes.
- The average deployed time spent on transport EMS calls was 48.0 minutes.
- The average deployed time at the hospital was 18.7 minutes, which accounts for approximately 39 percent of the average total deployed time for a transport EMS call.

One thing the KFD will need to monitor very closely moving forward is any impact the ongoing debates over funding the Affordable Care Act (ACA) may have on its billing and revenues. Over the past several years with the changes in insurance reimbursements brought about by the ACA, a growing number of EMS providers are looking to get out of the ALS business. Increasingly, private insurance companies and the government have reduced (or are considering reductions in) reimbursement rates, and are becoming more reluctant, in general, to compensate departments for the full cost of emergency room transportation fees, especially for non-emergency treatment. Communities that provide EMS transport services are therefore facing pressure on their transport revenues.

One of the fastest growing value-added service enhancements in EMS is the development of Mobile Integrated Healthcare/Community Paramedicine (MIH/CP) programs. ***Mobile Integrated Healthcare is defined by the National Association of EMTs (NAEMT)*** as ***"the provision of healthcare using patient-centered, mobile resources in the out-of-hospital environment."*** MIH/CP is comprised of a suite of potential services that EMS could provide to fill gaps in the local healthcare delivery system. In essence, MIH/CP is intended to better manage the increasing EMS call volume and better align the types of care being provided with the needs of the patient. To be effective, MIH/CP is commonly accomplished through a collaborative approach with healthcare and social service agencies within the community.

MIP/CP can be provided through community paramedicine programs, which are programs that use EMTs and paramedics to provide this out-of-hospital health care. MIH/CP programs help facilitate more appropriate uses of emergency care resources and enhance access to primary care, particularly for underserved populations, by focusing on chronic disease management, post-discharge follow-up, and transport to non-emergency care settings.

FIGURE 4-24: MIH/CP Umbrella



The benefits of MIH/CP are therefore two-fold. These programs potentially help provide more appropriate health care to community residents, and if reimbursement arrangements can be agreed upon, also offer a substitute funding stream, separate from emergency transport, for community-based EMS transport programs.

In 2009, there were four programs like this in the country, but a recent survey by the National Association of EMTs identified more than 250 active MIH/CP programs now operating across the U.S.[101] Although it was reported to CPSM that this concept has been slow to gain traction in Montana, the KFD should investigate options to operationalize an MIH/CP program for Kalispell.

A consideration for a potential role for an MIH/CP program in Kalispell could be integrated with the CR 1 program for mental health emergencies that operates with the KPD, which could be a specialized response unit for behavioral health emergencies. Sometimes referred to as a Crisis Intervention Team (CIT), specialized units such as these have been effective in other communities across the country to reduce the risks associated with behavioral health-related responses.[102]

There may be government funds available for implementation of these types of programs, and some recent changes to the Medicare regulations indicate a possibly favorable view on billing for these services. Several fire departments have obtained grants to implement this type of program. A program of this type in Kalispell—particularly with its high percentage of residents over the age of 65—could improve both levels of service offered to the community and EMS revenues generated. This could be another potential duty for the EMS coordinator to undertake.

EMS Service Delivery Recommendation:

- The KFD should work with its medical director and other community stakeholders to determine the role that an MIH/CP program could play in working with high utilizers and other patients within Kalispell who would benefit from this type of service model. (Recommendation No. 45.)

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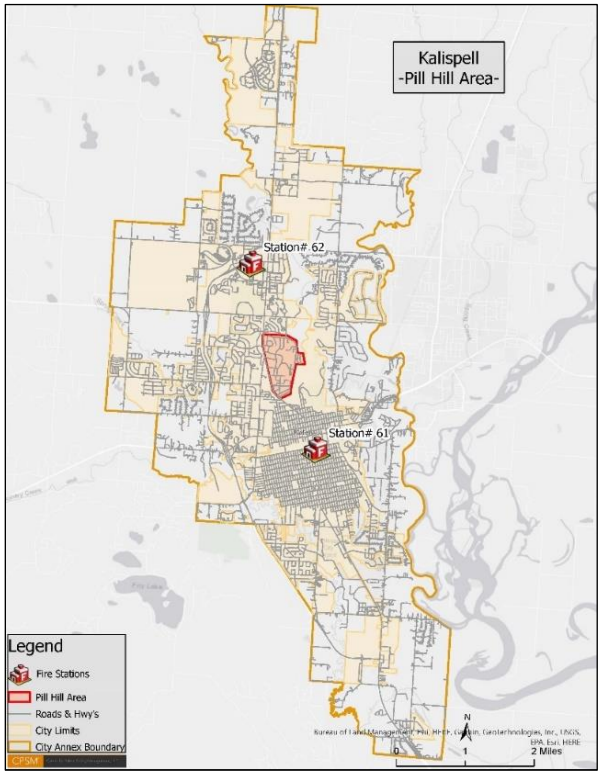
LOGAN HEALTH EMS RESPONSE ZONE

Logan Health Regional Medical Center is a 622-bed medical facility located at 330 Conway Drive (Emergency Department entrance). The hospital is the region's only university-level academic research and medical center. The medical center is the anchor of a large and growing comprehensive healthcare complex known locally as "Pill Hill." It is located off Sunnyview Lane (U.S. Route 93) and includes numerous doctors' offices, and other medical diagnostic, treatment, and support facilities. The following figure shows the location of the Logan health complex in Kalispell.

101. http://www.naemt.org/docs/default-source/2017-publication-docs/mih-cp-survey-2018-04-12-2018-web-links-1.pdf?Status=Temp&sfvrsn=a741cb92_2
102. https://www.psychiatrictimes.com/view/cahoots-model-prehospital-mental-health-crisis-intervention

FIGURE 4-25: Logan Health Complex Location



As complexes like this often do, the Logan health complex and its surrounding areas generate a significant number of calls for the KFD. This included numerous EMS calls at doctors' offices and other facilities within the complex. Most of these facilities already have trained and/or skilled medical personnel on site. In addition, most of these calls result in transport, that is, at most, a few blocks to the hospital ED.

Logan Health has its own in-house ALS-transport capable ambulances that were primarily used for interhospital or facility transports. These personnel are deployed from a location adjacent to the ED. Working collaboratively, KFD and Logan Health implemented a pilot program by which the Logan ambulances handle calls within the health complex. This area was later expanded to include several primarily residential areas adjacent to the Logan Health complex. The following figures show the boundaries of the current Logan Health EMS response zone.

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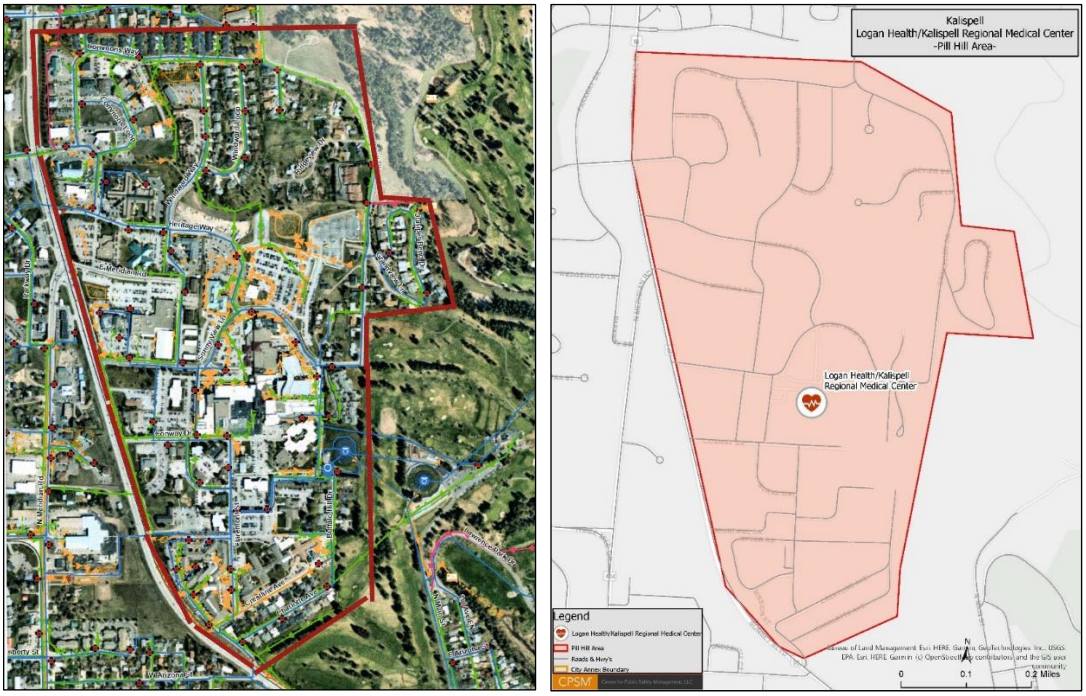
FIGURE 4-26: Logan Health EMS Response Zone



Between June 2, 2022, and December 31, 2022, Logan Health ambulances 2821 and 2822 responded to or arrived at 490 calls, of which 291 were 9-1-1 emergency incidents. The remaining 199 were interfacility transfer calls. Out of the 291 9-1-1 emergency calls, Logan Health ambulances arrived at 283 calls (97 percent) and transported one or more patients in 231 calls (82 percent).

The next table shows the number of calls by call type and the percentage of calls that fall into each call type category for the six months studied.

TABLE 4-15: Calls Responded to by Logan Health, by Type

Call Type	Total Calls	Call Percentage
Assist agency	4	0.8
Breathing difficulty	24	4.9
Cardiac and stroke	25	5.1
Fall and injury	43	8.8
Illness and other	147	30.0
Interfacility transfer	199	40.6
MVA	7	1.4
Overdose and psychiatric	7	1.4
Seizure and unconsciousness	34	6.9
Total	**490**	**100.0**

Analysis of this data indicates that:

- Logan Health ambulances responded to 490 calls, including four agency assist calls.

- 9-1-1 emergency calls totaled 291 (59.4 percent of EMS calls).
- Interfacility transfer calls totaled 199 (40.6 percent of EMS calls).

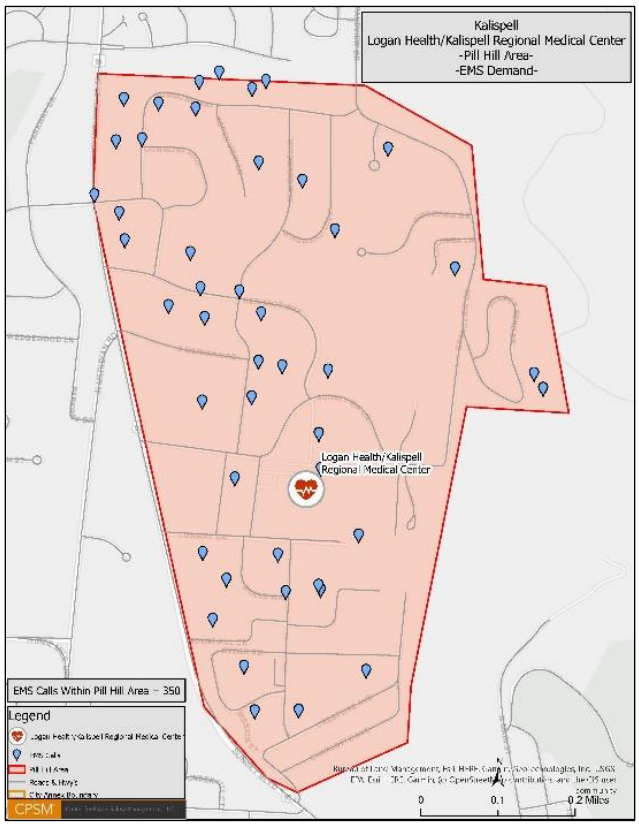
The next table breaks down the workload of Logan Health by the fire district or first due station where the calls occurred. Of particular note here is the number of calls that occurred in Kalispell. Logan Health does respond both in Kalispell and to surrounding communities for mutual aid when needed.

TABLE 4-16: Annual Workload of Logan Health by District

District / Station Area	Calls	Percent Calls	Runs	Minutes Per Run	Work Hours	Percent Work
KFD Station 61	2	0.4	2	42.9	1.4	0.2
KFD Station 62	394	80.4	401	87.8	587.0	76.0
Glacier Park Intl. Airport	9	1.8	9	119.9	18.0	2.3
Evergreen FD (MID)	5	1.0	5	236.1	19.7	2.5
Marion FD (West)	3	0.6	3	219.8	11.0	1.4
Olney FD	1	0.2	1	1.6	0.0	0.0
Whitefish FD	76	15.5	76	106.6	135.0	17.5
Total	**490**	**100.0**	**497**	**93.2**	**772.1**	**100.0**

The following figure plots the locations of the EMS calls that occurred in the designated Logan Health EMS response zone.

FIGURE 4-27: Logan Health EMS Calls in Designated Response Zone



One of the issues that was identified to CPSM by the members of the KFD was that Logan EMS has long response times, especially when they are already posted in the complex. While the data analysis did not break this down, it was reported that there have been multiple occasions where a KFD engine has arrived on the scene before the Logan ambulance.

In this analysis, 199 interfacility transfer calls, four agency assist calls, eight calls where no units recorded a valid on-scene time, six calls with a total response time exceeding 30 minutes, and 40 calls where one or more segments of the first arriving unit's response time could not be calculated due to missing or faulty data were all excluded. As a result, a total of 233 calls are included in the analysis.

The following table breaks down the average and 90th percentile dispatch, turnout, travel, and total response times by call type.

TABLE 4-17: Average and 90th Percentile Response Time of First Arriving Logan Health Ambulance, by Call Type

Call Type	Average Response Time, Min.				90th Percentile Response Time, Min.				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
Breathing difficulty	2.1	3.2	3.4	8.7	3.3	5.6	5.2	11.2	19
Cardiac and stroke	2.0	3.0	4.1	9.1	4.6	5.2	8.9	16.7	19
Fall and injury	2.6	3.2	3.6	9.4	5.9	5.4	5.2	13.8	36
Illness and other	2.4	3.4	3.1	8.9	3.8	5.5	5.1	11.2	120
MVA	2.1	2.8	3.8	8.8	5.4	4.9	5.1	11.3	5
OD*	3.0	2.5	3.1	8.6	5.5	6.0	4.2	11.2	6
Seizure and UNC**	2.0	2.9	3.4	8.3	3.4	6.3	5.5	10.4	28
Total	**2.3**	**3.2**	**3.3**	**8.9**	**3.9**	**5.4**	**5.2**	**11.4**	**233**

Note: *OD= Overdose and psychiatric; **UNC=Unconsciousness.

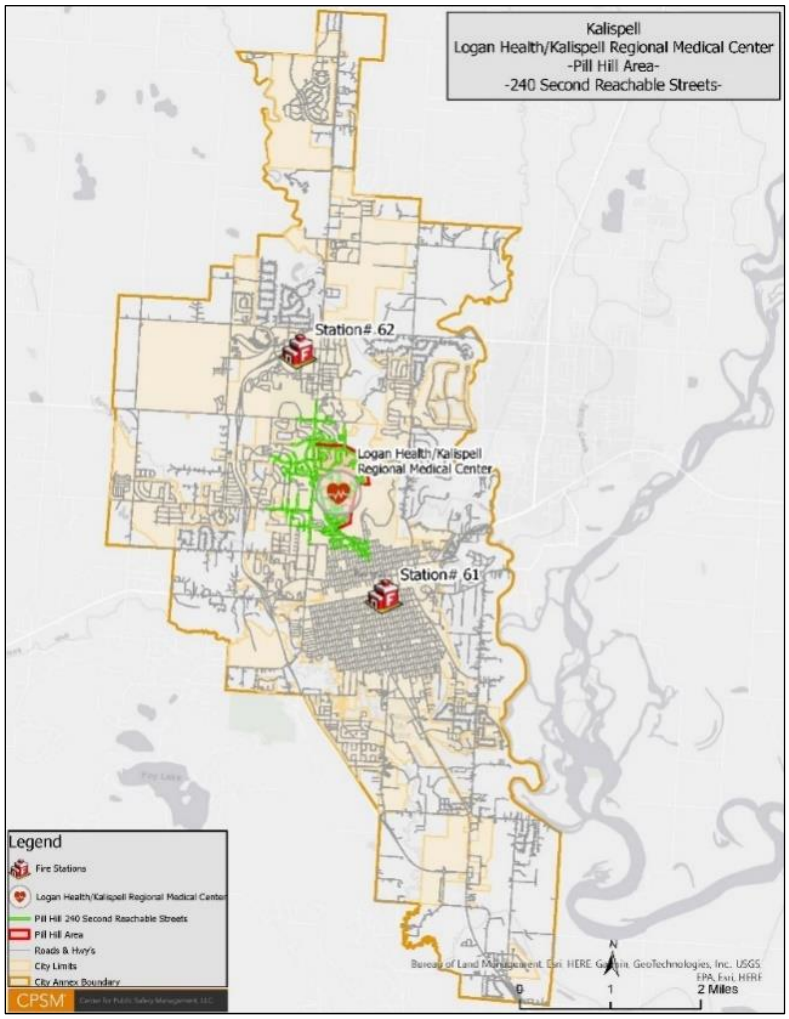
The data from this tables informs us that:

- The average dispatch time was 2.3 minutes.
- The average turnout time was 3.2 minutes.
- The average travel time was 3.3 minutes.
- The average total response time was 8.9 minutes.
- The 90th percentile dispatch time was 3.9 minutes.
- The 90th percentile turnout time was 5.4 minutes.
- The 90th percentile travel time was 5.2 minutes.
- The 90th percentile total response time was 11.4 minutes.

It is difficult to totally quantify these response times, particularly travel time, when Logan's responses range from short responses within the complex to as far away as Glacier International Airport and Whitefish. On the surface, however, they are well above the recommended EMS benchmarks, although these include dispatch and turnout times, which would not be impacted by the ultimate location of the call. While extended response times may be marginally acceptable in instances where the call is at a doctors' office or medical facility where there is trained staff, it is not acceptable for EMS calls outside of the Logan Health complex where

Logan ambulances are considered to be the "first due" ambulance. If a KFD engine is arriving first to these incidents, that also is not acceptable. The next figure shows the 240-second first due response bleed from the Logan Health ED.

FIGURE 4-28: Logan Health Station 240-Second Response Bleed



The following table shows the number of 9-1-1 calls by call type broken out by transport and non-transport calls.

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TABLE 4-18: Logan Health Ambulance Transport Calls by Call Type

Call Type	Number of Calls			Conversion Rate
	Non-transport	Transport	Total	
Agency assist	1	3	4	75.0
Breathing difficulty	7	17	24	70.8
Cardiac and stroke	4	21	25	84.0
Fall and injury	10	33	43	76.7
Illness and other	27	120	147	81.6
MVA	5	2	7	28.6
Overdose and psychiatric	1	6	7	85.7
Seizure and unconsciousness	5	29	34	85.3
Total	**60**	**231**	**291**	**79.4**

The next table shows the average duration of transport and non-transport EMS calls by call type. The following table gives the average deployed time for an ambulance on a transport call, along with three major components of the deployed time: on-scene time, travel to hospital time, and at-hospital time. Normally, the number of runs (234) exceeds the number of calls (231) as a call may have multiple runs. In addition, average times may differ slightly from similar averages measured per call.

TABLE 4-19: Logan Health Ambulance Transport Call Duration by Call Type

Call Type	Non-transport		Transport	
	Average Duration, Min.	Number of Calls	Average Duration, Min.	Number of Calls
Agency assist	1.6	1	24.1	3
Breathing difficulty	54.9	7	55.5	17
Cardiac and stroke	50.8	4	47.3	21
Fall and injury	42.7	10	57.9	33
Illness and other	39.5	27	53.3	120
MVA	14.6	5	40.6	2
Overdose and psychiatric	33.1	1	34.2	6
Seizure and unconsciousness	39.0	5	56.5	29
Total	**39.7**	**60**	**53.0**	**231**

Note: The duration of a call is defined as the longest deployed time of any of the units responding to the same call.

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TABLE 4-20: Time Components for Logan Health Ambulance Transport Runs by Type

Call Type	Average Time Spent per Run, Min.				Number of Runs
	On Scene	Traveling to Hospital	At Hospital	Deployed	
Agency assist	2.7	0.1	8.0	13.7	5
Breathing difficulty	23.5	2.8	22.8	55.5	17
Cardiac and stroke	21.9	5.6	13.3	47.3	21
Fall and injury	23.7	3.0	23.4	57.9	33
Illness and other	20.9	3.6	21.6	53.0	121
MVA	26.0	2.0	10.2	40.6	2
Overdose and psychiatric	18.2	1.1	9.7	34.2	6
Seizure and unconsciousness	23.8	3.3	22.6	56.5	29
Total	**21.5**	**3.5**	**20.6**	**52.4**	**234**

Note: Average unit deployed time per run is lower than the average call duration for some call types because call duration is based on the longest deployed time of any of the units responding to the same call.

As can be seen from the data in the above table, for most of Logan's transport calls to the hospital, the average travel time is short, which suggests that these transports originate in close proximity to the hospital.

Logan Health EMS Response Zone Recommendations:

- The KFD should work with Logan Health to identify the reasons for the elongated dispatch, turnout, and travel times for the Logan Health EMS response zone. Once deficiencies have been identified, appropriate actions should be taken to mitigate these issues. (Recommendation No. 46.)
- Logan Health EMS should only be dispatched alone and/or as the first due ambulance to medical calls that originate from within the Logan Health medical complex such as doctors' offices, diagnostic facilities, etc. EMS calls that occur in the neighborhoods adjacent to the Logan Health complex should be handled by the KFD utilizing normal response protocol. (Recommendation No. 47.)

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AUTOMATIC/MUTUAL AID

Mutual aid (MA) is an essential component of almost every fire department's operation. Except for the largest cities, no municipal fire department can, or should, be expected to have adequate resources to respond to and safely, effectively, and efficiently mitigate large-scale and complex incidents. Mutual aid is shared between communities when their day-to-day operational fire, rescue, and EMS capabilities have been exceeded, and this ensures that the citizens of the communities are protected even when local resources are overwhelmed.

Automatic aid (AA) is an extension of mutual aid, where the resources from adjacent communities are dispatched to respond at the same time as the units from the jurisdiction in which the incident is occurring. There are two basic principles for automatic aid, the first being that all jurisdictional boundaries are essentially erased, which allows for the closest, most-appropriate unit to respond to an incident, regardless of which jurisdiction it belongs to. The

second is to provide, immediately and at the time of initial dispatch, additional personnel or resources that may be needed to mitigate the reported incident.

Automatic and mutual aid are generally provided without charge among the participants. Over the years, automatic and mutual aid programs have been developed and refined and are now widely used in the U.S. fire service to augment services and reduce response times.

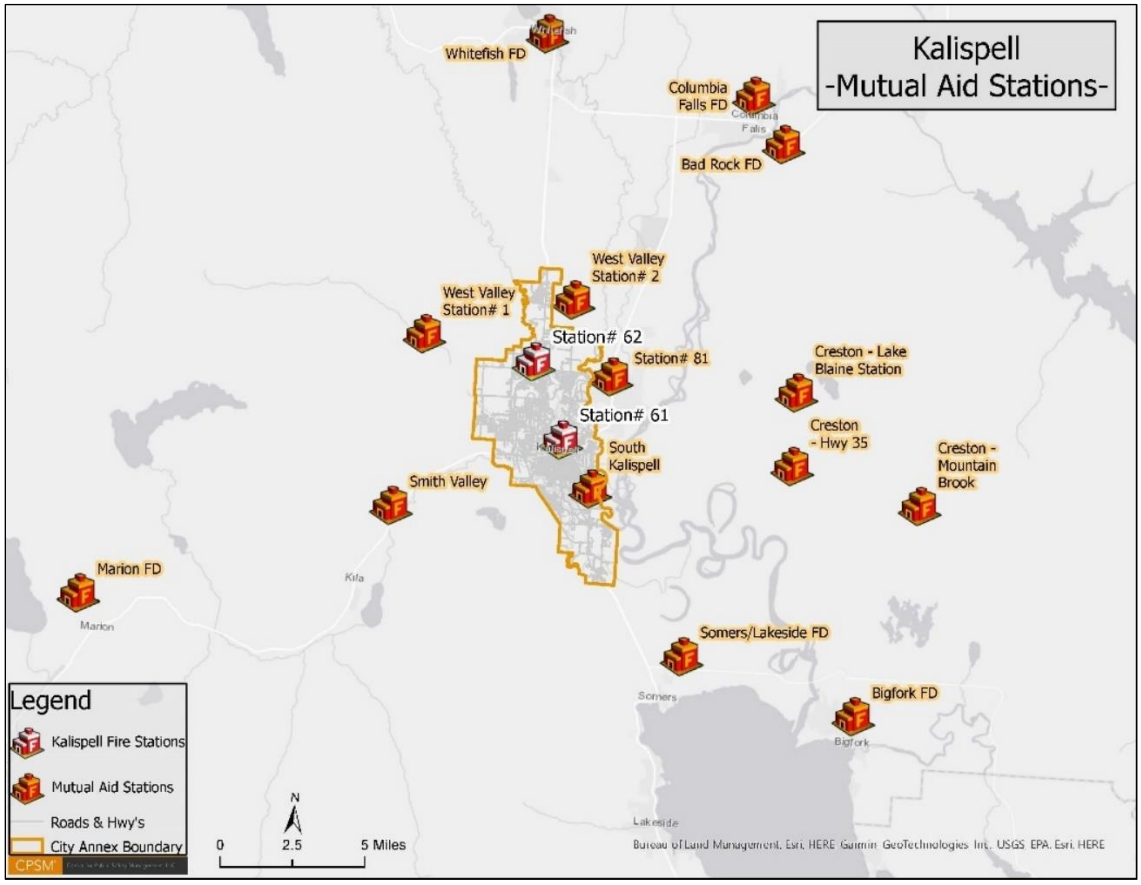
For AA and MA to be successful, participating agencies must train frequently together and at times, help each other with training shortfalls, specialized or specific training specific to the community. Likewise, successful MA and AA programs are recognized by the ISO in terms of weight of response (staffing and equipment) and water supplies (fire flow).

The KFD participates in what were once robust automatic/mutual aid systems throughout Flathead County. However, as the number of volunteer firefighters has declined nationally, these systems are likewise struggling which has significantly increased the challenges related to their reliability. The city has loose (verbal) mutual aid agreements with all its surrounding fire department neighbors. The following are the departments that provide mutual aid in Kalispell for major incidents. The equipment they provide was previously described in the section on fire operations.

- Evergreen FD (EFD): Combination department with several ALS ambulances, an engine, and a ladder.
- Smith Valley FD (SVFD): Volunteer department with a career ALS ambulance or cross-staffed two-person engine.
- West Valley FD (WVFD): Volunteer department with an engine.
- Somers/Lakeside FD (SFD): Volunteer department with an ALS ambulance and an engine.
- Whitefish FD (WFD): Career department, with a few volunteers, with an ALS ambulance, engine, and ladder.
- South Kalispell FD (SKFD): Volunteer department with an engine.
- Creston FD (CFD): Volunteer department with an engine.
- Bigfork FD (BFFD): Combination department with an engine.
- Bad Rock FD (BRFD): Volunteer department with an engine.
- Columbia Falls FD (CFFD): Combination department. Primarily volunteer with career day shift, M-F.
- Marion FD (MFD): Volunteer with paid ALS ambulance.

The following figure shows the locations of these stations.

FIGURE 4-29: KFD and Automatic/Mutual Aid Partner Station Locations



The next table breaks down the workload of KFD by external fire district where the calls occurred. The following provides further detail on the workload associated with structure and outside fire calls, also broken down by fire district. This table includes structure fires in Kalispell as well that would have generated an automatic aid response.

TABLE 4-21: Annual Workload by District

District / Station Area	Calls	Percent Calls	Runs	Runs Per Day	Minutes Per Run	Work Hours	Percent Work	Minutes Per Day
KFD Station 61	2,644	61.6	3,880	10.6	29.9	1,936.3	63.8	318.3
KFD Station 62	1,412	32.9	1,764	4.8	30.9	908.3	29.9	149.3
Evergreen FD	65	1.5	68	0.2	49.5	56.1	1.8	9.2
Smith Valley FD	17	0.4	18	0.0	41.9	12.6	0.4	2.1
South Kalispell FD	58	1.4	67	0.2	33.0	36.8	1.2	6.1
West Valley FD	83	1.9	97	0.3	48.2	77.9	2.6	12.8
Other*	14	0.3	14	0.0	27.1	6.3	0.2	1.0
Total	**4,293**	**100.0**	**5,908**	**16.2**	**30.8**	**3,034.2**	**100.0**	**498.8**

Note: *The 14 calls that occurred in "Other" districts include five calls in Whitefish, two calls in Creston, and one call each in Bad Rock North, Bigfork, Columbia Falls, Glacier Airport, Hungry Horse, the South Kalispell / Kalispell corner quadrant, and Somers fire districts, respectively.

TABLE 4-22: Runs for Structure and Outside Fires by District

District / Station Area	Structure Fires		Outside Fires		Combined	
	Runs	Minutes per Run	Runs	Minutes per Run	Annual Hours	Percent Work
KFD Station 61	36	76.7	28	36.3	63.0	62.9
KFD Station 62	10	29.4	4	23.2	6.5	6.5
Evergreen FD	12	108.0	0	NA	21.6	21.6
Smith Valley FD	4	64.0	0	NA	4.3	4.3
South Kalispell FD	0	NA	1	26.4	0.4	0.4
West Valley FD	2	130.0	0	NA	4.3	4.3
Total	**64**	**76.1**	**33**	**34.4**	**100.1**	**100.0**

The data in these tables indicates:

- There were 237 mutual aid calls or six percent of the total calls.
- There were 264 runs, including 57 runs dispatched for canceled calls. The daily average was 0.7 runs.
- The total deployed time for the year was 189.7 hours or 6.2 percent of the total annual workload. The daily average was 31.7 minutes for all units combined.

The KFD receives ambulance mutual aid when KFD is out of resources to respond to an EMS call that is coded BLS red or ALS. EMS mutual aid is received from Evergreen Fire, Smith Valley Fire, and Somers/Lakeside QRU, Whitefish Fire, Bigfork Fire, and Three Rivers EMS.

Mass casualty Incidents: Five (5) Ambulances dispatched starting with KFD ambulances that are available, the rest are dispatched from aid partners; KFD engine; and both the Chief and Assistant Chief.

Since the KFD relies on automatic/mutual aid for all structure fire responses, and in order to attempt to meet NFPA 1710 travel time benchmarks for the entire first alarm assignment to arrive on location (480 second travel time), the following map illustrates that travel time from the nearest aid stations.

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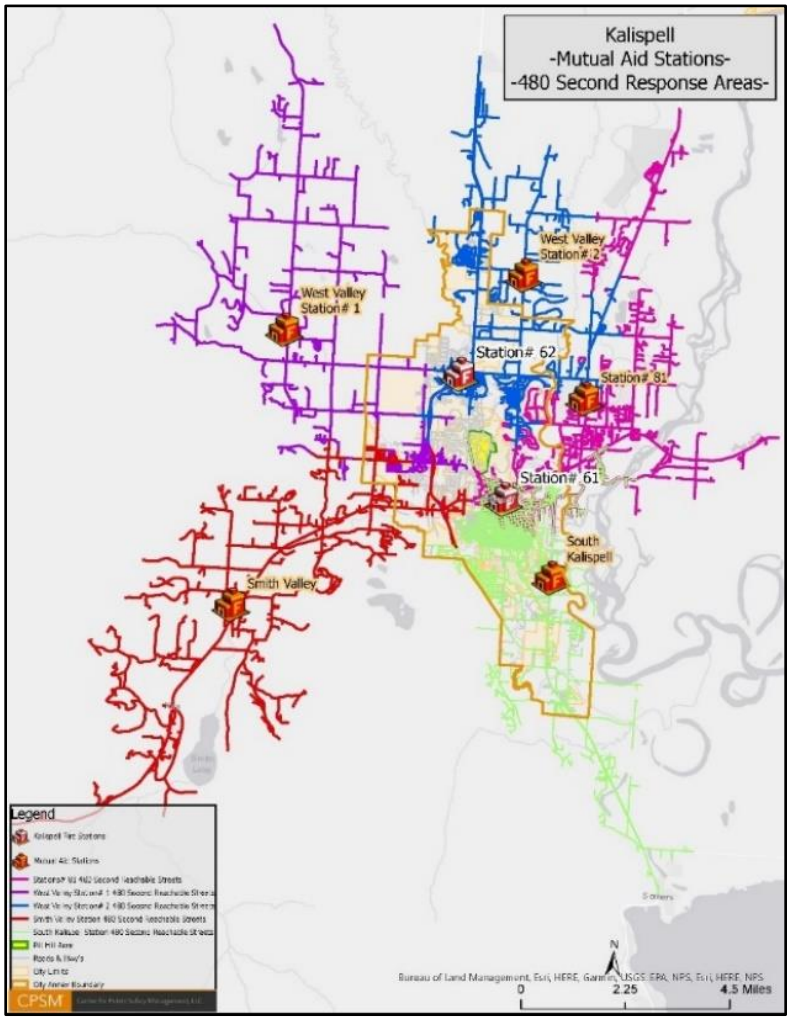
FIGURE 4-30: 480 Second Response Bleeds – Mutual Aid Stations



The issue of which companies should respond to certain areas on mutual or automatic aid is often the subject of debate within the emergency services field. While the simple answer is to say the closest should always be called, the reality is not that clear-cut. A significant issue that is closely related to automatic and mutual aid is the training of departments and personnel who are participating. In large part due to the lack of mandatory firefighter training requirements (in many cases even basic Firefighter I training is not mandatory), the training of personnel from fire company to fire company can vary widely. This is particularly true in the volunteer fire service. It also creates a major dilemma for fire chiefs of well-trained organizations and can create serious operational and safety issues on the emergency scene. In short, personnel who are not adequately trained can be a serious detriment on the emergency scene and present liabilities to the municipality in which the incident is taking place. Ultimately, the incident commander is responsible for the safety and conduct of everyone on the scene regardless of their organizational affiliation.

It is certainly reasonable for the KFD, and in a larger context the city as a whole, to expect that companies coming into the city on automatic and/or mutual aid be required to meet certain minimum training requirements as long as they are valid and reasonable. These minimum training requirements should be spelled out in the formal, signed automatic/mutual aid

agreements that should exist between various communities and/or fire departments. A provision in those agreements could stipulate that the fire chief or other designated individual must certify in writing annually that all his personnel (at least those who are supposed to be interior structural-certified and who might respond on mutual aid) continue to meet the requisite training standards. For example, several fire chiefs in southern New Jersey have informed surrounding mutual aid departments that personnel with beards[103] are not permitted to respond into their communities on mutual aid.

Mutual/Automatic Aid Recommendations:

- The KFD should formalize, in writing, its automatic and mutual aid agreements with all its neighboring departments. Written agreements codify an understanding between two or more entities to provide support in a given context. The primary purpose is to support each other's response efforts in an emergency. (Recommendation No. 48.)
  - An alternative way to formalize the mutual aid agreements for both fire and EMS is to develop one agreement for the entire county with each emergency services organization signing on as a participant.
- The City of Kalispell and KFD should require that personnel who staff fire and rescue organizations that respond into the city on mutual aid possess the same minimum levels of training (Firefighter I and II) that Kalispell personnel are required to maintain. (Recommendation No. 49.)
- The City of Kalispell and KFD mutual aid agreements with surrounding fire departments should stipulate the minimum required training standards for personnel who may respond into the city to assist. The agreements should also stipulate that the ranking officer of each entity must certify in writing on an annual basis that his/her personnel comply with the standards. (Recommendation No. 50.)

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SPECIALIZED FIRE-TECHNICAL RESPONSE CAPABILITIES

Specialized response capabilities include hazardous materials (hazmat), high-angle rope rescue, trench collapse, building collapse, complicated heavy auto extrication, elevated rescue with an aerial platform, and confined space rescue. There are no requirements in NFPA 1710, ISO-FSRS, or other national benchmarks that mandate a fire department deliver all these services. What is required in the NFPA standard is *an organizational statement that sets forth the criteria for the various types of special operations response and mitigation activities to which the fire department is required to respond.*

Large municipal fire departments often build these assets into their day-to-day staffing and deployable resources. In some cases, separate companies are created and staffed to manage the hazmat and technical rescue service deliverables. Some cities assign these functions to ladder and/or rescue companies to include auto-extrication. And in some communities, such as Kalispell, engine companies carry auto extrication equipment for light- to medium-extrication

103. The OSHA Respiratory Protection Standard CFR 1910-134 requires all personnel who may need to wear self-contained breathing apparatus (SCBA) to be fit tested on an annual basis with SCBA masks to ensure proper fit. It is generally accepted industry practice that personnel with beards cannot pass a fit test or are not in compliance if their beard was grown after the test.

incidents and are trained in certain aspects of hazmat and technical rescue incidents, more as supportive assets in large-scale incidents.

By virtue of its position as the largest fire department in the area, along with the wide range of specialized and potentially complex incidents it may experience that would require much more specific training, skills, and capabilities, the KFD has multifaceted specialized technical incident operational capabilities. The special operations teams represent a group of firefighter personnel that in addition to their firefighting duties and training have elected to diversify and train to meet the challenges and dangers of specific rescue environments. The following are the various specialty/technician certifications that KFD personnel have achieved:

- **Technical Rescue** – Technician-level including confined space, trench, rope, high/low angle, and structural collapse.
- **Hazmat Response** – Technician Level; response, rescue, detection, mitigation.
- **Swift Water Rescue.**

The department's special operations certified personnel are assigned to both stations, although most of their equipment is stored at Station 1. These capabilities include high angle, rope, confined space, and trench collapse technical rescue capabilities, in addition to normal vehicle extrication. The department also has a certified level A hazardous materials response team. It is the host for the Northwest Montana Regional Hazardous Material Team. All these special operations capabilities are available for response to assist on incidents throughout northwestern Montana.

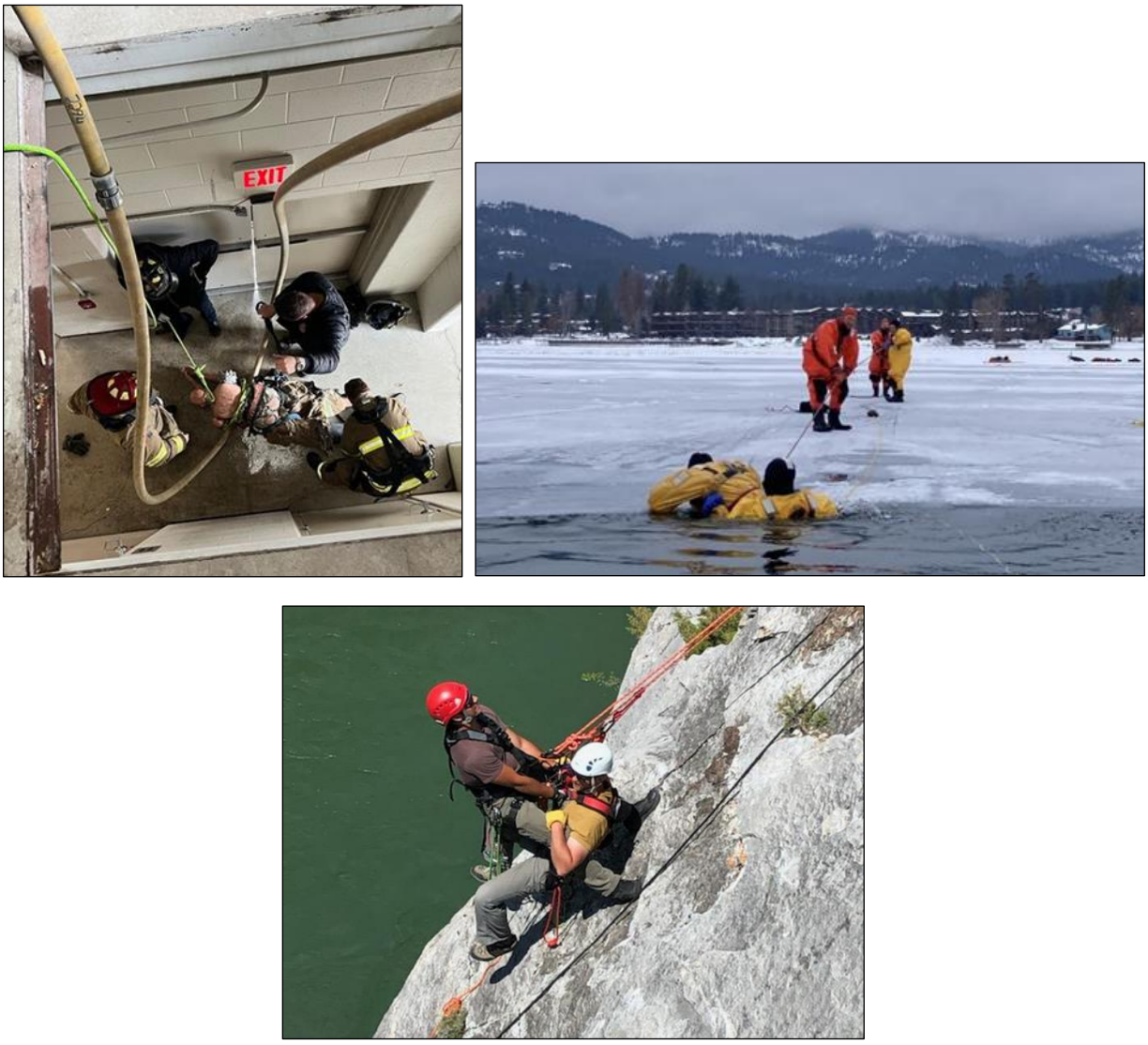
As an example of a recent technical rescue incident handled by the KFD, on May 2, 2023, at approx. 11:45 a.m., there was a 911 call for a subject who fell into a hole reported "as 30 feet deep." This was at a construction site, with work taking place on a new concrete vault that was approx. 20 to 25 feet in depth. An employee had fallen from the top to the bottom of the vault.

Using high-angle rope rescue skills, Kalispell firefighters with the assistance of Whitefish Fire, were able to remove the patient safely in a short amount of time, then stabilize and transport the patient to the hospital for evaluation and further treatment.

FIGURE 4-31: Kalispell and Whitefish Firefighters Work on a Technical Rescue Incident

Because of the specialized, often complex, and dangerous, nature of special operations, it is imperative that the personnel who engage in these endeavors be well trained and given opportunities to maintain their skills at the highest level possible. This requires training on a regular basis. The following figure shows KFD personnel training for several different types of technical rescue.

FIGURE 4-32: KFD Personnel Performing Training on Technical Rescue



The KFD is to be commended for this commitment to providing regional special operations training and being considered a leader in this area, which CPSM considers to be a Best Practice.

OPERATIONAL PLANNING CONSIDERATIONS AND RECOMMENDATIONS

The current state of the fire and EMS delivery system in Kalispell, from the operational perspective of the KFD, which includes external factors such as available staffing, risk, future city growth, development and redevelopment, available funding, and demand for service is, as analyzed and observed by CPSM, as follows:

During this study, we observed a highly functional fire and EMS organization that strives to provide an exceptional level of service to the community and the region.

The KFD is an excellent organization that provides a high-level of service to the city. The command staff works as a team to provide critical, and it appears effective, leadership to the department. Members of the department work as a team to produce a high-quality, effective, and efficient response that serves the city well. The KFD is one of the better organizations that we have evaluated. It should also be noted that the department has implemented several Best Practices, as noted previously.

Over the past two years under the leadership of the new Fire Chief and Assistant Fire Chief the KFD has:

- Ordered a new engine.
- Ordered a new ambulance.
- Procured new personal protective equipment (PPE) for all personnel. All KFD personnel now have two sets of PPE, which is the industry standard.
- Obtained new state-of-the-art self-contained breathing apparatus (SCBA) along with an air compressor and fill station.
- Remodeled the dormitories at Station 61.
- Reengaged with Montana Department of Natural Resources for wildland fires.
- Updated station physical fitness areas.
- KFD personnel have become more involved at the state level in various areas, which helps to boost morale.

From all accounts, once they arrive on the scene of an emergency, KFD personnel perform their duties in an exceptional manner and can be counted upon to complete effectively and efficiently the assignments given to them. This is the case even when they have less than adequate staffing to assemble a recommended ERF for almost any type of structure fire in the city. They are to be commended for their efforts and given the support they need to continue to try to be successful.

The City of Kalispell has an ISO rating of Class 3, one of the higher ratings achievable, and one of only 11 in Montana. This is a satisfactory score (and class), yet there are areas for improvement. There is a caveat to this, in that the overall points from the most recent evaluation in 2020 fell 1.94 points since 2015. The current rating puts the city just 0.69 points into the Class 3/3Y rating. If the rating declines again, the city will most likely drop to a Class 4 rating.

The above opinions of the CPSM team notwithstanding, the KFD is confronted by many of the challenges that are facing fire service organizations across America. As the fire service has entered an all-hazards environment, the public has come to expect increased knowledge, skill,

and ability from their firefighters, as well as a higher level of service and responsiveness. In addition, the City of Kalispell has been experiencing significant and rapid growth for the past several years, a trend that appears to have accelerated over the past several years (post COVID-19). These challenges include:

- With the current staffing levels the department in its most recent ISO evaluation received significant point deficiency in *Credit for Company Personnel*, receiving only 7.41 out of 15.00 possible points. This score fell nearly one point from the previous 2015 evaluation.
- When the KFD operates at true minimum staffing of just five personnel on duty, which happened 10 times (2.7 percent of the time) in 2022, there is just a single fire suppression unit and single ambulance staffed. This provides a false sense of security that the department will be able to handle the normal daily workload much less a significant incident on a high-activity day.
- Even at a staffing level of six, only two units are staffed for all fire and EMS responses, either two fire suppression units or one fire unit and one EMS unit.
- When a single fire response unit is available, with staffing of three personnel, tactical fire and rescue options will be limited.
- When staffing is at five or six the EMS unit that is staffed responds out of Station 62, which increases the response time for the ambulance into Station 61's area, which is nearly twice as busy. When this occurs the fire suppression unit (Ladder 642) is out of service.
- When staffing is at six and a second EMS incident comes in, the remaining fire suppression unit (Engine 631) responds to this incident to provide patient care until a mutual aid ambulance arrives. When this occurs, there is no fire suppression unit available for immediate response.
- When staffing is at six or seven, there may be no EMS transport unit readily available if both fire units are out on a fire-related incident.
- There is no dedicated EMS unit staffed until staffing reaches eight personnel, which happened just 49 times (13.4 percent) in 2022.
- When responding to any incident with the potential for personnel to encounter an IDLH, units with staffing of three personnel have fewer tactical fire options until the arrival of additional personnel and resources. In a worst-case scenario when staffing is at five personnel, if two are committed on an ambulance, the remainder of the on-duty staff would be unable to enter an IDLH until the arrival of one of the chiefs or a mutual aid unit.
- When units respond with just three personnel, the officers must assist with tasks such as stretching a line and therefore cannot properly perform duties such as initial size-up. In addition, the crews of two companies may need to be combined to accomplish tasks that a single engine should be able to perform, such as advancing a line to the upper floors of a building.
- Even at its maximum potential on duty staffing level of 11 personnel, the KFD minimum is five or six personnel short of the 16/17 recommended by NFPA 1710 as the benchmark for establishing an Effective Response Force (ERF) based upon critical tasking for an average size single-family dwelling.
- In our 2018 evaluation, CPSM recommended that the City of Kalispell establish an on-duty minimum staffing level in the KFD of seven personnel with eight being optimal. In 2022, the KFD's average daily on duty staffing was eight or more on just 49 days or 13.4 percent of the time. This is a reduction from the 15 percent level in 2017/2018.

- The current collective bargaining agreement allows 20 Kelly Days per member per year. This allows those covered in the agreement a 46.77-hour work week. This was identified as an impediment to proper staffing in our 2018 report.
- The city has a limited number of fires; however, as analyzed in this report, the city does have a significant level of risk.
- Anytime a mutual aid EMS transport unit responds to Kalispell from a neighboring fire department, such as Evergreen, Kalispell is not able to collect that EMS transport revenue.
- Surrounding areas are increasingly relying on KFD for EMS, since the number of their available volunteers, particularly on the EMS side, is declining.
- Based on the KFD's current deployment model, less than half of the city is within 240 seconds of travel time for the first responding unit as recommended in NFPA 1710. However, the areas that are covered include most of the most densely developed and populated areas of the city. It also includes much of the call volume.
- While there are a few pockets of the city that are not within 360 seconds of travel time for the second arriving engine, about 75 percent to 80 percent of the city is covered.
- The entire city is within a travel time of 480 seconds for structure fire responses. However, this does not tell the whole story, as the city's heavy reliance on automatic/mutual aid for all reported structure fires will impact the arrival time of the entire first alarm assignment.
- Most of the mutual aid can get into at least sections of Kalispell within 480 seconds of travel time. However, unknown turnout times for non-staffed stations and depending upon where in the city the incident is, will make it very difficult for Kalispell to meet the 480-second benchmark.
- The KFD has become a regional hub for special operations training and response; it hosts the Northwest Montana Regional Hazardous Materials Response Team.
- Call processing (at dispatch), turnout (in the station) times, and travel times are all higher than recommended NFPA 1710 benchmarks.
- Funding needs were prominently mentioned by many of the KFD stakeholders as a major obstacle for them moving forward.
- The city's fire stations are in good condition, although Station 61 is less than optimal from both an operational and an administrative standpoint.
- As smaller, more rural communities struggle with declining volunteer memberships, the City of Kalispell could become a hub for the regional delivery of fire and EMS services and/or shared services.
- The KFD has limited community risk reduction (CRR) and training capabilities due to limited administrative/ support personnel, and in the latter case, a suitable training facility. The administrative support functions of the KFD should be enhanced.
- Nearly 25 percent of the population of the city falls into higher risk categories of 65 years old or older (17.0 percent) and under age 5 (7.7 percent).
- More than one in ten (10.5 percent) of the city's residents live below the poverty line.
- The city's population has more than doubled since 2000. In 2018, The city planning department predicted continued growth and development of around 2 percent per year

and 21 percent in the next decade. In reality, **the population has increased about 19 percent in just those five years, and 15.7 percent since 2020**. This growth is expected to continue.

- Almost every significant data point that was analyzed by CPSM for this study showed a significant increase between 2018 and 2022. This includes population, calls, runs, EMS transports, and response times. The following table illustrates a comparison of major data points between 2018 and 2022 (depicted in the next table).
  - Of particular note: total calls increased by **23.5 percent;** total runs increased by **28.2 percent.**
  - Various response time metrics increased by between **4.6 percent** and **38.3 percent.**

TABLE 4-23: Kalispell/KFD Data Comparison, 2018 and 2022

Data Point	2018	2022	Increase
Population (residents)	**23,950**	**28,450**	**4,500 / +19%**
Area of City	11.64 Square Miles (2010)	12.43 Square Miles (2020)	0.79/ **+6.8%**
Population Density	1,712.6 (2010)	1,976.3 (2020)	263.7/ **+15.4%**
Population (transient)	803,000	1,900,000	1,097,000 / **+137%**
Persons over the age of 65	15%	17 %	**+2%**
Nursing Homes/Skilled Care Facilities	5	12	7/ **+140%**
Calls for Service	**3,477**	**4,293**	**816 / +23.5%**
EMS	2,567	3,067	500 / **+19.5%**
Transports	1,606	2,042	436 / **+27.1%**
Fire	506	670	164 / **+32.4%**
Other Calls (Mutual Aid + Cancelled)	404	556	152/ **+37.6%**
Total Runs	4,607	5,908	1,301/ **+28.2%**
EMS	3,454	4,461	1,007/ **+29.2%**
Fire	680	782	102/ **+15%**
Other Calls	473	665	192/ **+40.6%**
Workload/Deployed Hours	2,548.1	3,3034.2	486.1/ **+19.1%**
EMS	2,048.3	2,463.9	415.6/ **+20.3%**
Fire	290.4	320.3	29.9/ **+10.3%**
Other Calls	209.4	250.0	40.6/ **+19.4%**
Availability to Respond to Calls			
First Due Station Responded	74.3%	79.6%	**+5.3%**
First Due Station Arrived	70.1%	78.0%	**+7.9%**
First Due Station Arrived First	65.6%	73.0%	**+7.4%**
Travel and Response Times			
EMS Average Travel Time	5.1 Minutes	5.7 Minutes	0.7/ **+13.7%**
Fire Average Travel Time	4.7 Minutes	6.5 Minutes	1.8/ **+38.3%**
Total Average Travel Time	5.0 Minutes	5.8 Minutes	0.8/ **+16%**
EMS 90th Percentile Travel Time	8.8 Minutes	9.2 Minutes	0.4/ **+4.6%**

Data Point	2018	2022	Increase
Fire 90th Percentile Travel Time	8.5 Minutes	10.4 Minutes	1.9/ **+22.4%**
Total 90th Percentile Travel Time	8.8 minutes	9.6 Minutes	0.8/ **+9.1%**
Fire Overall Average Total Response Time	9.0 Minutes	10.6 Minutes	1.6/ **+17.8%**
Fire Overall 90th Percentile Total response Time	13.5 Minutes	15.3 Minutes	1.8/ **+13.3%**

There is no "right" amount of fire protection and EMS delivery. It is a constantly changing level based on such things as the expressed needs of the community, community risk, and population growth. Thus, in looking at response times it is prudent to design a deployment strategy around the actual circumstances that exist in the community and the fire and/or problem that is identified to exist. The strategic and tactical challenges presented by the widely varied hazards that the department protects against need to be identified and planned for through a community risk analysis planning and management process as identified in this report. It is ultimately the responsibility of elected officials to determine the level of risk that is acceptable to their respective community. Once the acceptable level of risk has been determined, then operational service objectives can be established. Whether looking at acceptable risk, or level of service objectives, it would be imprudent, and probably very costly, to build a deployment strategy that is based solely upon response times.

As mentioned previously, during this study, CPSM observed a very functional fire and EMS organization that strives to provide a high level of service to the community and the region. The KFD is a very good organization that provides a high-level of service to the city. Members of the department appear to work as a team to produce a high quality, effective, and efficient response that serves the city well.

From all accounts, once they arrive on the scene of an emergency, KFD personnel perform their duties in an exceptional manner and can be counted upon to complete assignments given to them effectively and efficiently. This is the case even when they have less than adequate staffing to assemble a recommended ERF for any type of structure in the city. They are commended for their efforts and given the support they need to continue to try to be successful.

In formulating our recommendations CPSM has relied on several widely accepted references for benchmarks and standards, industry best practices, as well as experience drawn from projects across the United States. These references include:

- The 9th Edition of the *Fire and Emergency Service Self-Assessment Manual* (FESSAM), @2015 by the Center for Public Safety Excellence, Inc., Chantilly, Va.
- *Managing Fire and Emergency Services*, @2012 by the International City-County Management Association, 777 N. Capitol Street NE, Washington, DC.
- National Fire Protection Association standards for deployment, EMS, safety, etc.

Fire Staffing and Deployment

In the 2018 study that CPSM completed for the City of Kalispell we suggested then that the optimum daily staffing was eight personnel, in order to manage the potential fire risk identified herein, and the EMS transport response when a second ambulance is needed. With the significant increases in every statistical area that the city and fire department have experienced in the ensuing five years, along with the expected continued rapid growth and development,

which will continue to drive increased requests for service from the KFD, we now believe that the **minimum on-duty staff should be increased to eight personnel on duty** at all times as soon as possible. Then over the next two years, **the minimum on-duty staffing should gradually be increased to ten personnel on duty** at all times.

As CPSM has mentioned several times, we find the number of Kelly Days that are earned by KFD members as part of the last several collective bargaining agreements to be much higher than anything that we have encountered before. We understand that time off is important to the members of the KFD. We also hesitate to delve too deeply into CBAs because we are not privy to the give and take that occurred in the negotiating process to arrive at the final terms and conditions. Conversely, we were also informed by many members of the KFD that their number one concern is the department's low staffing levels, particularly with increasing call volume. Overtime, particularly forced or mandatory overtime, is also a concern. These situations conflict with each other and will need to be discussed in great depth during the next contract negotiations.

Section 7(k) of the FLSA provides that employees engaged in fire protection may be paid overtime on a "work period" basis. A "work period" may be from 7 consecutive days to 28 consecutive days in length. For work periods of at least 7 but less than 28 days, overtime pay is required when the number of hours worked exceeds the number of hours that bears the same relationship to 212 (fire) as the number of days in the work period bears to 28. For example, fire protection personnel are due overtime under such a plan after 106 hours worked during a 14-day work period.

With a 28-day work period, the hours scheduled in a year are 2,912. (365/28=13.03 or 13 work periods in a year; 56 hours/week x 4 = 224 hours in a 28-day work period; 224 x 13 =2,912 hours scheduled in a year). Under 29 U.S.C 207(k), qualifying public agency fire suppression employees working in excess of 53-hours/week shall be compensated at a rate of one and on-half times the regular rate of pay.

Personnel working a straight three platoon system such as in Kalispell will average 56 hours a week, so they will also average three hours per week in excess of the 53 hours. It should be kept in mind that any leave hours taken during that time—vacation, personal, compensatory, sick, etc.—can be subtracted from the FLSA hours calculation as leave time is considered to be "non-productive" time. In addition, personnel are already being paid straight time for the three excess hours, so what is owed to them by FLSA is, in reality, three hours at 0.5 their normal pay rate, or 1.5 hours total additional pay. The simplest, most straightforward way to deal with this, without impacting on staffing, is to just pay personnel who exceed the working hours threshold the overtime to which they are entitled.

If the city prefers to provide time off instead of monetary compensation, the city only needs to reduce the productive hours by 12 in each 28-day cycle. With thirteen 28-day cycles in a year, each KFD member who is on A, B, and C shifts (D shift personnel are not eligible) would be eligible for 6.5 Kelly Days per year. Departments that utilize this system often award 7 days. If Kalispell were to provide each eligible KFD member 7 Kelly Days per year, this would save 13 days per member, or **390 24-hour leave slots** per year. This was the Kelly Day award prior to the 2015 CBA.

In order to reduce the hours worked further, some governing bodies/fire departments provide their personnel with 12 Kelly Days per year, one each month, in essence reducing the number of monthly shifts each person must work by one. Under this scenario, the city and KFD would save 8 days per member, or a total of **240 24-hour leave slots**. Under this scenario, KFD personnel would average 9 shifts on duty per month as opposed to 10 with no Kelly Days.

The city should consider an adjustment in the Kelly Days provision currently provided to eligible fire staff and align more closely with what is required by law, which in a 28-day work period where shift fire staff are scheduled for 224 hours is one 12-hour Kelly Day in the 28-day work period to reduce the hours worked to 212, which is the overtime threshold for this work period.

Additional Facility Location Review

The placement of fire stations and location of responding units are key factors in reducing response times and is a key performance measure in determining the efficiency of department operations. The goal of placement of a single fire facility or creating a network of responding fire stations in a single community is to *optimize coverage* with short travel distances (aka: "response times"), when possible, while giving special attention to natural and manufactured barriers, and response routes that can create response-time problems.

Likewise, current and potential for future demand for service is a consideration for the siting of fire facilities. Demand is the number and types of calls for services provided by the entire fire department. When demand is evaluated, it is important the number of incidents is not confused with the number of unit responses. An emergency call may require the response of more than one unit, but only one incident number is generated. This is a direct accelerator of demand. CPSM measures a call as a single event, which may be handled by a single unit, and a run as a response made by a unit to a call that involves more than one unit.

As discussed previously (and above), travel time (aka: response time) is key to understanding how a fire facility location influences a community's aggregate response time performance. NFPA sets benchmark travel times for first arriving fire units as:[104]

- ≤ 240 seconds for the first arriving engine company to a fire suppression incident 90 percent of the time.
- ≤ 240 seconds for the first arriving engine company with automated external defibrillator (AED) or higher-level capability.

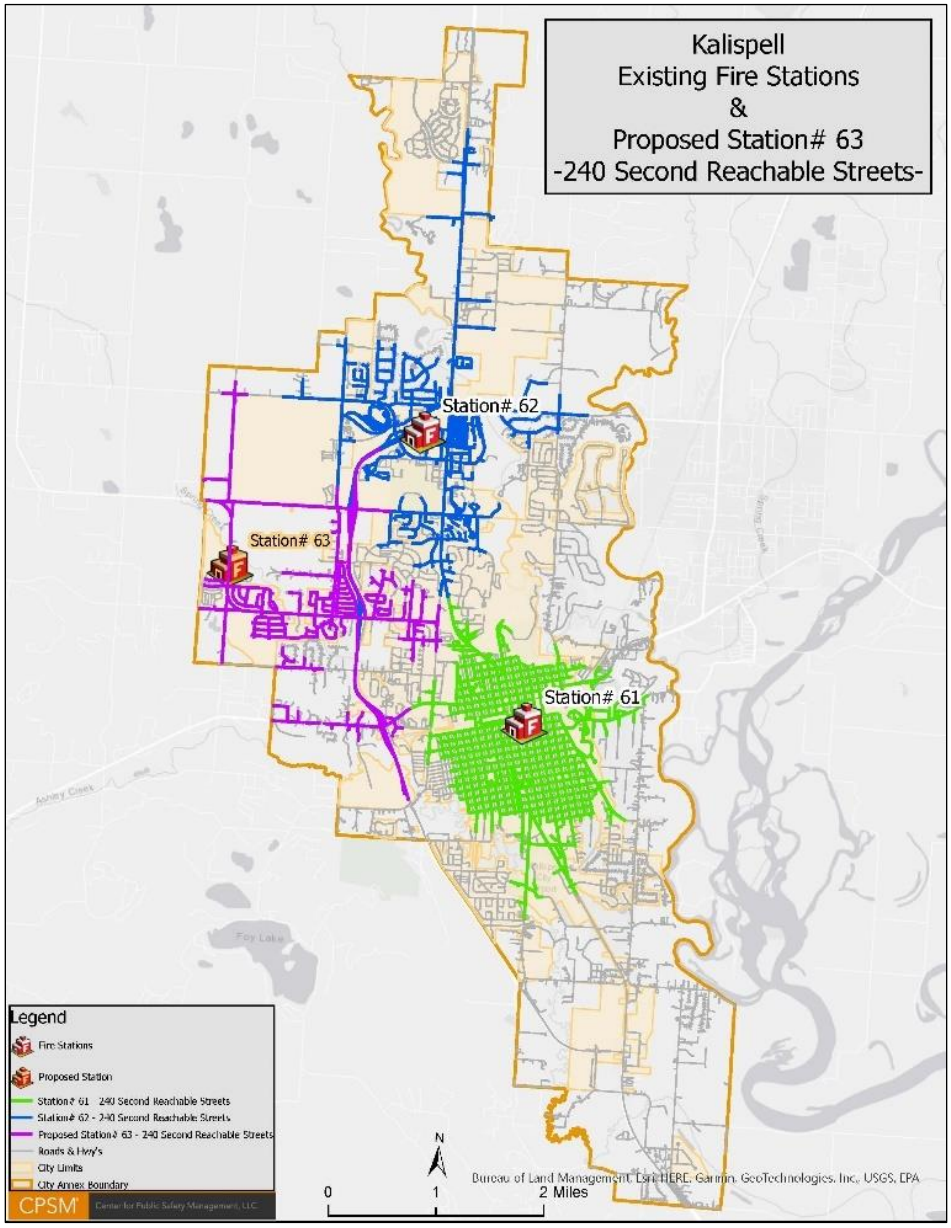
The NFPA also benchmarks the travel time of the second arriving unit on a fire incident, and the travel time to assemble the first alarm assignment of apparatus and staff on low/medium hazards as:

- ≤ 360 seconds for the second company 90 percent of the time.
- ≤ 480 seconds to assemble the initial first alarm assignment on scene 90 percent of the time for low/medium hazards, 90 percent of the time.

As was identified earlier in this section, less than 50 percent of the City of Kalispell is within a travel time of 240 seconds. The city has long-range plans for the potential addition of up to three fire stations as the population and service needs increase. In light of the city's continued rapid growth and a quickly increasing call volume, the time has arrived for the city to begin the process of constructing a new station 63.

104. 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*.

FIGURE 4-33: 240-Second Travel Time Bleeds with Proposed Station 63



The figure above shows 240-second travel bleeds with the potential addition of Fire Station 62 on city-owned land at Farm to Market Road and Mountain Vista Way in the western part of the city. This is an area that is experiencing a significant amount of residential development. The addition of this station significantly enhances the 240-second coverage for the city, particularly in an area where there is significant residential development occurring and planned.

The next figure shows the 360-second travel time bleeds for the same three-station configuration.

The figure after that shows the ISO 1.5-mile engine company travel distances. While there are still large gaps in this map, the addition of the third station does provide additional coverage that will be beneficial (along with improved deployment and response times) in future ISO evaluations.

FIGURE 4-34: KFD New Station 63 with 360-Second Travel Time Bleeds

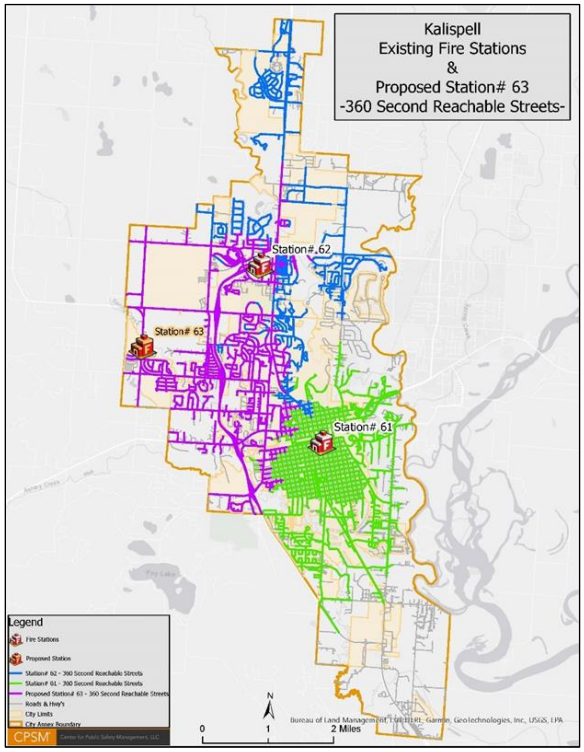
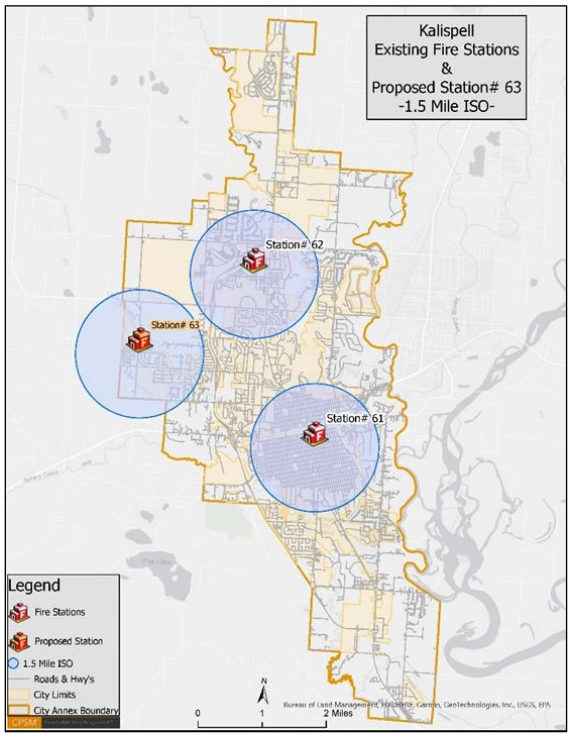


FIGURE 4-35: KFD New Station 63 with ISO 1.5-Mile Engine Company Circles

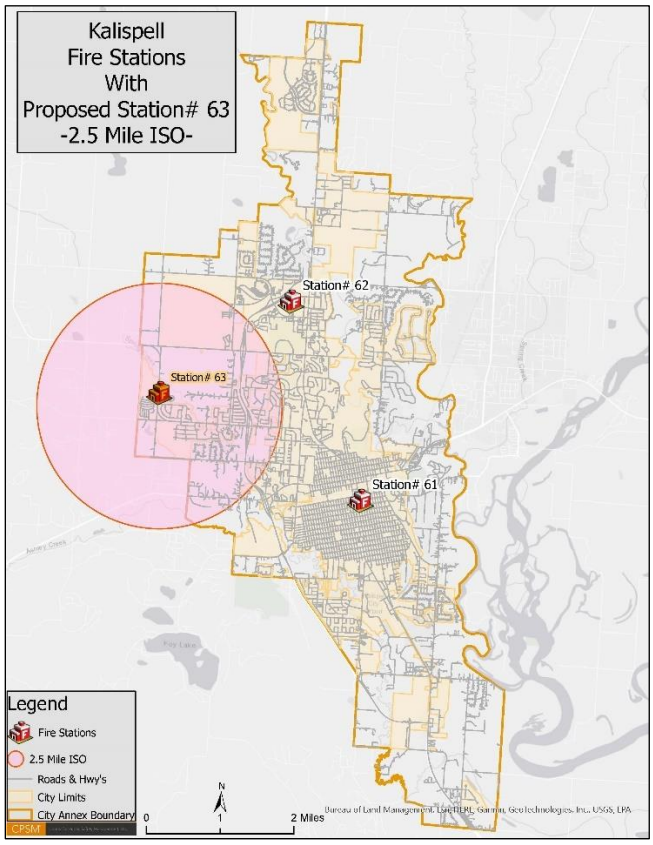


The only concern that CPSM has regarding the location of this station—and we understand that city-owned land is available—is how close it is to the western border of the city. While it provides

significant benefit to the city in a growing area, a large part of its reasonable first due response area will be located outside of the city. Conversely, if the city eventually annexes additional land in this area into the city, this station will be well-positioned to provide coverage.

CPSM suggests that once this station is completed, that the quint/ladder could be relocated here as we believe that will provide better coverage throughout the city. The next figure shows the ISO 2.5-mile ladder company circle from Station 63.

FIGURE 4-36: KFD New Station 63 with ISO 2.5-Mile Ladder Company Circle

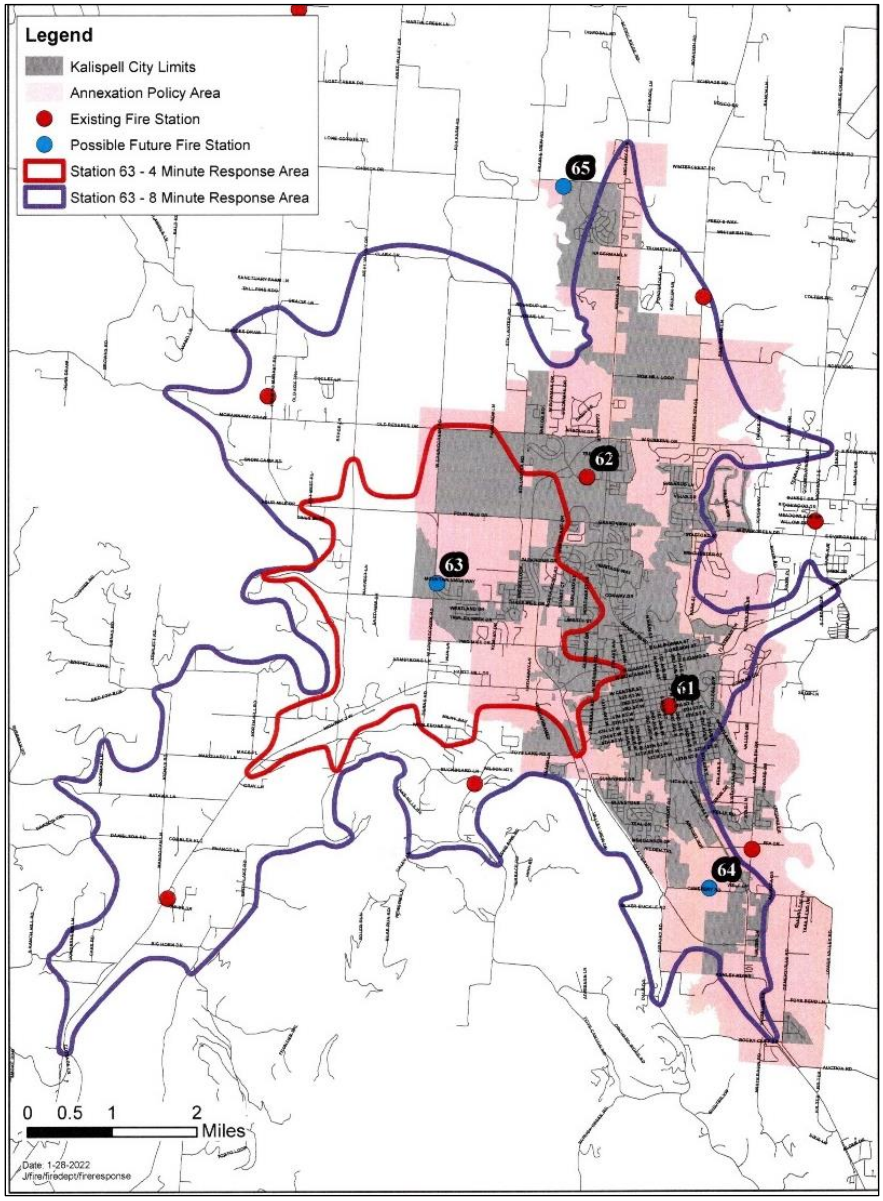


Long term, the city also has very tentative plans to eventually construct two additional stations if needed. These stations would be located as follows:

- Station 64 – In the southern part of Kalispell. There is currently no specific location, and no city-owned land reserved.
- Station 65 – In the northern part of Kalispell on city-owned land at Church Drive and Silverbrook Drive.

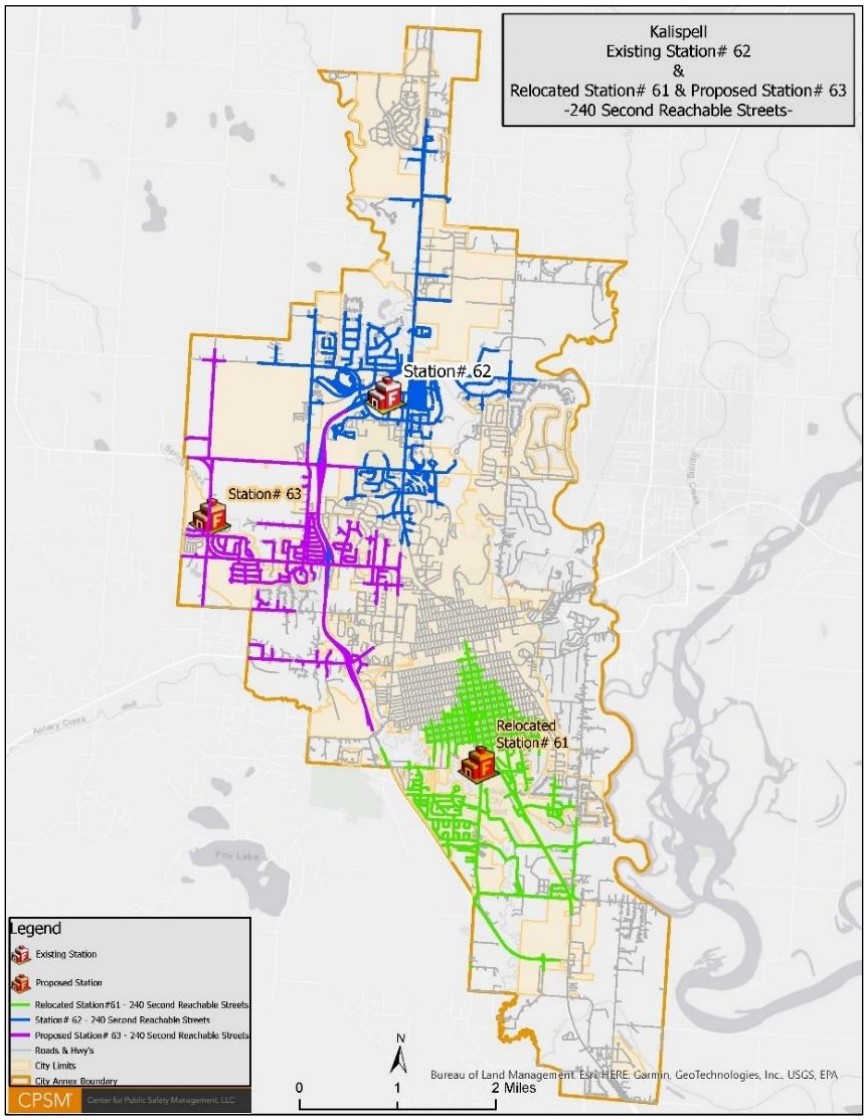
The following figure illustrates the potential future five-station configuration.

FIGURE 4-37: KFD Five-Station Configuration



Regarding Station 64, the Fire Chief would like to consider relocating Station 61 and constructing a new headquarters station south of the existing downtown area. This would eliminate the need for a Station 64 by essentially combining Station 61 and a future Station 64 into one new facility. While no site has been identified for this facility, the suggestion was made regarding an area of the airport and wastewater facility would be a possible location. This is in the vicinity of 1800-1900 Airport Road. The next figure shows this configuration with the new Station 63 and a relocated Station 61.

FIGURE 4-38: KFD Relocated Station 61 and new Station 63 with 240-Second Travel Time Bleeds



While a methodology of "surrounding the demand and responding to the demand" from multiple directions is a viable alternative in some scenarios, it is our opinion that that is not the proper approach here. As illustrated, with this station relocated, much of the downtown area, where this is heavy call volume and high fire risk, is now outside of 240 seconds of travel time. Conversely, the southern part of the city has relatively low call volume and lower risk.

Even at 300 seconds, so a minute longer, much of downtown Kalispell remains outside this travel time. It is not until we reach 360 seconds that the entire area is covered. While it is ultimately up to the city to decide whether this option is a viable one, at this time, and with the information available to us, this does not appear to be an option that CPSM would recommend or endorse. However, since any move like this is realistically probably five to ten years in the future, a lot can change that may warrant relocating Station 61 or simply adding a new Station 64.

FIGURE 4-39: KFD Relocated Station 61 with 300-Second Travel Time Bleeds

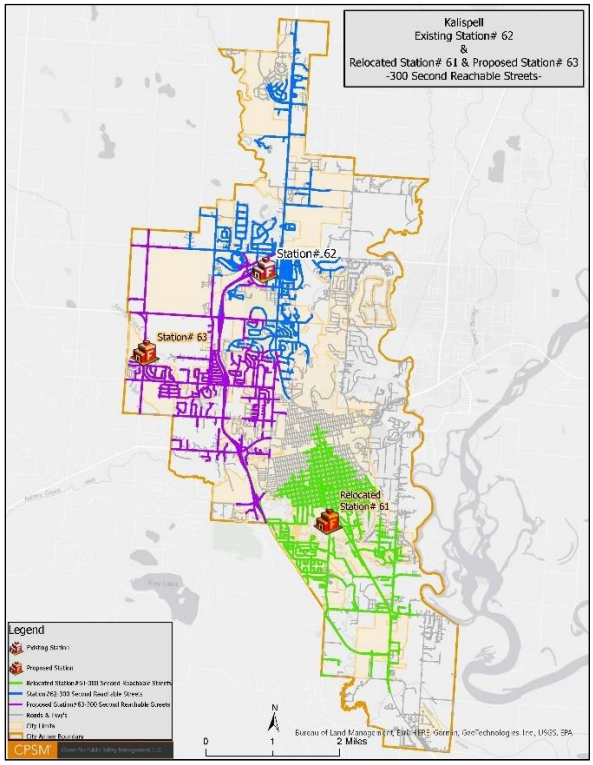
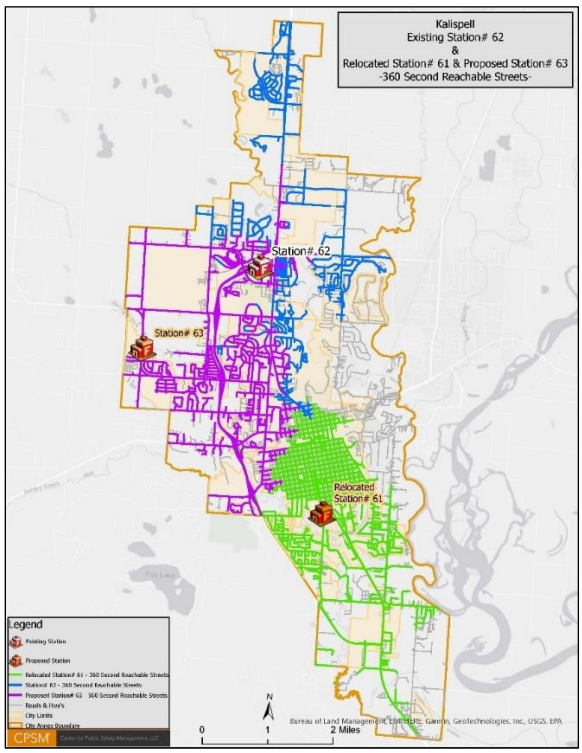


FIGURE 4-40: KFD Relocated Station 61 with 360-Second Travel Time Bleeds



Regionalization

As an urban island protected by a career fire department and surrounded by mostly volunteer or paid-on-call fire departments, the KFD (or the Kalispell and Whitefish fire departments) would provide a great foundation for a potential regional firefighting endeavor in Flathead County. The City of Kalispell could be the catalyst for such an endeavor and initiate discussions with surrounding municipalities. Regional collaboration opens the potential for shared services related to the provision of emergency services.

The idea of giving up total local control is always a proposition that gives elected officials, and their constituents pause and has been one of the obstacles to true regionalization or consolidation, particularly where small community pride and the time-honored concept of home rule are deeply ingrained in the culture. However, the constantly escalating costs of attempting to provide even a status quo service level is becoming increasingly difficult. Tax dollars are being stretched to the limit. Smaller communities that have far fewer resources and options than their larger neighbors will find it especially difficult to cope within the limitations imposed by the new financial reality. The continuing trend of declining volunteerism will create simultaneous challenges that will stretch the provision of emergency services in many communities even farther.

During our field visit to Kalispell, and our interviews with stakeholders, CPSM was informed that a bill had been introduced in the Montana legislature (House Bill No. 813 "*An Act Authorizing the Creation of Regional Fire Protection Authorities*") that would permit the formation of regional fire authorities in Montana. The bill was scheduled for a hearing in March 2023 but appeared to stall after that. There has been no further movement on it.

A regional fire authority (abbreviated to RFA) is a special purpose district created by the vote of the people residing in the proposed district. Its boundaries are usually—but not always—coextensive with two or more adjacent fire protection jurisdictions. It is considered a municipal corporation, an independent taxing authority, and a taxing district.

In simple terms it is a cooperative agreement between government entities or municipalities to provide fire and emergency services. The authority is governed by a Board of Directors appointed by the participating governments.

Once established, the RFA governing board is established and consists of elected officials of the participating municipalities. These governing board members generally consist of:

- Current elected officials from the participating jurisdictions, such as city councilmembers or Township Trustees; and/or,
- Regional fire commissioners who are elected by the voters of the regional fire authority.
- A combination of the above may be permitted.

Advantages of this alternative include:

- Kalispell would likely maintain the majority ownership stake on any Kalispell-centric RFA. However, other potential partners would also have a stake and direct representation on the RFA board through the provision of a representative governing board.
- Provides stable and sustainable funding.
- Predictable revenue sources and options to provide for current and future fire operation needs.

- Allows for future expansion to better regionalize the delivery of fire and EMS services in the greater Kalispell area.

CPSM does not recommend this as a primary option particularly since RFAs are not currently authorized in Montana. However, what we do recommend is that the governing body in Kalispell lobby their local legislators to approve this legislation. If successful, it would provide the city with one additional long-term option to explore regarding maintaining a high-quality and sustainable fire and EMS delivery system that is financially supported by all users

Planning Recommendations and Considerations:

- CPSM recommends that as a planning objective that over the next three fiscal years the city enhance KFD staffing levels as shown here. (Recommendation No. 51.)
  - Year 1 – Increase minimum on-duty staffing to 8 personnel.
    - Hire one additional firefighter and reassign current D Platoon firefighters to A, B, and C Platoons to increase maximum shift staffing to 11 personnel.
    - Separate the training and safety functions from the Assistant Fire Chief position and create and fill a position of Training and Safety Officer at the rank of Captain.
    - Upgrade the position of EMS Coordinator from a part-time to a full time position at the rank of Captain.
    - Total additional positions = three (3).
  - Year 2 – Add one additional firefighter per shift (three total positions) and increase minimum on-duty staffing to nine personnel at all times. The maximum shift staffing would be 12 personnel.
  - Year 3 – Add one additional firefighter per shift (three total positions) and increase minimum on-duty staffing to 10 personnel at all times. This will allow the city to staff two ambulances and two fire suppression units 24/7. Having the ability to staff two EMS units 24/7 will eliminate the need for most EMS mutual aid into the city, which will reduce potential revenue loss. The maximum shift staffing would be 13 personnel.

    Deployment of personnel at each staffing increment would be as follows:

8 Personnel	5	Engine w/ 3 Ambulance w/ 2	3	Ladder w/ 3 or Ambulance w/ 3
9 Personnel	5	Engine w/ 3 Ambulance w/ 2	4	Ladder w/ 4 and/or 2 Ambulances w/ 2
10 Personnel	5	Engine w/ 3 Ambulance w/ 2	5	Ladder w/ 3 Ambulance w/ 2

- As a planning objective, CPSM recommends that the City of Kalispell consider options for the next CBA negotiations with the goal of aligning Kelly Day hours with the FLSA work period as outlined in 29 U.S.C 207(k) and utilize this alignment to help increase on-duty staffing. (Recommendation No. 52.)
- As a planning objective, CPSM further recommends the city review all options for increasing EMS revenues. This should include the continual review of in-house EMS billing to ensure

collection of revenues is maximized to the fullest extent allowable by law, with a focus on closing the gap between billed services and collected revenues; consideration of service fees with areas outside of the city boundaries that the KFD provides EMS transport to; and reconsideration of the city EMS tax levy at a rate sufficient to offset general fund transfers needed to sustain the ambulance fund. (Recommendation No. 53.)

- As a planning objective, CPSM recommends that the City of Kalispell proceed with plans for the construction of Fire Station 63 in its proposed location at Farm to Market Drive and Mountain Vista Drive. (Recommendation No. 54.)

  Once this station is ready to go in service, CPSM recommends:

  - The quint/ladder from Station 62 be relocated from Station 62.
  - Equipment to be deployed from this station would be the quint/ladder and an ambulance.
  - Initial staffing would be three personnel per shift (nine additional personnel) who would cross staff the fire suppression unit and the ambulance as needed.
  - Station 61 would continue to be staffed with five personnel who would staff an engine and an ambulance.
  - Station 62 would continue to be staffed with five personnel who would staff an engine and an ambulance.
- The City of Kalispell leadership, both city and fire department, should lobby their local legislators to seek passage of House Bill 813 that would allow the creation of regional fire authorities. (Recommendation No. 55.)
- As a planning objective, CPSM recommends that with the opening of Station 63, the City of Kalispell should create a position of Shift Commander (three additional positions) who would serve as the on-duty shift commander and respond in a command vehicle to incidents. (Recommendation No. 56.)

A proposed organizational chart illustrating all of the above recommendations follows

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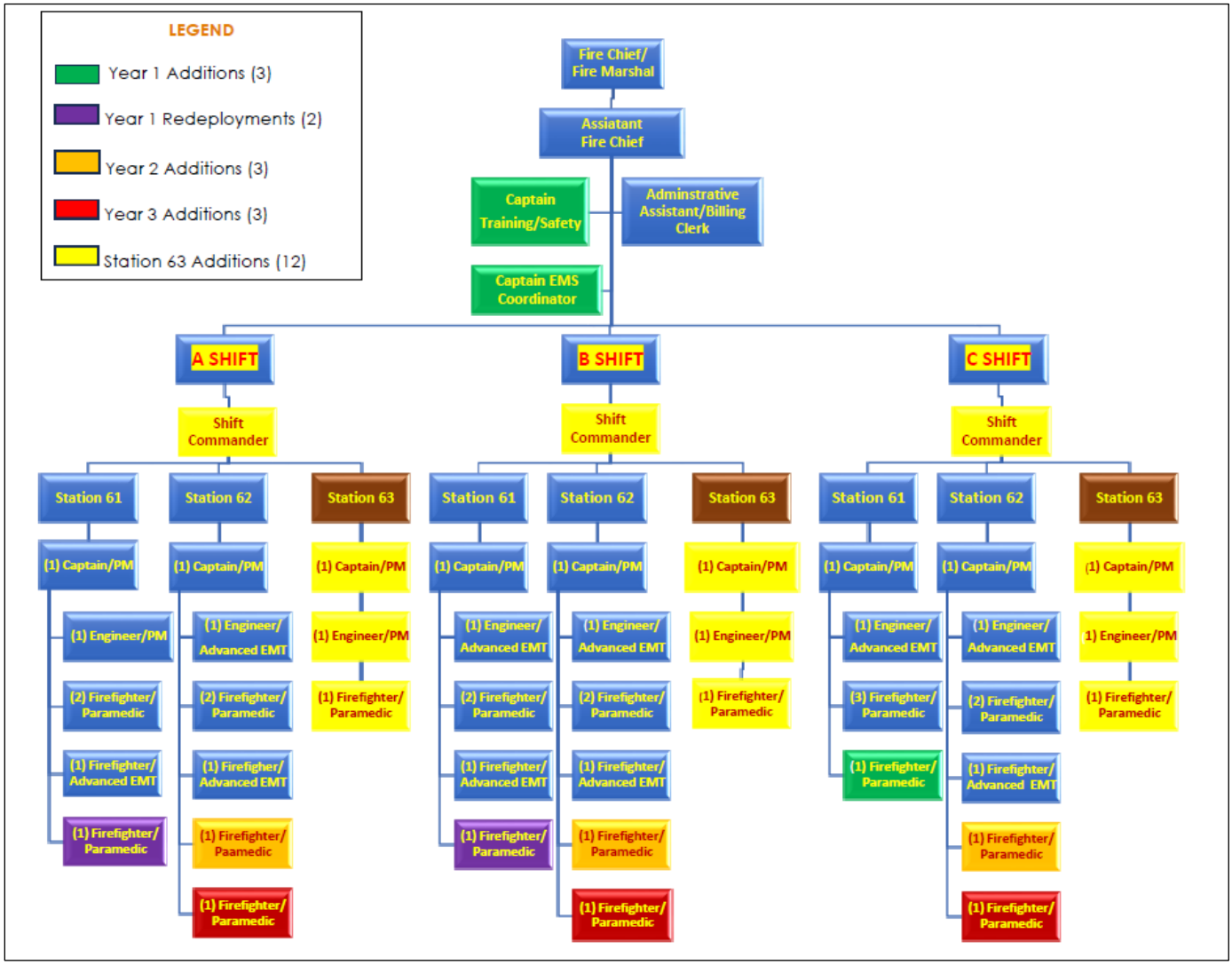
FIGURE 4-41: Recommended Long-Term KFD Organizational Structure



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SECTION 5. DATA ANALYSIS

This data analysis examines all calls for service between January 1, 2018, and December 31, 2022, as recorded in Flathead County 9-1-1 Communications Center's computer-aided dispatch (CAD) system and KFD's National Fire Incident Reporting System (NFIRS).

The main analysis focuses on calls that occurred in the one-year period. A trend analysis of calls responded to by KFD and the corresponding workload from 2018 to 2022 is presented in Attachment IV. The workload of Logan Health ambulances is examined in Attachment V.

This analysis is made up of five parts. The first part focuses on call types and dispatches. The second part explores the time spent and the workload of individual units. The third part presents an analysis of the busiest hours in the year studied. The fourth part provides a response time analysis of KFD units. The fifth and final part is an analysis of unit transport.

The Kalispell Fire Department serves a population of about 25,500 people in an area of approximately 12.6 square miles. KFD is an all-hazards response fire department, providing service and protection for fire and medical emergencies, hazardous material responses, vehicle accidents, and other incidents where life and property are threatened. The KFD staffs a complement of 32 personnel. It operates out of two fire stations, utilizing three ALS ambulances, a frontline engine, a reserve engine, a 105-foot ladder truck, a water tender, a support unit, a wildland unit, and two administrative vehicles.

Between January 1, 2022, and December 31, 2022, the Kalispell Fire Department responded to 4,293 calls, of which 71 percent were EMS calls. The total combined workload (deployed time) for KFD units was 3,034.2 hours. The average dispatch time was 2.5 minutes, and the average total response time was 9.7 minutes. The 90th percentile dispatch time was 4.4 minutes and the 90th percentile total response time was 14.3 minutes.

METHODOLOGY

In this report, CPSM analyzes calls and runs. A call is an emergency service request or incident. A run is a dispatch of a unit (i.e., a unit responding to a call). Thus, a call may include multiple runs.

We received CAD data and NFIRS data for the Kalispell Fire Department. We first matched the NFIRS and CAD data based on the incident numbers provided. Then, we classified the calls into a series of steps. We first used the NFIRS incident type to identify canceled calls and to assign emergency medical service (EMS), motor vehicle accident (MVA), and fire category call types. EMS calls were then assigned detailed categories based on their Criteria Based Dispatch (CBD) codes and descriptions. The type of calls that occurred outside KFD's fire district were identified as mutual aid. The method to categorize incident types is shown in Attachment VI.

We received records for 4,469 total calls that were made between January 1, 2022, and December 31, 2022. We removed two test calls, four calls lacking a responding KFD unit, and 167 calls to which a unit was dispatched but did not go en route or arrive on scene. Three calls that involved only administrative units were not included in the main analysis. The work associated with these calls is included in the analysis of additional personnel in Attachment I.

AGGREGATE CALL TOTALS

Between January 1, 2022, and December 31, 2022, KFD responded to 4,293 calls, of which 26 were structure fire calls and 25 were outside fire calls.

Calls by Type

The following table and two figures show the number of calls by call type, average calls per day, and the percentage of calls that fall into each call type category for the year studied.

TABLE 5-1: Call Types

Call Type	Total Calls	Calls per Day	Call Percentage
Breathing difficulty	244	0.7	5.7
Cardiac and stroke	304	0.8	7.1
Fall and injury	502	1.4	11.7
Illness and other	1,276	3.5	29.7
MVA	164	0.4	3.8
Overdose and psychiatric	121	0.3	2.8
Seizure and unconsciousness	456	1.2	10.6
EMS Subtotal	**3,067**	**8.4**	**71.4**
False alarm	217	0.6	5.1
Good intent	44	0.1	1.0
Hazard	95	0.3	2.2
Outside fire	25	0.1	0.6
Public service	263	0.7	6.1
Structure fire	26	0.1	0.6
Fire Subtotal	**670**	**1.8**	**15.6**
Canceled	319	0.9	7.4
Mutual aid*	237	0.6	5.5
Total	**4,293**	**11.8**	**100.0**

Note: *Calls that occurred outside KFD's response area were labeled as mutual aid. Out of 237 mutual aid calls, 54 were canceled.

FIGURE 5-1: EMS Calls by Type

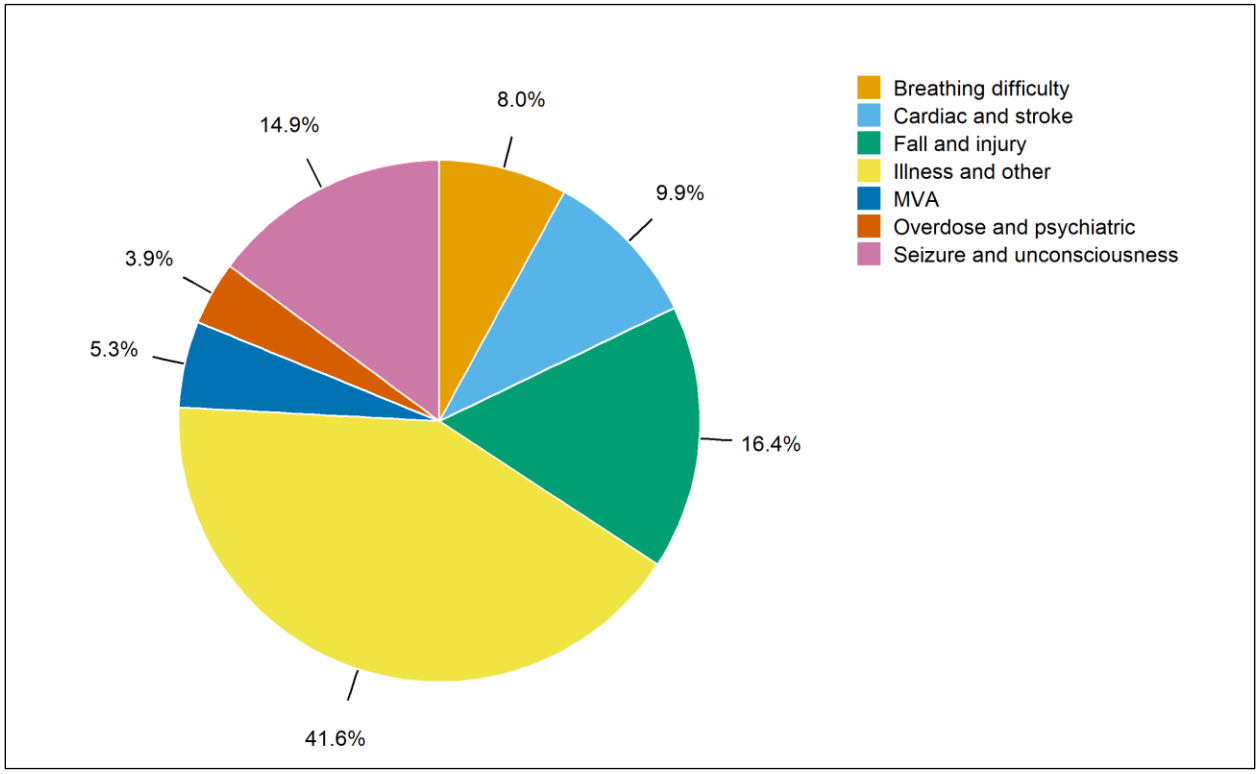
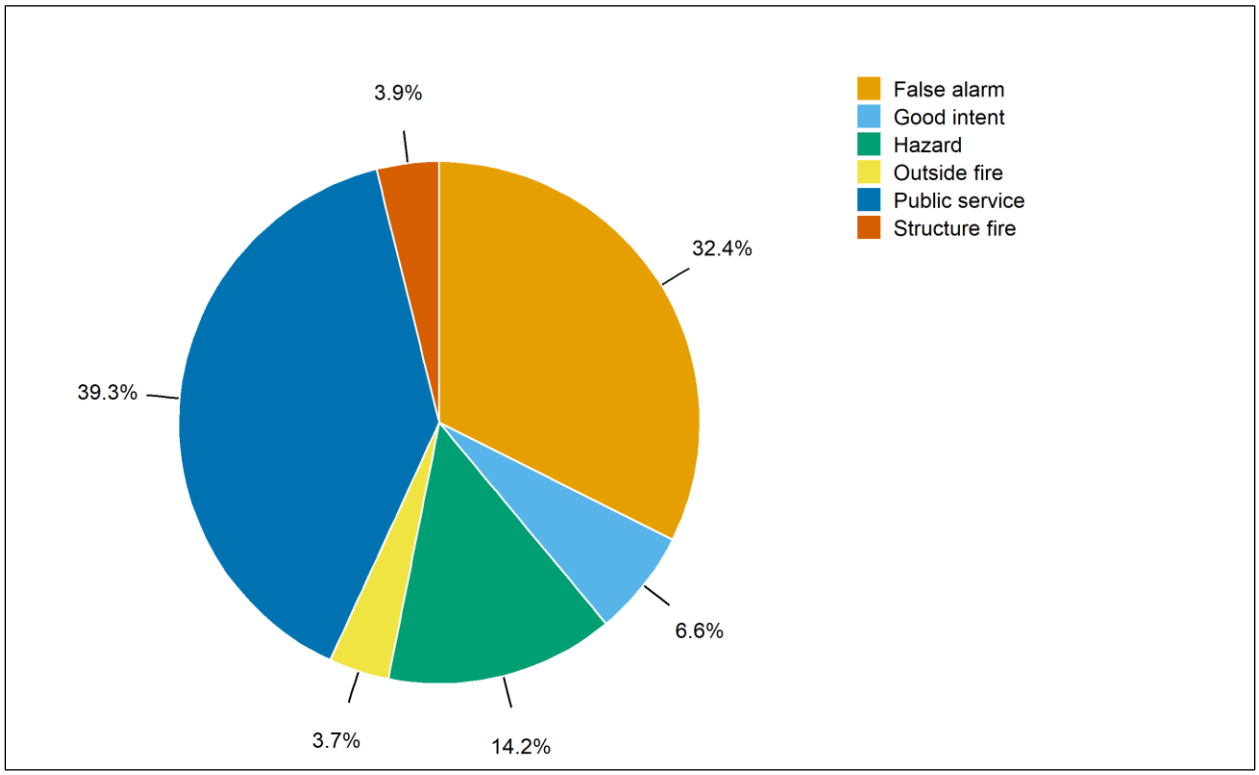


FIGURE 5-2: Fire Calls by Type



Observations:

Overall

- The department received an average of 11.8 calls, including 0.9 canceled and 0.6 mutual aid calls, per day.

EMS

- EMS calls for the year totaled 3,067 (71 percent of all calls), an average of 8.4 per day.
- Illness and other calls were the largest category of EMS calls at 42 percent of EMS calls, an average of 3.5 calls per day.
- Cardiac and stroke calls made up 10 percent of EMS calls, an average of 0.8 calls per day.
- Motor vehicle accidents made up five percent of EMS calls, an average of 0.4 calls per day.

Fire

- Fire calls for the year totaled 670 (16 percent of all calls), an average of 1.8 per day.
- Public service calls were the largest category of fire calls at 39 percent of fire calls, an average of 0.7 calls per day.
- False alarm calls made up 32 percent of fire calls, an average of 0.6 calls per day.
- Structure and outside fire calls combined made up eight percent of fire calls, an average of 0.1 calls per day, or one call every seven days.

Calls by Type and Duration

The following table shows the duration of calls by type using four duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, and more than two hours.

TABLE 5-2: Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	Two or More Hours	Total
Breathing difficulty	55	166	21	2	244
Cardiac and stroke	84	191	26	3	304
Fall and injury	154	296	49	3	502
Illness and other	414	725	129	8	1,276
MVA	96	45	20	3	164
Overdose and psychiatric	35	72	13	1	121
Seizure and unconsciousness	150	261	42	3	456
EMS Subtotal	**988**	**1,756**	**300**	**23**	**3,067**
False alarm	179	37	0	1	217
Good intent	39	4	0	1	44
Hazard	65	24	6	0	95
Outside fire	14	8	3	0	25
Public service	218	37	7	1	263
Structure fire	8	8	5	5	26
Fire Subtotal	**523**	**118**	**21**	**8**	**670**
Canceled	311	4	4	0	319
Mutual aid	78	99	54	6	237
Total	**1,900**	**1,977**	**379**	**37**	**4,293**

Observations:

EMS

- On average, 0.9 EMS calls per day lasted more than one hour.
- A total of 2,744 EMS calls (89 percent) lasted less than one hour, 300 EMS calls (10 percent) lasted one to two hours, and 23 EMS calls (one percent) lasted two or more hours.

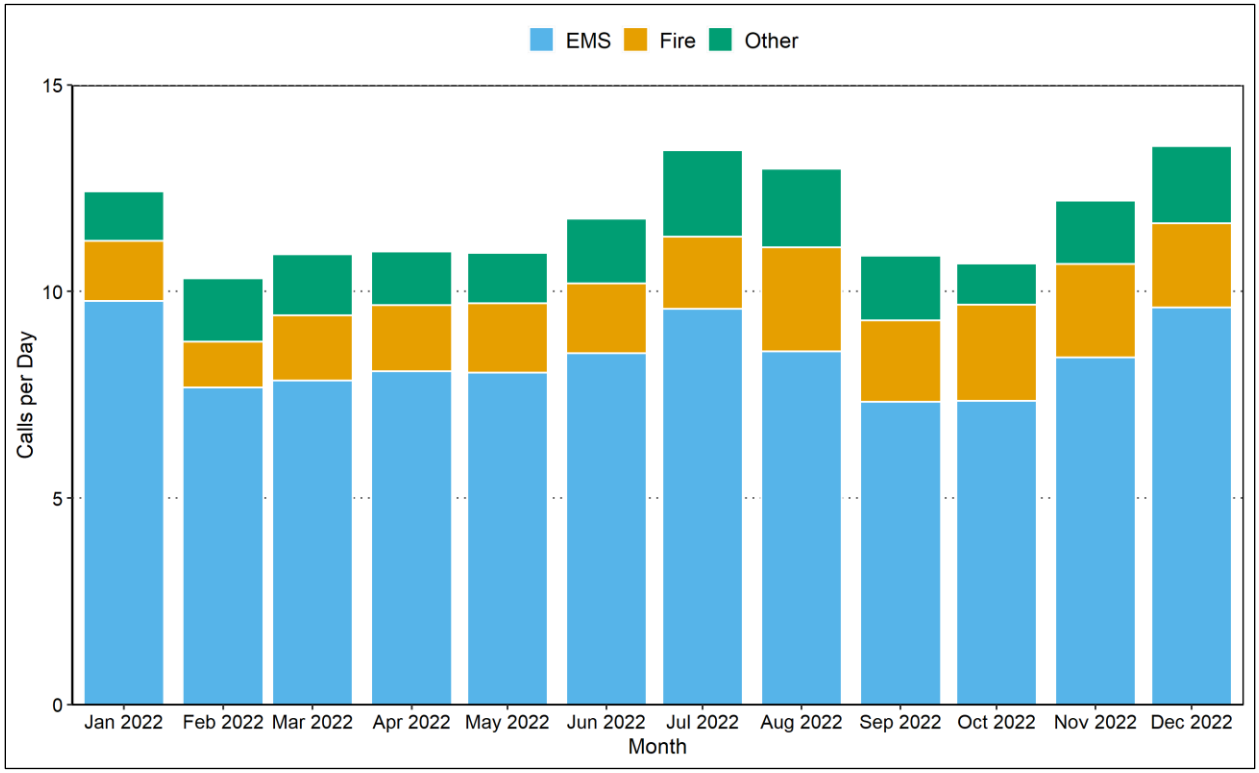
Fire

- On average, 0.1 fire calls per day lasted more than one hour.
- A total of 641 fire calls (96 percent) lasted less than one hour, 21 fire calls (three percent) lasted one to two hours, and eight fire calls (one percent) lasted two or more hours.
- A total of 22 outside fire calls (88 percent) lasted less than one hour and three outside fire calls (12 percent) lasted one to two hours.
- A total of 16 structure fire calls (62 percent) lasted less than one hour, five structure fire calls (19 percent) lasted one to two hours, and five structure fire calls (19 percent) lasted two or more hours.

Calls by Month and Hour of Day

Figure 5-3 shows the monthly variation in the average daily number of calls handled by the KFD between January 1, 2022, and December 31, 2022. Similarly, Figure 5-4 illustrates the average number of calls received each hour of the day over the year.

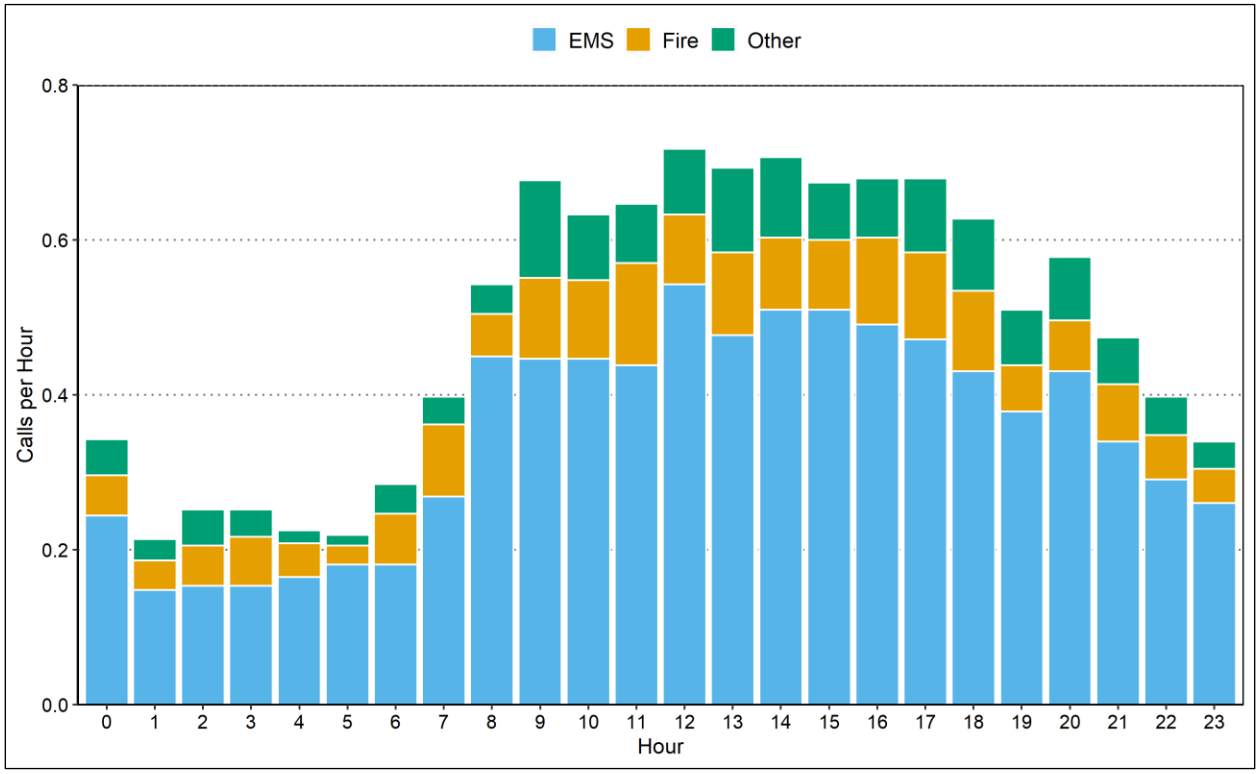
FIGURE 5-3: Calls by Month



Observations:

- Average EMS calls per day ranged from 7.3 in September 2022 to 9.8 in January 2022.
- Average fire calls per day ranged from 1.1 in February 2022 to 2.5 in August 2022.
- Average total calls per day overall ranged from 10.3 in February 2022 to 13.5 in December 2022.

FIGURE 5-4: Calls by Hour of Day



Observations:

- Average EMS calls per hour ranged from 0.15 between 1:00 a.m. and 2:00 a.m. to 0.54 between noon and 1:00 p.m.
- Average fire calls per hour ranged from 0.02 between 5:00 a.m. and 6:00 a.m. to 0.13 between 11:00 a.m. and noon.
- Average total calls per hour overall ranged from 0.21 between 1:00 a.m. and 2:00 a.m. to 0.72 between noon and 1:00 p.m.

Units Arrived at Calls

Table 5-3, along with Figures 5-5 and 5-6, detail the number of calls with one, two, and three or more KFD units arriving at a call, broken down by call type. In this section, we limit ourselves to calls where a KFD unit arrives.

TABLE 5-3: Calls by Call Type and Number of Arriving Units

Call Type	Number of Units			Total Calls
	One	Two	Three or More	
Breathing difficulty	125	117	0	242
Cardiac and stroke	130	172	0	302
Fall and injury	360	139	0	499
Illness and other	883	373	1	1,257
MVA	71	85	4	160
Overdose and psychiatric	89	32	0	121
Seizure and unconsciousness	276	171	0	447
EMS Subtotal	**1,934**	**1,089**	**5**	**3,028**
False alarm	209	4	0	213
Good intent	35	2	0	37
Hazard	83	5	2	90
Outside fire	19	5	1	25
Public service	230	19	1	250
Structure fire	14	8	3	25
Fire Subtotal	**590**	**43**	**7**	**640**
Canceled	130	12	0	142
Mutual aid	182	12	1	195
Total	**2,836**	**1,156**	**13**	**4,005**
Percentage	**70.8**	**28.9**	**0.3**	**100.0**

Note: Only calls with arriving KFD units were considered. There were 288 calls where a KFD unit recorded an en route time but no unit recorded an arrival time. This included 177 canceled calls, 42 mutual aid calls, 39 EMS calls, and 30 fire calls.

FIGURE 5-5: Calls by Number of Units Arriving – EMS

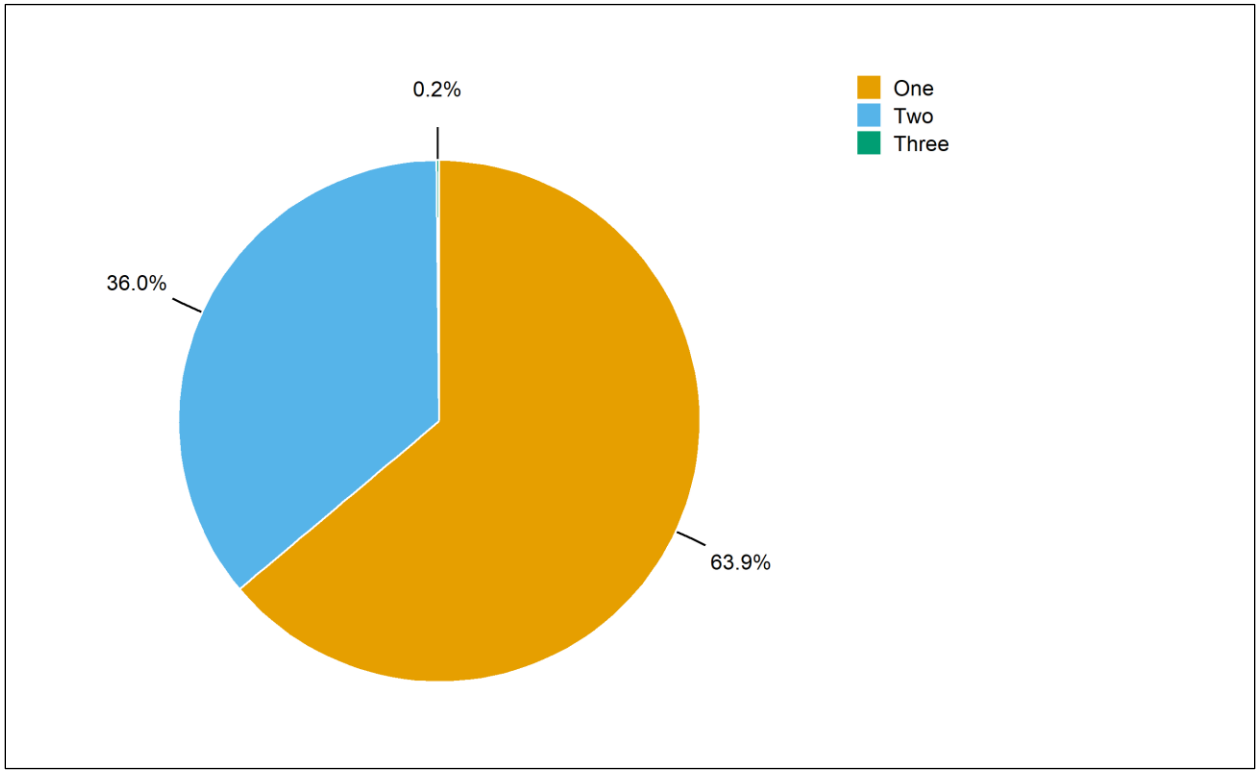
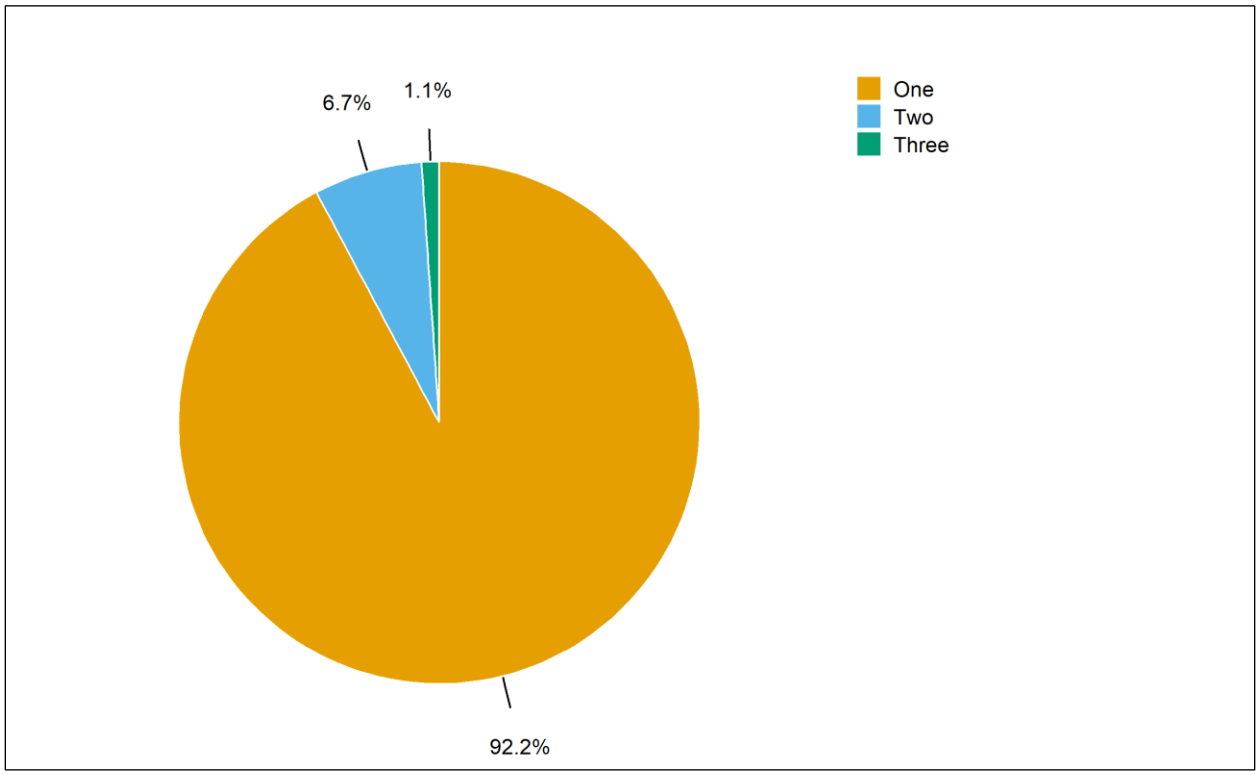


FIGURE 5-6: Calls by Number of Units Arriving – Fire



Observations:

Overall

- On average, 1.3 KFD units arrived at all calls; for 70.8 percent of calls, only one unit arrived.

EMS

- On average, 1.4 units arrived per EMS call.
- For EMS calls, one unit arrived 63.9 percent of the time, two units arrived 36.0 percent of the time, and three units arrived 0.2 percent of the time.

Fire

- On average, 1.1 units arrived per fire call.
- For fire calls, one unit arrived 92.2 percent of the time, two units arrived 6.7 percent of the time, and three units arrived 1.1 percent of the time.
- For outside fire calls, three units arrived 4.0 percent of the time.
- For structure fire calls, three units arrived 12.0 percent of the time.

WORKLOAD: RUNS AND TOTAL TIME SPENT

The workload of each KFD unit is measured in two ways: runs and deployed time. The deployed time of a run is measured from the time a unit is dispatched through the time the unit is cleared. Because multiple units respond to some calls, there are more runs (5,908) than calls (4,293) and the average deployed time per run varies from the total duration of calls.

Runs and Deployed Time – All Units

Deployed time, also referred to as deployed hours, is the total deployment time of all units deployed on all runs. Table 5-4 shows the total deployed time, both overall and broken down by type of run, for KFD units between January 1, 2022, and December 31, 2022. Table 5-5 and Figure 5-7 present the average deployed minutes by hour of day.

TABLE 5-4: Annual Runs and Deployed Time by Run Type

Run Type	Minutes per Run	Annual Hours	Percent of Hours	Minutes per Day	Annual Runs	Runs per Day
Breathing difficulty	34.8	221.9	7.3	36.5	383	1.0
Cardiac and stroke	33.1	280.4	9.2	46.1	509	1.4
Fall and injury	34.3	386.6	12.7	63.6	677	1.9
Illness and other	33.4	975.8	32.2	160.4	1,753	4.8
MVA	26.2	135.1	4.5	22.2	309	0.8
Overdose and psychiatric	33.6	92.4	3.0	15.2	165	0.5
Seizure and unconsciousness	33.5	371.7	12.3	61.1	665	1.8
EMS Subtotal	**33.1**	**2,463.9**	**81.2**	**405.0**	**4,461**	**12.2**
False alarm	20.8	80.6	2.7	13.2	232	0.6
Good intent	18.8	16.0	0.5	2.6	51	0.1
Hazard	27.1	48.7	1.6	8.0	108	0.3
Outside fire	34.6	18.5	0.6	3.0	32	0.1
Public service	20.3	105.7	3.5	17.4	313	0.9
Structure fire	66.5	50.9	1.7	8.4	46	0.1
Fire Subtotal	**24.6**	**320.3**	**10.6**	**52.7**	**782**	**2.1**
Canceled	9.0	60.3	2.0	9.9	401	1.1
Mutual aid	43.1	189.7	6.3	31.2	264	0.7
Other Subtotal	**22.6**	**250.0**	**8.2**	**41.1**	**665**	**1.8**
Total	**30.8**	**3,034.2**	**100.0**	**498.8**	**5,908**	**16.2**

Observations:

Overall

- The total deployed time for the year was 3,034.2 hours. The daily average was 498.8 minutes for all units combined.
- There were 5,908 runs, including 401 runs dispatched for canceled calls and 264 runs dispatched for mutual aid calls. The daily average was 16.2 runs.

EMS

- EMS runs accounted for 81 percent of the total workload.
- The average deployed time for EMS runs was 33.1 minutes. The deployed time for all EMS runs averaged 405.0 minutes per day.

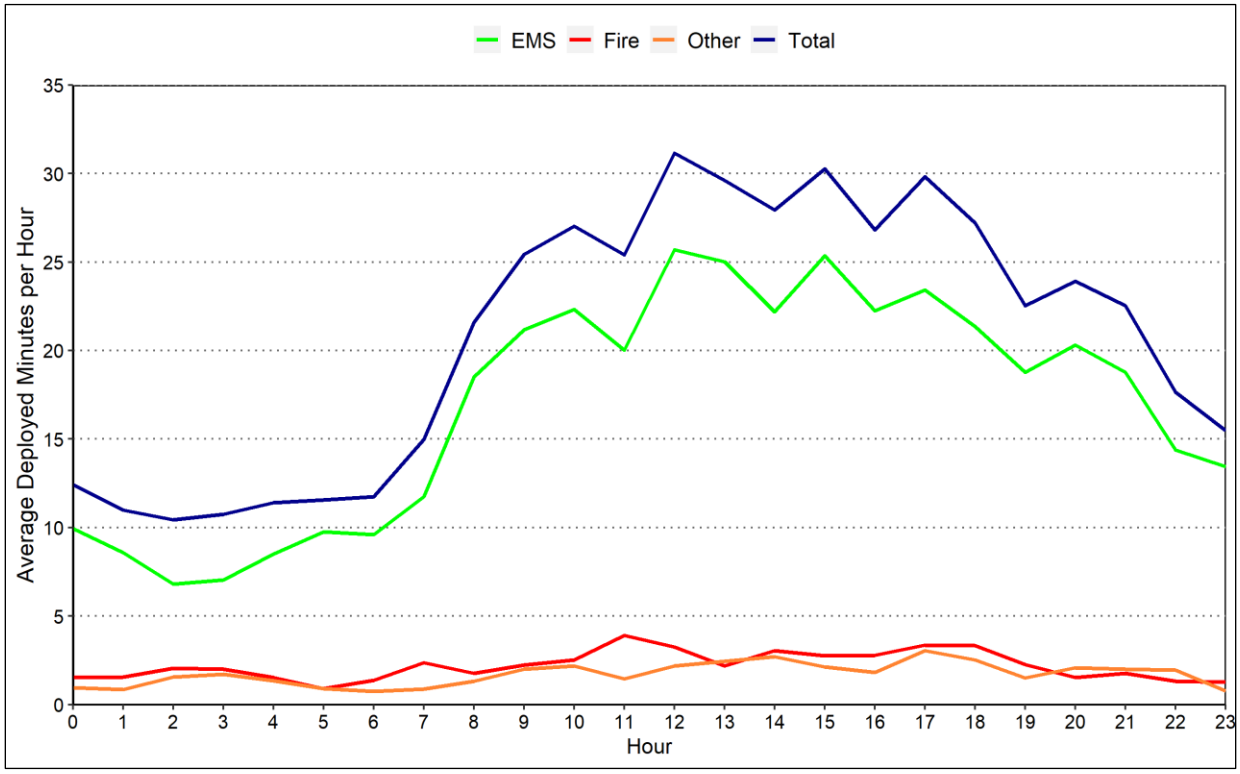
Fire

- Fire runs accounted for 11 percent of the total workload.
- The average deployed time for fire runs was 24.6 minutes. The deployed time for all fire runs averaged 52.7 minutes per day.
- There were 78 runs for structure and outside fire calls combined, with a total workload of 69.4 hours. This accounted for two percent of the total workload.
- The average deployed time for outside fire runs was 34.6 minutes per run, and the average deployed time for structure fire runs was 66.5 minutes per run.

TABLE 5-5: Average Deployed Minutes by Hour of Day

Hour	EMS	Fire	Other	Total
0	9.9	1.5	1.0	12.4
1	8.6	1.6	0.8	11.0
2	6.8	2.1	1.6	10.4
3	7.0	2.0	1.7	10.8
4	8.5	1.5	1.4	11.4
5	9.8	0.9	0.9	11.6
6	9.6	1.4	0.8	11.7
7	11.7	2.4	0.9	15.0
8	18.5	1.8	1.3	21.6
9	21.2	2.2	2.0	25.4
10	22.3	2.5	2.2	27.0
11	20.0	3.9	1.5	25.4
12	25.7	3.3	2.2	31.1
13	25.0	2.2	2.4	29.6
14	22.2	3.0	2.7	27.9
15	25.4	2.8	2.1	30.3
16	22.2	2.8	1.8	26.8
17	23.4	3.4	3.0	29.8
18	21.3	3.3	2.5	27.2
19	18.8	2.3	1.5	22.5
20	20.3	1.5	2.1	23.9
21	18.8	1.8	2.0	22.5
22	14.4	1.3	1.9	17.6
23	13.4	1.3	0.8	15.5
Daily Avg.	**405.0**	**52.7**	**41.1**	**498.8**

FIGURE 5-7: Average Deployed Minutes by Hour of Day



Observations:

- Hourly deployed time was highest during the day from 9:00 a.m. to 7:00 p.m., averaging from 25.4 to 31.1 minutes.
- Average deployed time peaked between noon and 1:00 p.m., averaging 31.1 minutes.
- Average deployed time was the lowest between 2:00 a.m. and 3:00 a.m., averaging 10.4 minutes.

Workload by Unit

Table 5-6 summarizes the annual workload of KFD units. Tables 5-7 and 5-8 provide a more detailed view of the workload for each unit, showing each unit's runs (Table 5-7) and the resulting daily average deployed time (Table 5-8) by run type.

TABLE 5-6: Runs and Workload by Station and Unit

Station	Unit	Unit Type	Minutes per Run	Total Hours	Total Percent	Minutes per Day	Total Runs	Runs per Day
61	621	ALS Ambulance	37.8	414.1	13.6	68.1	657	1.8
	631	Engine	21.9	822.5	27.1	135.2	2,254	6.2
	Subtotal		**25.5**	**1,236.6**	**40.8**	**203.3**	**2,911**	**8.0**
62	622	ALS Ambulance	36.2	1,286.3	42.4	211.4	2,132	5.8
	624	ALS Ambulance	35.7	447.6	14.8	73.6	752	2.1
	642	Ladder	34.0	60.0	2.0	9.9	106	0.3
	682	Wildland Unit	31.8	3.7	0.1	0.6	7	0.0
	Subtotal		**36.0**	**1,797.6**	**59.2**	**295.5**	**2,997**	**8.2**
Total			**30.8**	**3,034.2**	**100.0**	**498.8**	**5,908**	**16.2**

TABLE 5-7: Annual Runs by Run Type, Station, and Unit

Station	Unit	EMS	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Cancel	Mutual aid	Total
61	621	564	1	0	1	0	26	3	35	27	657
	631	1,475	190	35	78	23	186	25	193	49	2,254
	Subtotal	**2,039**	**191**	**35**	**79**	**23**	**212**	**28**	**228**	**76**	**2,911**
62	622	1,792	8	6	6	2	64	4	123	127	2,132
	624	605	8	4	6	0	29	1	45	54	752
	642	25	25	6	17	2	7	13	5	6	106
	682	0	0	0	0	5	1	0	0	1	7
	Subtotal	**2,422**	**41**	**16**	**29**	**9**	**101**	**18**	**173**	**188**	**2,997**
Total		**4,461**	**232**	**51**	**108**	**32**	**313**	**46**	**401**	**264**	**5,908**

TABLE 5-8: Deployed Minutes per Day by Run Type, Station, and Unit

Station	Unit	EMS	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Cancel	Mutual aid	Total
61	621	62.7	0.0	0.0	0.0	0.0	1.5	0.5	0.8	2.5	68.1
	631	89.5	10.8	1.9	5.6	2.1	10.3	4.4	5.1	5.5	135.2
	Subtotal	**152.2**	**10.8**	**1.9**	**5.6**	**2.1**	**11.8**	**4.9**	**5.9**	**8.0**	**203.3**
62	622	186.9	0.3	0.2	0.5	0.3	3.6	1.3	2.9	15.5	211.4
	624	64.1	0.3	0.1	0.4	0.0	1.5	0.1	1.0	6.1	73.6
	642	1.8	1.8	0.3	1.6	0.1	0.5	2.1	0.1	1.5	9.9
	682	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.6
	Subtotal	**252.9**	**2.4**	**0.7**	**2.4**	**1.0**	**5.6**	**3.5**	**4.0**	**23.1**	**295.5**
Total		**405.0**	**13.2**	**2.6**	**8.0**	**3.0**	**17.4**	**8.4**	**9.9**	**31.2**	**498.8**

Observations:

- Station 61 made the second most runs (2,911, or an average of 8.0 runs per day) and had the second-highest total annual deployed time (1,236.6, or an average of 3.4 hours per day).
  - EMS calls accounted for 70 percent of runs and 75 percent of the total deployed time.
  - Structure and outside fire calls accounted for two percent of runs and three percent of the total deployed time.
- Station 62 made the most runs (2,997, or an average of 8.2 runs per day) and had the highest total annual deployed time (1,797.6, or an average of 4.9 hours per day).
  - EMS calls accounted for 81 percent of runs and 86 percent of the total deployed time.
  - Structure and outside fire calls accounted for one percent of runs and one percent of the total deployed time.
- Engine 631 made the most runs (2,254, or an average of 6.2 runs per day) and had the second-highest total annual deployed time (822.5 hours, or an average of 2.3 hours per day).
  - EMS calls accounted for 65 percent of runs and 66 percent of the total deployed time.
  - Structure and outside fire calls accounted for two percent of runs and five percent of the total deployed time.
- Ambulance 622 made the second most runs (2,132, or an average of 5.8 runs per day) and had the highest total annual deployed time (1,286.3 hours, or an average of 3.5 hours per day).
  - EMS calls accounted for 84 percent of runs and 88 percent of the total deployed time.
  - Structure and outside fire calls accounted for one percent of the total deployed time.

Workload by Fire District

Table 5-9 breaks down the workload of KFD by each station's first due station area or by external fire district where the calls occurred. Table 5-10 provides further detail on the workload associated with structure and outside fire calls, also broken down by fire district.

TABLE 5-9: Annual Workload by District

District / Station Area	Calls	Percent Calls	Runs	Runs Per Day	Minutes Per Run	Work Hours	Percent Work	Minutes Per Day
KFD Station 61	2,644	61.6	3,880	10.6	29.9	1,936.3	63.8	318.3
KFD Station 62	1,412	32.9	1,764	4.8	30.9	908.3	29.9	149.3
Evergreen FD	65	1.5	68	0.2	49.5	56.1	1.8	9.2
Smith Valley FD	17	0.4	18	0.0	41.9	12.6	0.4	2.1
South Kalispell FD	58	1.4	67	0.2	33.0	36.8	1.2	6.1
West Valley FD	83	1.9	97	0.3	48.2	77.9	2.6	12.8
Other*	14	0.3	14	0.0	27.1	6.3	0.2	1.0
Total	**4,293**	**100.0**	**5,908**	**16.2**	**30.8**	**3,034.2**	**100.0**	**498.8**

Note: *The 14 calls that occurred in "Other" districts include five calls in Whitefish, two calls in Creston, and one call each in Badrock North, Bigfork, C. Falls, Glacier, Hungry Horse, the South Kalispell / Kalispell corner quadrant, and Somers fire districts, respectively.

TABLE 5-10: Runs for Structure and Outside Fires by District

District / Station Area	Structure Fires		Outside Fires		Combined	
	Runs	Minutes per Run	Runs	Minutes per Run	Annual Hours	Percent Work
KFD Station 61	36	76.7	28	36.3	63.0	62.9
KFD Station 62	10	29.4	4	23.2	6.5	6.5
Evergreen FD	12	108.0	0	NA	21.6	21.6
Smith Valley FD	4	64.0	0	NA	4.3	4.3
South Kalispell FD	0	NA	1	26.4	0.4	0.4
West Valley FD	2	130.0	0	NA	4.3	4.3
Total	**64**	**76.1**	**33**	**34.4**	**100.1**	**100.0**

Observations:

KFD Station 61's Response Area

- There were 2,644 calls or 62 percent of the total calls.
- There were 3,880 runs, including 284 runs dispatched for canceled calls. The daily average was 10.6 runs.
- The total deployed time for the year was 1,936.3 hours or 64 percent of the total annual workload. The daily average was 5.3 hours for all units combined.

KFD Station 62's Response Area

- There were 1,412 calls or 33 percent of the total calls.
- There were 1,764 runs, including 117 runs dispatched for canceled calls. The daily average was 4.8 runs.
- The total deployed time for the year was 908.3 hours or 30 percent of the total annual workload. The daily average was 2.5 hours for all units combined.

Outside KFD District

- There were 237 mutual aid calls or six percent of the total calls.
- There were 264 runs, including 57 runs dispatched for canceled calls. The daily average was 0.7 runs.
- The total deployed time for the year was 189.7 hours or six percent of the total annual workload. The daily average was 31.7 minutes for all units combined.

ANALYSIS OF BUSIEST HOURS

For the 4,293 calls that were responded to by KFD between January 1, 2022, and December 31, 2022, there is significant variability in the number of calls from hour to hour. One special concern relates to the resources available for hours with the heaviest workload. We tabulated the data for each of the 8,760 hours in the year.

Table 5-11 shows the number of hours in the year in which there were zero to four or more calls during the hour. Table 5-12 shows the 10 one-hour intervals which had the most calls during the year. Table 5-13 examines the number of times a call within each KFD station's first due area overlapped with another call within the same area.

TABLE 5-11: Frequency Distribution of the Number of Calls

Calls in an Hour	Frequency	Percentage
0	5,478	62.5
1	2,462	28.1
2	653	7.5
3	145	1.7
4+	22	0.3
Total	**8,760**	**100.0**

TABLE 5-12: Top 10 Hours with the Most Calls Received

Hour	Number of Calls	Number of Runs	Deployed Hours
11/2/2022, 6:00 a.m. to 7:00 a.m.	6	6	1.5
1/5/2022, 11:00 a.m. to noon	4	7	3.7
7/7/2022, 4:00 p.m. to 5:00 p.m.	4	7	3.1
1/19/2022, 3:00 p.m. to 4:00 p.m.	4	7	3.0
10/6/2022, 3:00 p.m. to 4:00 p.m.	4	7	2.7
4/10/2022, 8:00 p.m. to 9:00 p.m.	4	7	2.3
7/23/2022, 2:00 a.m. to 3:00 a.m.	4	6	3.6
12/5/2022, 9:00 a.m. to 10:00 a.m.	4	6	3.4
11/7/2022, 5:00 p.m. to 6:00 p.m.	4	6	2.5
9/2/2022, 4:00 p.m. to 5:00 p.m.	4	6	2.3

Note: Total deployed hours are a measure of the total time spent responding to calls received in the hour and may extend into the next hour or hours. The number of runs and deployed hours were calculated based on all response units.

TABLE 5-13: Frequency of Overlapping Calls by First Due Station Area

First Due Area	Scenario	Number of Calls	Percent of Calls	Total Hours
61	No overlapped call	2,215	83.8	1,290.2
	Overlapped with one call	392	14.8	119.0
	Overlapped with two calls	37	1.4	6.3
62	No overlapped call	1,291	91.4	735.3
	Overlapped with one call	120	8.5	35.6
	Overlapped with two calls	1	0.1	0.1

Note: 237 mutual aid calls outside KFD's fire district were not included.

Table 5-14 focuses on each KFD station's availability to respond to calls within its first due area. At the same time, it focuses on calls where a unit eventually arrived and ignores calls where no unit arrived. Out of 4,056 total calls that are not mutual aid (Table 5-1), 3,810 calls had an arriving unit.

TABLE 5-14: Station Availability to Respond to Calls

First Due Area	Calls in Area	First Due Responded	Percent Responded	First Due Arrived	Percent Arrived	First Due First	Percent First
61	2,489	1,927	77.4	1,875	75.3	1,739	69.9
62	1,321	1,107	83.8	1,095	82.9	1,041	78.8
Total	**3,810**	**3,034**	**79.6**	**2,970**	**78.0**	**2,780**	**73.0**

Note: For each station, we count the number of calls within its first due area where at least one unit arrived. Next, we focus on units from the first due station to see if any unit responded, arrived, or arrived first.

Observations:

- During 22 hours (0.3 percent of all hours), four or more calls occurred; in other words, the department responded to four or more calls in an hour roughly once every 17 days.
- The highest number of calls to occur in an hour was six, which happened once.
- The hour with the most calls was 6:00 a.m. to 7:00 a.m. on November 2, 2022. The hour's six calls involved six individual dispatches resulting in 1.5 hours of deployed time. These six calls included three hazard calls and three public service calls.

RESPONSE TIME

In this part of the analysis, we present response time statistics for different call types. We separate response time into its identifiable components. *Dispatch time* is the difference between the time a call is received and the time a unit is dispatched. Dispatch time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch. *Turnout time* is the difference between dispatch time and the time a unit is en route to a call's location. *Travel time* is the difference between the time en route and arrival on scene. *Response time* is the total time elapsed between receiving a call to arriving on scene.

In this analysis, we included all calls responded to by non-administrative KFD units while excluding canceled, mutual aid, and non-emergency calls. In addition, calls with a total response time of more than 30 minutes were excluded. Finally, we focused on units that had complete time stamps, that is, units with all components recorded, so that we could calculate each segment of response time. In this analysis, calls with "1-High," "2-Structure," and "3-Medium" priority levels were identified as emergency calls.

Based on the methodology above, for 4,293 calls (Table 5-1), we excluded 319 canceled calls, 237 mutual aid calls, 105 non-emergency calls, 69 calls where no units recorded a valid on-scene time, and 60 calls with a total response time exceeding 30 minutes. As a result, in this section, a total of 3,503 calls are included in the analysis.

Response Time by Type of Call

Table 5-15 breaks down the average and 90th percentile dispatch, turnout, travel, and total response times by call type. A 90th percentile means that 90 percent of calls had response times at or below that number. For example, Table 5-15 shows an overall 90th percentile response time of 14.3 minutes, which means that 90 percent of the time, a call had a response time of no more than 14.3 minutes. Figures 5-8 and 5-9 illustrate the same information.

TABLE 5-15: Average and 90th Percentile Response Time of First Arriving Unit, by Call Type

Call Type	Average Response Time, Min.				90th Percentile Response Time, Min.				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
Breathing difficulty	1.8	1.5	5.3	8.6	3.0	2.6	8.2	11.9	239
Cardiac and stroke	1.9	1.6	5.2	8.8	2.8	2.4	8.2	12.6	299
Fall and injury	2.3	1.6	6.1	9.9	3.6	2.5	9.9	14.4	483
Illness and other	2.7	1.5	5.9	10.0	4.7	2.5	9.6	15.0	1,194
MVA	2.4	1.6	4.8	8.8	4.4	2.6	7.0	12.5	133
OD*	3.3	1.8	6.1	11.2	6.8	2.8	10.3	17.9	111
Seizure and UNC**	2.0	1.4	5.3	8.7	3.3	2.3	8.5	12.4	434
EMS Subtotal	**2.4**	**1.5**	**5.7**	**9.6**	**3.9**	**2.5**	**9.2**	**14.0**	**2,893**
False alarm	1.8	2.0	6.6	10.4	2.6	3.5	9.8	14.0	210
Good intent	2.0	1.8	5.6	9.4	2.9	2.7	9.4	13.5	33
Hazard	2.3	1.8	6.8	11.0	3.9	3.0	10.7	16.5	79
Outside fire	2.0	1.8	6.3	10.2	3.3	3.4	10.5	14.5	23
Public service	2.4	1.9	6.7	11.0	4.0	3.0	11.4	16.9	240
Structure fire	1.8	1.7	5.0	8.5	3.2	3.2	7.2	12.3	25
Fire Subtotal	**2.1**	**1.9**	**6.5**	**10.6**	**3.5**	**3.2**	**10.4**	**15.3**	**610**
Total	**2.3**	**1.6**	**5.8**	**9.7**	**3.9**	**2.6**	**9.6**	**14.3**	**3,503**

Note: *OD= Overdose and psychiatric; **UNC=Unconsciousness.

FIGURE 5-8: Average Response Time of First Arriving Unit, by Call Type – EMS

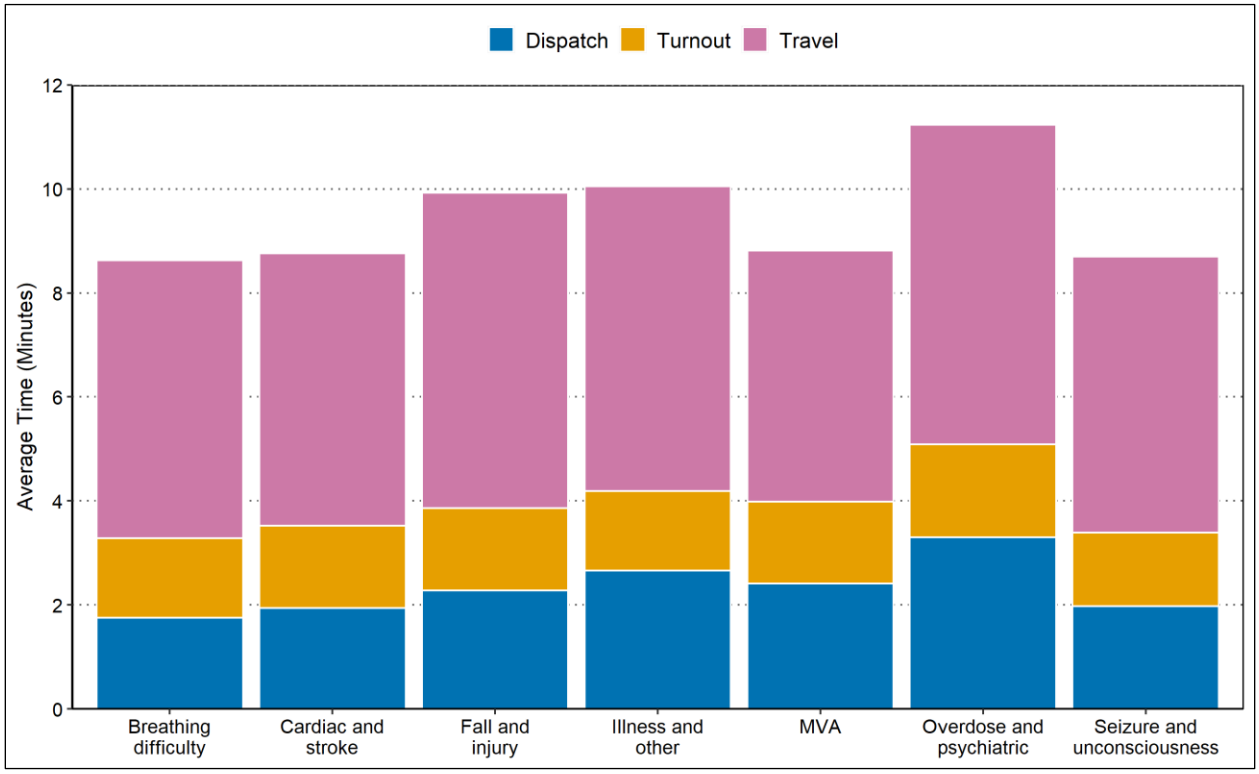
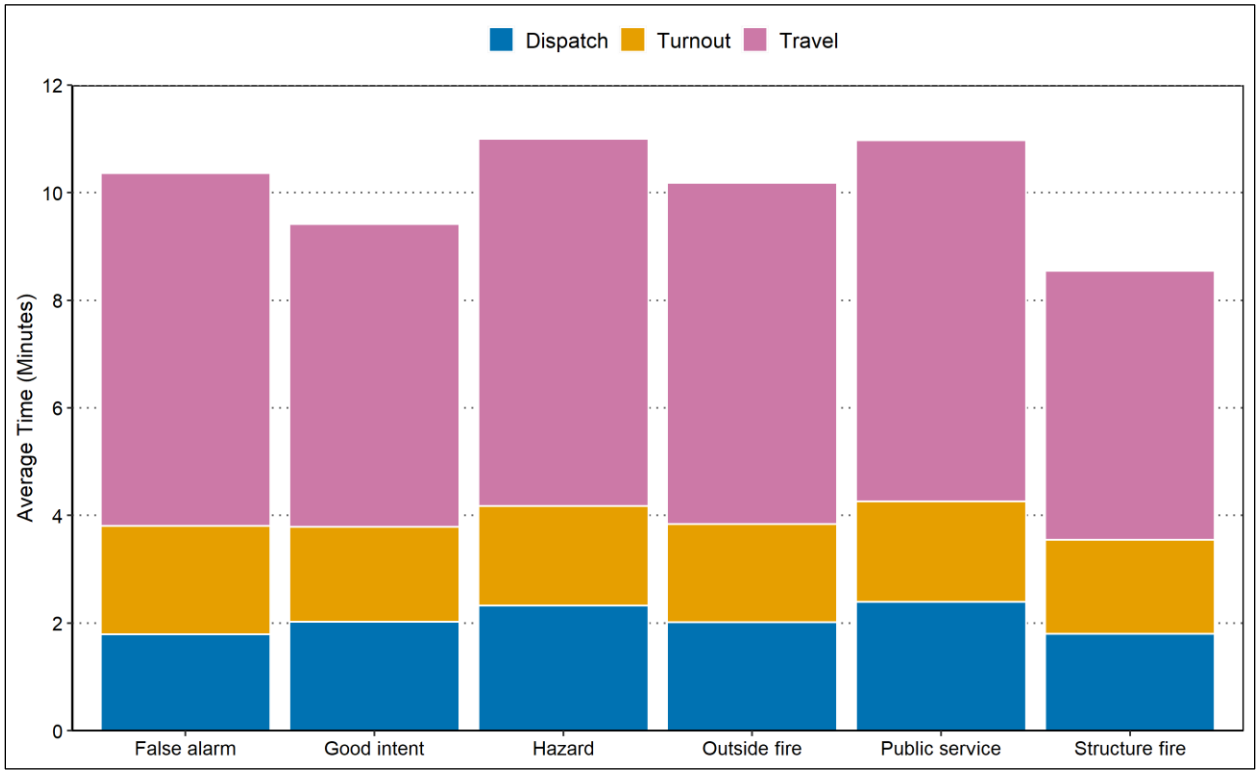


FIGURE 5-9: Average Response Time of First Arriving Unit, by Call Type – Fire



Observations:

- The average dispatch time was 2.3 minutes.
- The average turnout time was 1.6 minutes.
- The average travel time was 5.8 minutes.
- The average total response time was 9.7 minutes.
- The average response time was 9.6 minutes for EMS calls and 10.6 minutes for fire calls.
- The average response time was 10.2 minutes for outside fires and 8.5 minutes for structure fires.
- The 90th percentile dispatch time was 3.9 minutes.
- The 90th percentile turnout time was 2.6 minutes.
- The 90th percentile travel time was 9.6 minutes.
- The 90th percentile total response time was 14.3 minutes.
- The 90th percentile response time was 14.0 minutes for EMS calls and 15.3 minutes for fire calls.
- The 90th percentile response time was 14.5 minutes for outside fires and 12.3 minutes for structure fires.

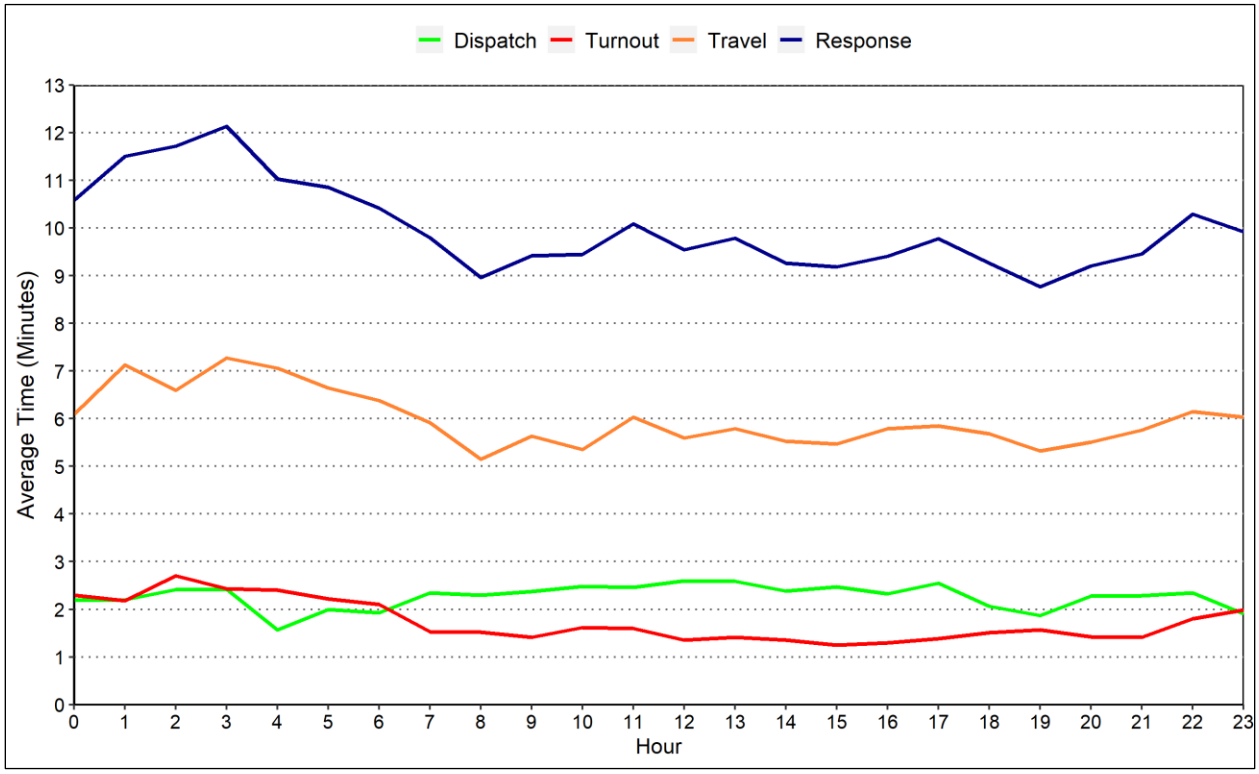
Response Time by Hour

Table 5-16 shows the average response time by the time of day. The table also shows 90th percentile response times. Figure 5-10 shows the average response time by the time of day.

TABLE 5-16: Average and 90th Percentile Response Time of First Arriving Unit, by Hour of Day

Hour	Minutes					Number of Calls
	Dispatch	Turnout	Travel	Response Time	90th Percentile Response Time	
0	2.2	2.3	6.1	10.6	15.9	101
1	2.2	2.2	7.1	11.5	17.4	63
2	2.4	2.7	6.6	11.7	17.8	72
3	2.4	2.4	7.3	12.1	18.4	74
4	1.6	2.4	7.1	11.0	14.6	72
5	2.0	2.2	6.6	10.9	15.0	72
6	1.9	2.1	6.4	10.4	13.7	85
7	2.3	1.5	5.9	9.8	12.8	125
8	2.3	1.5	5.1	9.0	13.4	174
9	2.4	1.4	5.6	9.4	13.8	196
10	2.5	1.6	5.4	9.4	13.2	190
11	2.5	1.6	6.0	10.1	15.9	193
12	2.6	1.4	5.6	9.5	14.6	216
13	2.6	1.4	5.8	9.8	15.2	199
14	2.4	1.4	5.5	9.3	13.8	200
15	2.5	1.2	5.5	9.2	13.4	207
6	2.3	1.3	5.8	9.4	14.5	204
17	2.5	1.4	5.8	9.8	15.2	199
18	2.1	1.5	5.7	9.3	13.6	179
19	1.9	1.6	5.3	8.8	12.4	149
20	2.3	1.4	5.5	9.2	12.8	170
21	2.3	1.4	5.8	9.5	13.9	139
22	2.3	1.8	6.1	10.3	15.3	122
23	1.9	2.0	6.0	9.9	13.7	102
Total	**2.3**	**1.6**	**5.8**	**9.7**	**14.3**	**3,503**

FIGURE 5-10: Average Response Time of First Arriving Unit, by Hour of Day



Observations:

- Average dispatch time was between 1.6 minutes (4:00 a.m. to 5:00 a.m.) and 2.6 minutes (noon to 1:00 p.m.).
- Average turnout time was between 1.2 minutes (3:00 p.m. to 4:00 p.m.) and 2.7 minutes (2:00 a.m. to 3:00 a.m.).
- Average travel time was between 5.1 minutes (8:00 a.m. to 9:00 a.m.) and 7.3 minutes (3:00 a.m. to 4:00 a.m.).
- Average response time was between 8.8 minutes (7:00 a.m. to 8:00 a.m.) and 12.1 minutes (3:00 a.m. to 4:00 a.m.).
- The 90th percentile response time was between 12.4 minutes (7:00 a.m. to 8:00 a.m.) and 18.4 minutes (3:00 a.m. to 4:00 a.m.).

Response Time Distribution

Here, we present a more detailed look at how response times to calls are distributed. The cumulative distribution of total response time for the first arriving unit to EMS calls is shown in Figure 5-11 and Table 5-17. Figure 5-11 shows response times for the first arriving unit to EMS calls as a frequency distribution in whole-minute increments, and Figure 5-12 shows the same for the first arriving unit to outside and structure fire calls.

The cumulative percentages here are read in the same way as a percentile. In Figure 5-11, the 90th percentile of 14.0 minutes means that 90 percent of EMS calls had a response time of 14.0 minutes or less. In Table 5-17, the cumulative percentage of 37.4, for example, means that 37.4 percent of EMS calls had a response time under 8 minutes.

FIGURE 5-11: Cumulative Distribution of Response Time – First Arriving Unit – EMS

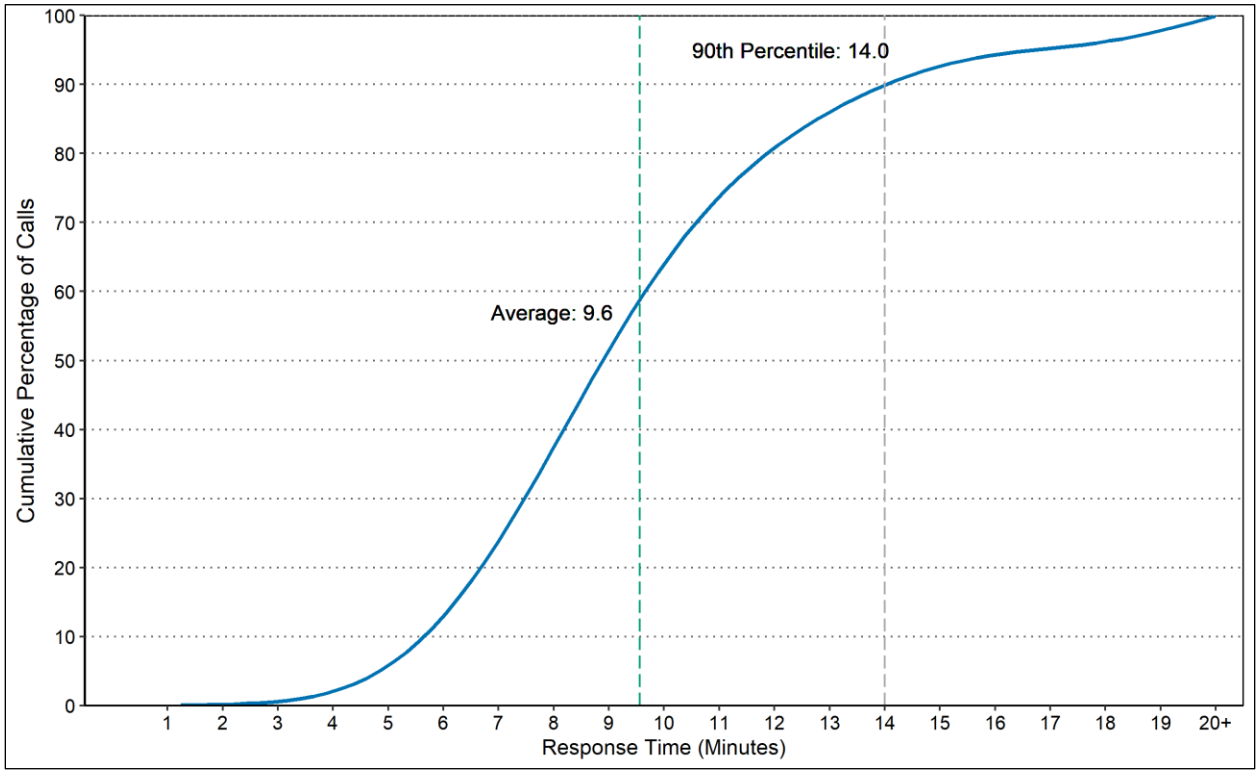


FIGURE 5-12: Cumulative Distribution of Response Time – First Arriving Unit – Outside and Structure Fires

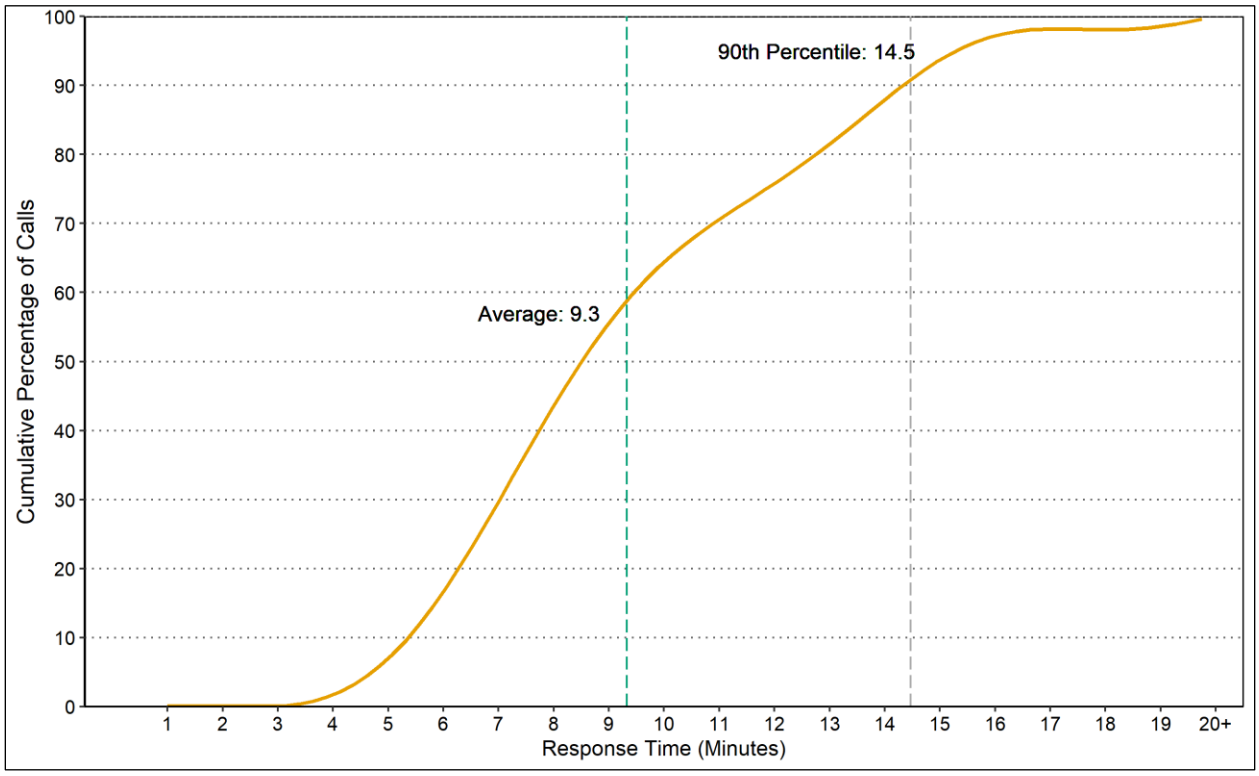


TABLE 5-17: Cumulative Distribution of Response Time – First Arriving Unit

Response Time (minute)	EMS		Outside and Structure Fires	
	Frequency	Cumulative Percentage	Frequency	Cumulative Percentage
1	1	0.0	0	0.0
2	2	0.1	0	0.0
3	13	0.6	0	0.0
4	46	2.1	0	0.0
5	109	5.9	4	8.3
6	196	12.7	3	14.6
7	324	23.9	7	29.2
8	392	37.4	8	45.8
9	409	51.6	5	56.2
10	364	64.2	3	62.5
11	272	73.6	5	72.9
12	209	80.8	1	75.0
13	155	86.1	2	79.2
14	112	90.0	5	89.6
15	69	92.4	2	93.8
16	56	94.3	2	97.9
17	31	95.4	0	97.9
18	28	96.4	0	97.9
19	28	97.3	0	97.9
20+	77	100.0	1	100.0

Observations:

- For 37 percent of EMS calls, the response time of the first arriving unit was less than 8 minutes.
- For 46 percent of outside and structure fire calls, the response time of the first arriving unit was less than 8 minutes.

Response Time by Station Area

Here, we detail the average and 90th percentile response times to calls that occurred in different parts of the KFD's response area. The results are shown in the following table.

TABLE 5-18: Average and 90th Percentile Response Time of First Arriving Unit, by Area

Area	Average Response Time, Min.				90th Percentile Response Time, Min.				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
K61-SK 4Corner	3.7	1.6	7.9	13.1	14.0	2.5	13.2	26.3	17
KS61 Commercial	2.6	1.5	5.0	9.1	4.5	2.6	8.5	13.8	1,005
KS61 Residential	2.3	1.6	6.2	10.1	3.8	2.6	10.0	14.8	1,249
Station 61 Subtotal	**2.4**	**1.6**	**5.7**	**9.7**	**4.0**	**2.6**	**9.4**	**14.4**	**2,271**
KS62 Commercial	2.2	1.6	5.3	9.1	3.7	2.6	8.2	13.2	559
KS62 Residential	2.1	1.7	6.7	10.5	3.4	2.7	10.5	14.6	673
Station 62 Subtotal	**2.2**	**1.6**	**6.1**	**9.9**	**3.4**	**2.7**	**9.8**	**14.0**	**1,232**
Total	**2.3**	**1.6**	**5.8**	**9.7**	**3.9**	**2.6**	**9.6**	**14.3**	**3,503**

TRANSPORT CALL ANALYSIS

In this section, we present an analysis of KFD unit activity that involved transporting patients, the variations by hour of day, and the average time for each stage of transport service. We identified transport calls by requiring that at least one responding medic unit had recorded both "en route to hospital" and "at hospital" times. Based on these criteria, note that 106 non-EMS calls resulted in a transport and are included in this analysis.

Transport Calls by Type

The following table shows the number of calls by call type broken out by transport and non-transport calls.

TABLE 5-19: Transport Calls by Call Type

Call Type	Number of Calls			Conversion Rate
	Non-transport	Transport	Total	
Breathing difficulty	63	181	244	74.2
Cardiac and stroke	88	216	304	71.1
Fall and injury	178	324	502	64.5
Illness and other	455	821	1,276	64.3
MVA	134	30	164	18.3
Overdose and psychiatric	35	86	121	71.1
Seizure and unconsciousness	178	278	456	61.0
EMS Subtotal	**1,131**	**1,936**	**3,067**	**63.1**
Fire & Other	1,120	106	1,226	8.6
Total	**2,251**	**2,042**	**4,293**	**47.6**

Observations:

- Overall, 63 percent of EMS calls in Kalispell involved transporting one or more patients.
- On average, there were 8.4 EMS calls per day, and 5.3 involved transporting one or more patients.
- Breathing difficulty calls had the highest transport rate, averaging 74 percent.
- Motor vehicle accidents had the lowest transport rate, averaging 18 percent.

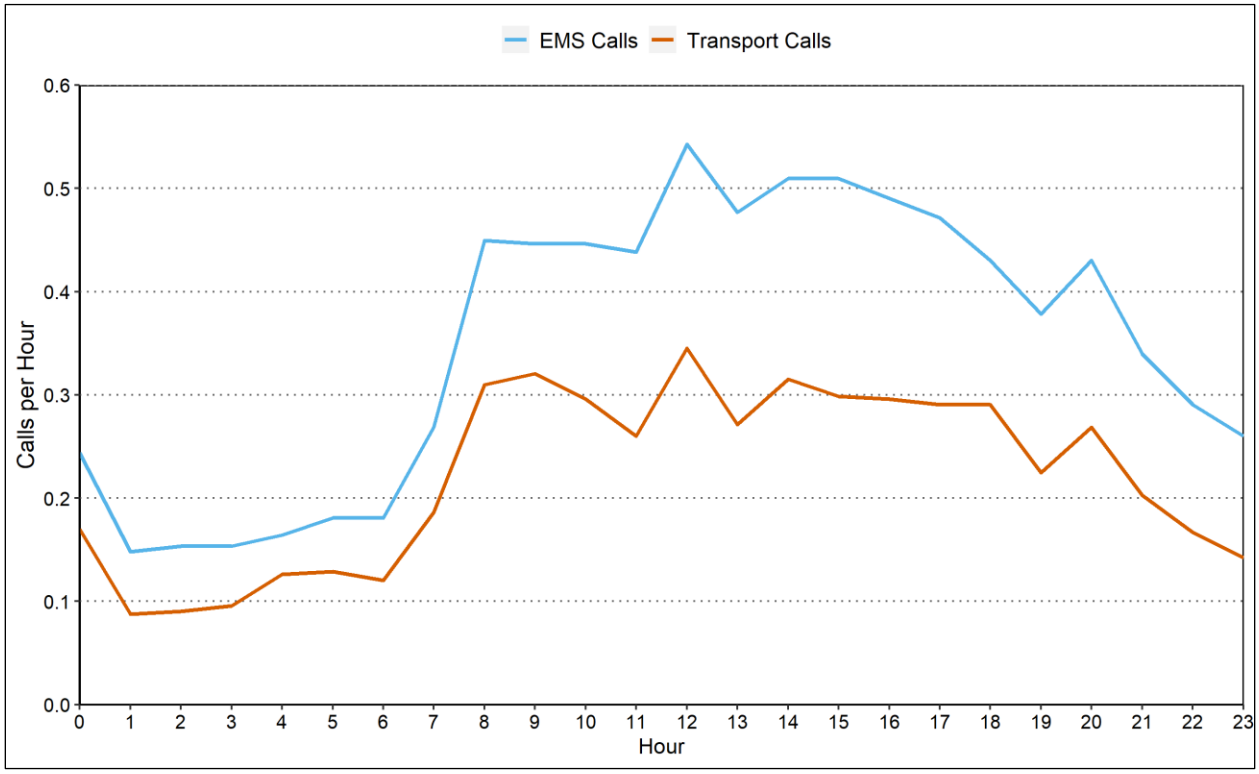
Average Transport Calls per Hour

Table 5-20 and Figure 5-13 show the average number of EMS calls received each hour of the day for the year and the average number of transport calls. Transport calls categorized as fire, mutual aid, or canceled have been excluded from the table.

TABLE 5-20: Transport Calls per Day, by Hour

Hour	Number of EMS Calls	Number of Transport Calls	EMS Calls per Day	Transport Calls per Day	Conversion Rate
0	89	62	0.2	0.2	69.7
1	54	32	0.1	0.1	59.3
2	56	33	0.2	0.1	58.9
3	56	35	0.2	0.1	62.5
4	60	46	0.2	0.1	76.7
5	66	47	0.2	0.1	71.2
6	66	44	0.2	0.1	66.7
7	98	68	0.3	0.2	69.4
8	164	113	0.4	0.3	68.9
9	163	117	0.4	0.3	71.8
10	163	108	0.4	0.3	66.3
11	160	95	0.4	0.3	59.4
12	198	126	0.5	0.3	63.6
13	174	99	0.5	0.3	56.9
14	186	115	0.5	0.3	61.8
15	186	109	0.5	0.3	58.6
16	179	108	0.5	0.3	60.3
17	172	106	0.5	0.3	61.6
18	157	106	0.4	0.3	67.5
19	138	82	0.4	0.2	59.4
20	157	98	0.4	0.3	62.4
21	124	74	0.3	0.2	59.7
22	106	61	0.3	0.2	57.5
23	95	52	0.3	0.1	54.7
Total	**3,067**	**1,936**	**8.4**	**5.3**	**63.1**

FIGURE 5-13: Average Transport Calls per Day, by Hour



Observations:

- Hourly EMS calls per day were highest during the day from noon to 6:00 p.m., averaging 0.5 calls per hour.
- Average hourly EMS calls per day peaked between noon and 1:00 p.m., averaging 0.54 calls per hour.
- Average hourly EMS calls per day were lowest between 1:00 a.m. and 2:00 a.m., averaging 0.15 calls per hour.
- Hourly transport calls per day were highest during the day from 11:00 a.m. to 6:00 p.m., averaging 0.3 calls per hour.
- Average hourly transport calls per day peaked between noon and 1:00 p.m., averaging 0.35 calls per hour.
- Average hourly transport calls per day was lowest between 1:00 a.m. and 2:00 a.m., averaging 0.09 calls per hour.
- Average hourly transport conversion rates per day peaked between 4:00 a.m. and 5:00 a.m., averaging 77 percent.
- Average hourly transport conversion rates per day were lowest between 11:00 p.m. and midnight, averaging 55 percent.

Calls by Type and Duration

The following table shows the average duration of transport and non-transport EMS calls by call type.

TABLE 5-21: Transport Call Duration by Call Type

Call Type	Non-transport		Transport	
	Average Duration, Min.	Number of Calls	Average Duration, Min.	Number of Calls
Breathing difficulty	26.2	63	48.6	181
Cardiac and stroke	25.6	88	48.6	216
Fall and injury	24.7	178	48.0	324
Illness and other	23.4	455	47.8	821
MVA	29.1	134	59.4	30
Overdose and psychiatric	24.3	35	46.5	86
Seizure and unconsciousness	23.6	178	49.8	278
EMS Subtotal	**24.7**	**1,131**	**48.4**	**1,936**
Fire & Other	21.3	1,120	59.5	106
Total	**23.0**	**2,251**	**49.0**	**2,042**

Note: The duration of a call is defined as the longest deployed time of any of the units responding to the same call.

Observations:

- The average duration was 24.7 minutes for non-transport EMS calls.
- The average duration was 48.4 minutes for EMS calls where one or more patients were transported to a hospital.

Transport Time Components

The following table shows the average deployed time for a transport-capable unit on a transport call, along with three major components of the deployed time: on-scene time, travel to hospital time, and at-hospital time.

The on-scene time is the interval from the unit arriving on-scene time through the time the unit departs the scene for the hospital. Travel to hospital time is the interval from the time the unit departs the scene to travel to the hospital through the time the unit arrives at the hospital. At-hospital time is the interval from the time the unit arrives at the hospital until the unit is cleared.

The table analyzes times by run. Normally, the number of runs (2,044) exceeds the number of calls (2,042) as a call may have multiple units assigned (a run for each unit to a single call). In addition, average times may differ slightly from similar averages measured per call.

TABLE 5-22: Time Component Analysis for Ambulance Transport Runs by Call Type

Call Type	Average Time Spent per Run, Minutes				Number of Runs
	On Scene	Traveling to Hospital	At Hospital	Deployed	
Breathing difficulty	14.1	7.0	19.0	48.4	181
Cardiac and stroke	14.5	6.8	19.4	48.2	216
Fall and injury	15.7	6.1	17.8	47.7	324
Illness and other	13.6	6.7	19.1	47.5	821
MVA	15.5	8.0	21.1	51.1	32
Overdose and psychiatric	14.2	6.5	16.6	45.7	86
Seizure and unconsciousness	16.3	6.7	18.5	49.6	278
EMS Total	**14.6**	**6.7**	**18.7**	**48.0**	**1,938**
Fire & Other Total	16.4	11.3	20.7	59.5	106
Total	**14.7**	**6.9**	**18.8**	**48.6**	**2,044**

Note: Average unit deployed time per run is lower than the average call duration for some call types because call duration is based on the longest deployed time of any of the units responding to the same call, which may include an engine or ladder. Total deployed time is greater than the combination of on-scene, transport, and hospital wait times as it includes turnout, initial travel, and hospital return times.

Observations:

- The average time spent on-scene for a transport EMS call was 14.6 minutes.
- The average travel time from the scene of the EMS call to the hospital was 6.7 minutes.
- The average deployed time spent on an EMS transport was 48.0 minutes.
- The average deployed time at the hospital was 18.7 minutes, which accounts for approximately 39 percent of the average total deployed time for a transport EMS call.

TABLE 5-23: Workload of Administrative Units

Unit ID	Unit Type	Annual Hours	Annual Runs
601	Fire Chief	26.5	31
602	Assistant Chief	17.1	30
Total		**43.6**	**61**

ATTACHMENT II: ACTIONS TAKEN

TABLE 5-24: Actions Taken Analysis for Structure and Outside Fire Calls

Action Taken	Number of Calls	
	Outside Fire	Structure Fire
Confine fire (wildland)	2	0
Contain fire (wildland)	3	0
Control fire (wildland)	2	0
Control traffic	2	0
Enforce codes	2	0
Extinguishment by fire service personnel	15	9
Fire control or extinguishment, other	2	11
Incident command	1	4
Information, investigation & enforcement, other	0	1
Investigate	11	9
Operate apparatus or vehicle	3	0
Provide information to public or media	1	0
Remove hazard	1	0
Restore fire alarm system	1	0
Salvage & overhaul	1	7
Shut down system	0	3
Ventilate	0	6

Note: Totals are higher than the total number of structure and outside fire calls because some calls recorded multiple actions taken.

Observations:

- Out of 25 outside fires, 15 were extinguished by fire service personnel, which accounted for 60 percent of outside fires.
- Out of 26 structure fires, 9 were extinguished by fire service personnel, which accounted for 35 percent of structure fires.

ATTACHMENT III: FIRE LOSS

TABLE 5-25: Total Fire Loss Above and Below $25,000

Call Type	No Loss	Under $25,000	$25,000 plus	Total
Outside fire	22	2	1	25
Structure fire	19	5	2	26
Total	**41**	**7**	**3**	**51**

TABLE 5-26: Content and Property Loss – Structure and Outside Fires

Call Type	Property Loss		Content Loss	
	Loss Value	Number of Calls	Loss Value	Number of Calls
Outside fire	$35,200	3	$2,000	1
Structure fire	$112,050	7	$60,120	5
Total	**$147,250**	**10**	**$62,120**	**6**

Note: The table includes only fire calls with a recorded loss greater than 0.

Observations:

- 22 outside fires and 19 structure fires had no recorded losses.
- One outside fire and two structure fires had $25,000 or more in recorded losses.
- Structure fires:
  - The highest total loss for a structure fire was $105,000.
  - The average total loss for all structure fires was $6,622.
  - Five structure fires recorded content losses with a combined $60,120 in losses.
  - Out of 26 structure fires, seven had recorded property losses, with a combined $112,050 in losses.
- Outside fires:
  - The highest total loss for an outside fire was $32,000.
  - The average total loss for all outside fires was $1,488.
  - One outside fire recorded content loss with a combined $2,000 in losses.
  - Out of 25 outside fires, three had recorded property losses, with a combined $35,200 in losses.

ATTACHMENT IV: HISTORICAL TRENDS IN SERVICE

In this section, we present an analysis of historical trends in EMS and fire responses based on five years of data for the KFD. The trends in calls by type, unit workload, response time, and transport call volume are analyzed.

Trend in Calls by Type

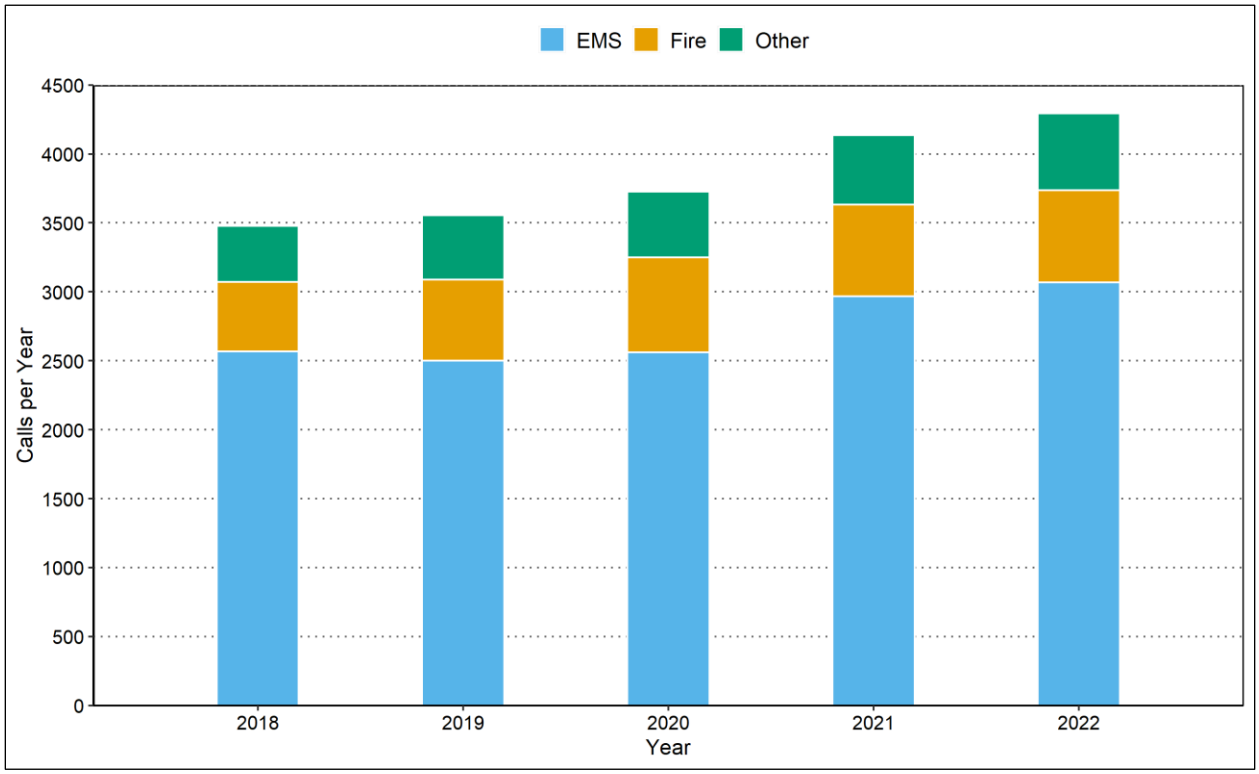
Table 5-27 and Figure 5-14 show the trend in the number of calls by type from 2018 through 2022.

TABLE 5-27: Calls by Type and Year

Year	EMS	Fire	Other	Total
2018	2,567	506	404	**3,477**
2019	2,502	586	468	**3,556**
2020	2,561	688	477	**3,726**
2021	2,966	666	504	**4,136**
2022	3,067	670	556	**4,293**

Note: For each year, we excluded testing calls, calls without enroute and arriving units, and calls responded to by only administrative units.

FIGURE 5-14: Calls by Type and Year



Observations:

- Overall call volume increased 23 percent from 3,477 in 2018 to 4,293 in 2022.
- EMS calls increased 19 percent from 2,567 in 2018 to 3,067 in 2022.

- Fire calls increased 32 percent from 506 in 2018 to 670 in 2022.
- Other calls (canceled and mutual aid combined) increased 38 percent from 404 in 2018 to 556 in 2022.

Trend in Workload

Table 5-28 shows the trend in workload for KFD units responding to calls from 2018 through 2022. The workload is measured in both the number of runs and the annual deployed hours. As with calls, these are separated by EMS, fire, and other call types. Figures 5-15 and 5-16 illustrate the trend in runs and annual deployed hours, respectively. Figure 5-17 presents the trend of average deployed minutes by the hour of the day by year.

TABLE 5-28: Runs and Deployed Hours by Type and Year

Year	Runs				Deployed Hours			
	EMS	Fire	Other	Total	EMS	Fire	Other	Total
2018	3,454	680	473	**4,607**	2,048.3	290.4	209.4	**2,548.1**
2019	3,421	760	546	**4,727**	2,092.7	362.6	222.5	**2,677.8**
2020	3,620	864	571	**5,055**	2,081.9	345.0	206.6	**2,633.5**
2021	4,215	820	611	**5,646**	2,349.5	305.3	208.4	**2,863.2**
2022	4,461	782	665	**5,908**	2,463.9	320.3	250.0	**3,034.2**

FIGURE 5-15: Runs by Type and Year

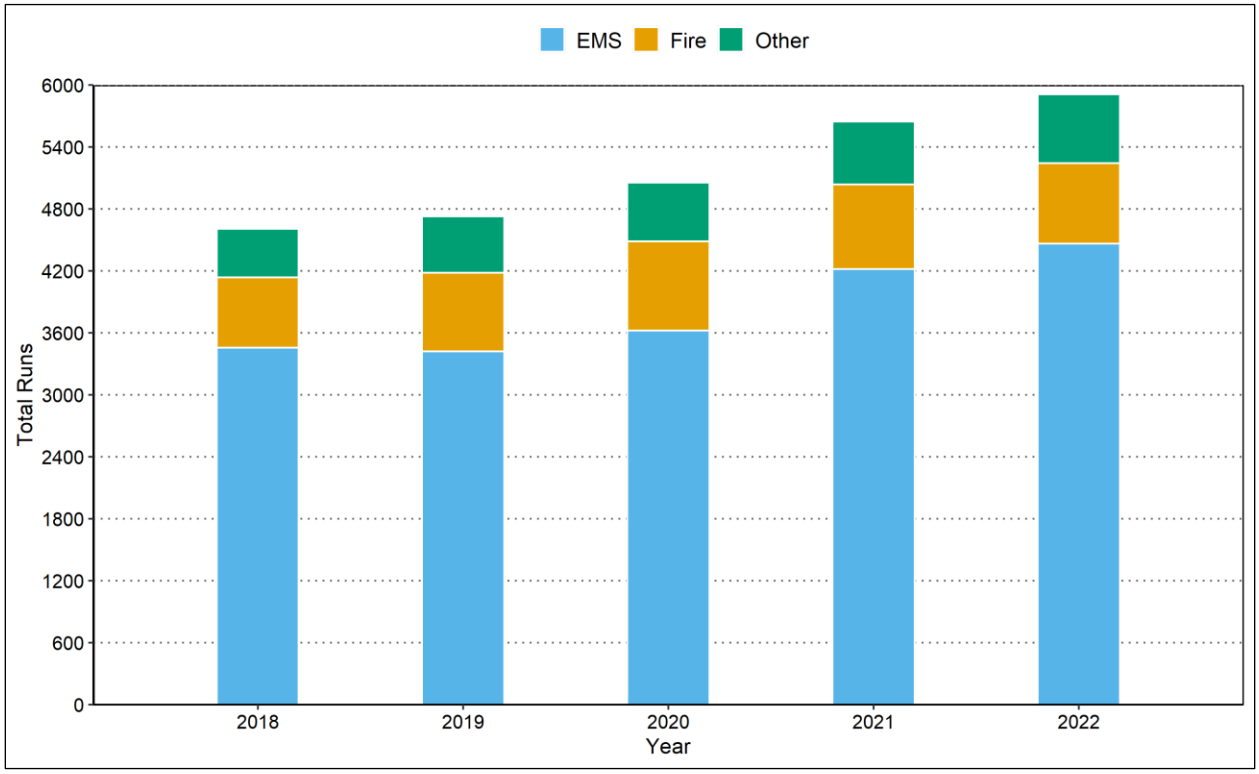


FIGURE 5-16: Deployed Hours by Type and Year

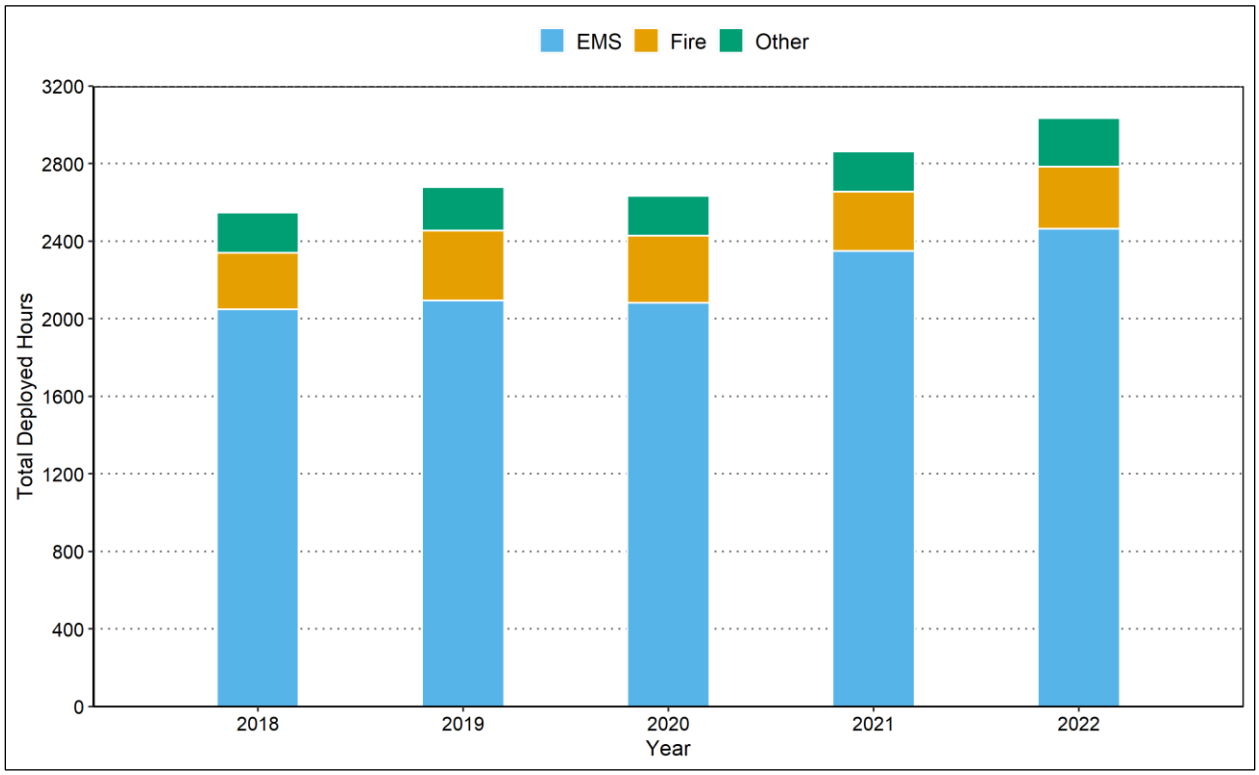
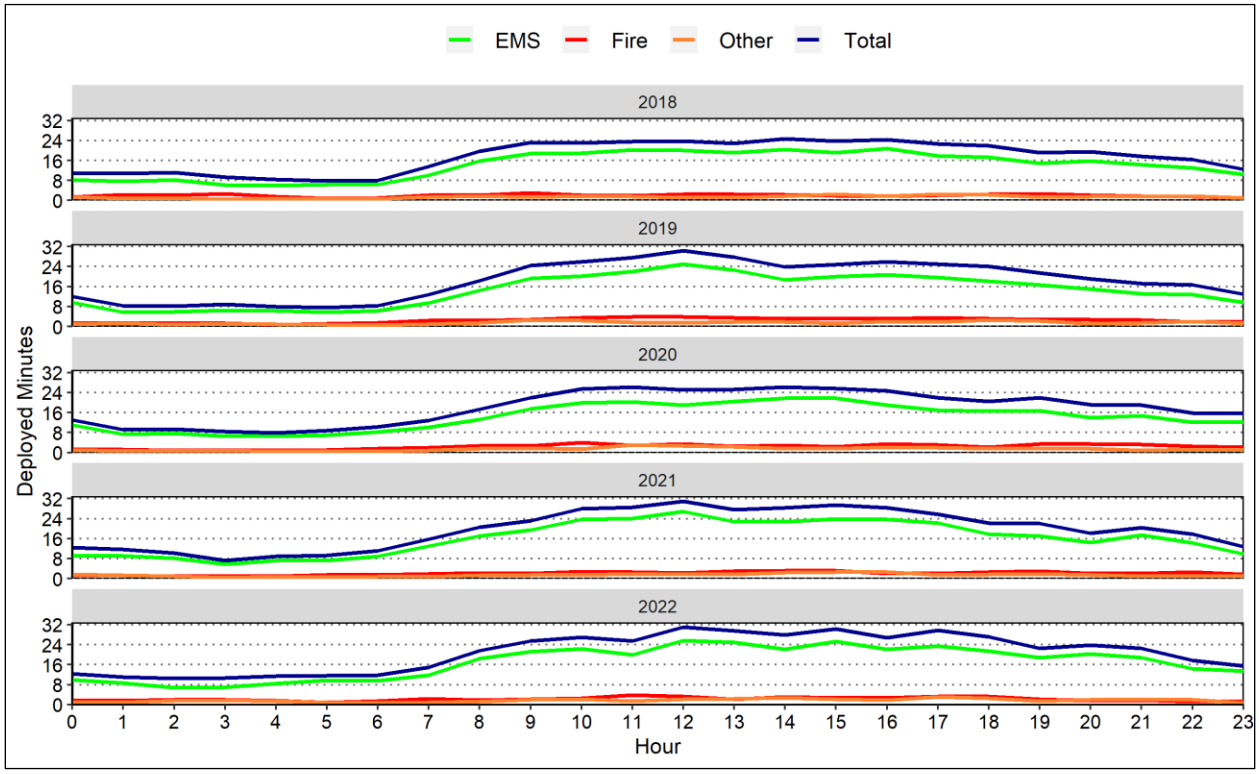


FIGURE 5-17: Average Deployed Minutes by Hour of Day and Year



Observations:

- Total runs increased 28 percent from 4,607 in 2018 to 5,908 in 2022.
- EMS runs increased 29 percent from 3,454 in 2018 to 4,461 in 2022.
- Fire runs increased 15 percent from 680 in 2018 to 782 in 2022.
- The total workload increased 19 percent from 2,548.1 hours in 2018 to 3,034.2 hours in 2022.
- The EMS workload increased 20 percent from 2,048.3 hours in 2018 to 2,463.9 hours in 2022.
- The fire workload increased 10 percent from 290.4 hours in 2018 to 320.3 hours in 2022.

Trend in Response Time

For the five-year data, we chose calls for the response time analysis based on the methodology introduced in the *Response Time* section. For the first arriving KFD units responding to calls, the trends in average and 90th percentile dispatch, turnout, travel, and total response times by call type are examined in Tables 5-29 and 5-30, respectively. Figure 5-18 shows the average response time by year and Figure 5-19 shows the average response time of the first arriving unit by hour of day by year.

TABLE 5-29: Average Response Time by Year (in Minutes)

Year	Dispatch			Turnout			Travel			Response Time			Call Count
	EMS	Fire	**Total**	EMS	Fire	**Total**	EMS	Fire	**Total**	EMS	Fire	**Total**	
2018	2.5	2.1	**2.4**	1.9	2.3	**1.9**	5.1	4.7	**5.0**	9.4	9.0	**9.3**	2,672
2019	2.2	1.9	**2.2**	1.7	2.1	**1.8**	5.4	5.0	**5.3**	9.2	9.1	**9.2**	2,922
2020	2.4	2.1	**2.3**	1.7	1.9	**1.7**	5.4	5.6	**5.4**	9.4	9.6	**9.5**	3,074
2021	2.6	2.3	**2.5**	1.5	1.8	**1.6**	5.6	5.9	**5.7**	9.7	10.0	**9.8**	3,447
2022	2.4	2.1	**2.3**	1.5	1.9	**1.6**	5.7	6.5	**5.8**	9.6	10.6	**9.7**	3,503

TABLE 5-30: 90th Percentile Response Time by Year (in Minutes)

Year	Dispatch			Turnout			Travel			Response Time			Call Count
	EMS	Fire	**Total**	EMS	Fire	**Total**	EMS	Fire	**Total**	EMS	Fire	**Total**	
2018	4.3	3.5	**4.2**	3.0	3.4	**3.0**	8.8	8.5	**8.8**	14.3	13.5	**14.2**	2,672
2019	3.7	3.2	**3.6**	2.7	3.4	**2.9**	9.0	8.6	**8.9**	13.6	13.4	**13.6**	2,922
2020	4.0	3.6	**3.8**	2.8	2.9	**2.8**	9.0	9.8	**9.2**	13.8	14.7	**14.0**	3,074
2021	4.4	3.9	**4.3**	2.6	2.9	**2.6**	9.2	9.9	**9.3**	14.4	14.9	**14.5**	3,447
2022	3.9	3.5	**3.9**	2.5	3.2	**2,6**	9.2	10.4	**9.6**	14.0	15.3	**14.3**	3,503

FIGURE 5-18: Average Response Time by Year

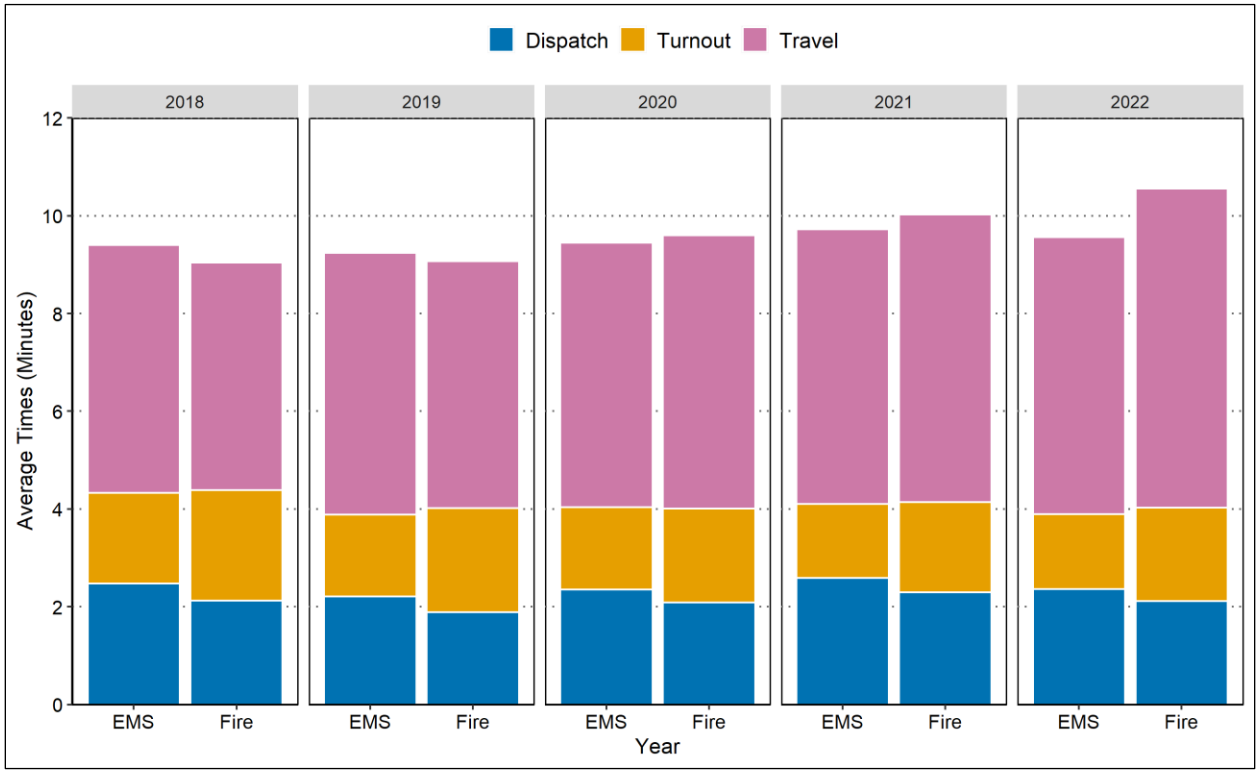
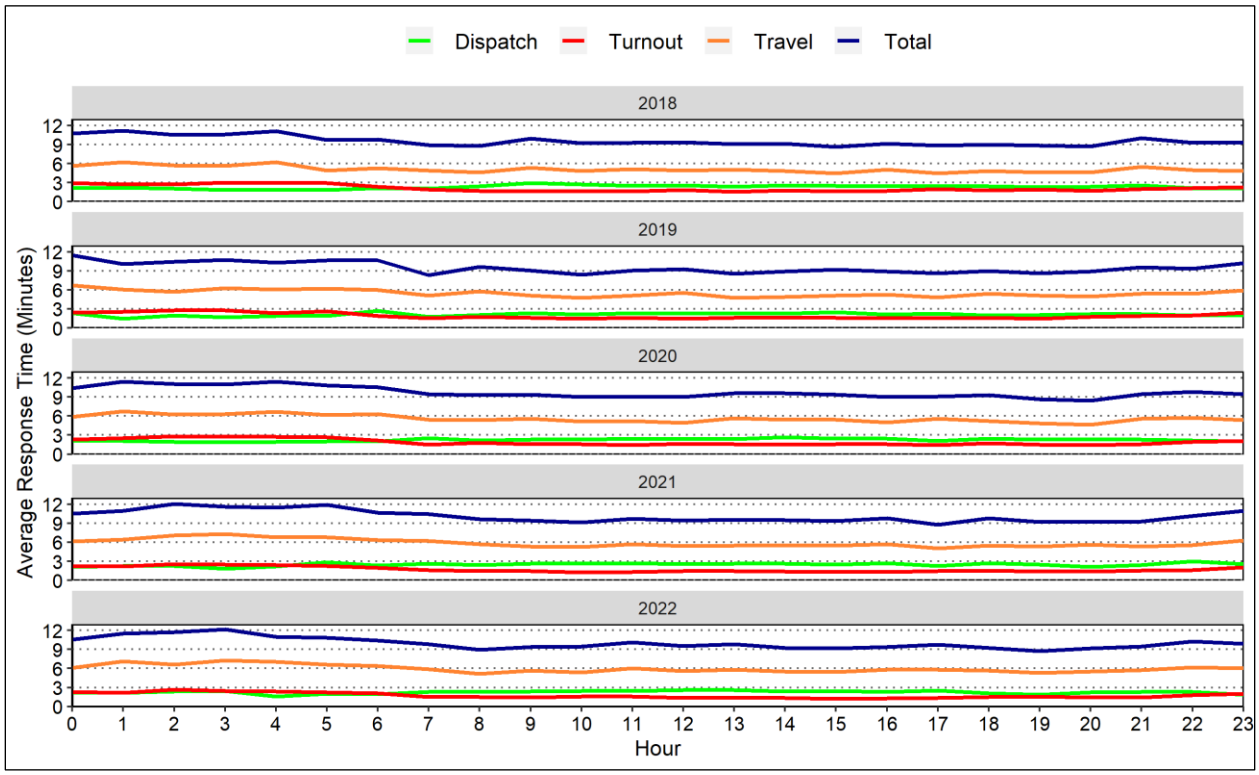


FIGURE 5-19: Average Response Time by Hour of Day, by Year



Observations:

- The average response time for EMS calls ranged from 9.2 to 9.7 minutes between 2018 and 2022 and showed no specific trend.
- The 90th percentile response time for EMS calls ranged from 13.6 to 14.4 minutes between 2018 and 2022 and showed no specific trend.
- The average response time for fire calls increased 18 percent from 9.0 minutes in 2018 to 10.6 minutes in 2022.
- The 90th percentile response time for fire calls increased 13 percent from 13.5 minutes in 2018 to 15.3 minutes in 2022.

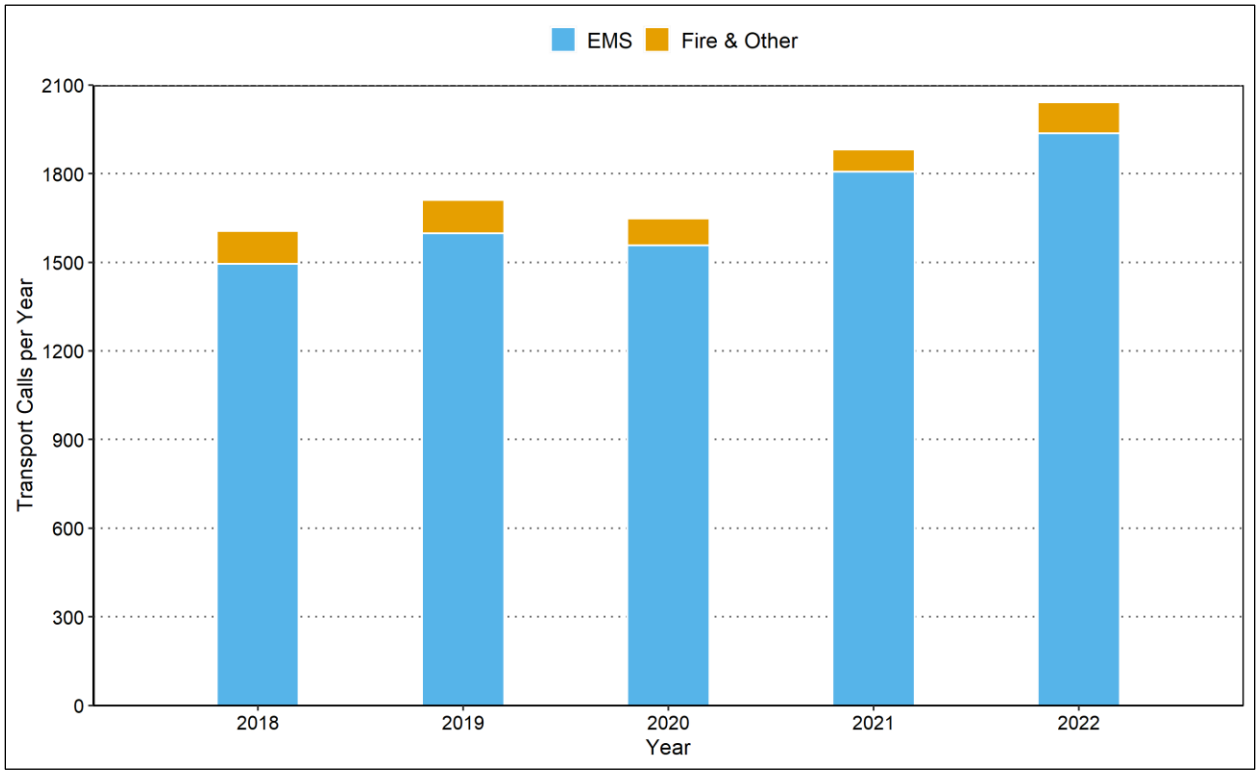
Trend in Transport Calls

Table 5-31 and Figure 5-20 show the trend in the volume of different types of transport calls from 2018 through 2022.

TABLE 5-31: Transport Call Volume by Type and Year

Year	EMS	Fire & Other	Total
2018	1,494	112	**1,606**
2019	1,598	113	**1,711**
2020	1,557	91	**1,648**
2021	1,807	74	**1,881**
2022	1,936	106	**2,042**

FIGURE 5-20: Transport Calls by Type and Year



Observations:

- The volume of transport calls increased 27 percent from 1,606 in 2018 to 2,042 in 2022.

ATTACHMENT V: LOGAN HEALTH AMBULANCE

Between June 2, 2022, and December 31, 2022, Logan Health ambulances 2821 and 2822 went en route or arrived at 490 calls, of which 291 were 9-1-1 emergency and 199 were interfacility transfer calls. Of the interfacility transfer calls 164 lacked records of transporting and at hospital times. Out of 291 9-1-1 emergency calls, Logan Health ambulances arrived at 283 calls (97 percent) and transported one or more patients in 231 calls (82 percent).

Logan Health Ambulance Calls

Table 5-32 shows the number of calls by call type and the percentage of calls that fall into each call type category for the six months studied. Figure 5-21 shows the monthly variation in the number of calls handled by the Logan Health ambulances between June 2, 2022, and December 31, 2022. Similarly, Figure 5-22 illustrates the number of calls received by hour over the same period.

TABLE 5-32: Call Responded to by Logan Health, by Type

Call Type	Total Calls	Call Percentage
Assist agency	4	0.8
Breathing difficulty	24	4.9
Cardiac and stroke	25	5.1
Fall and injury	43	8.8
Illness and other	147	30.0
Interfacility transfer	199	40.6
MVA	7	1.4
Overdose and psychiatric	7	1.4
Seizure and unconsciousness	34	6.9
Total	**490**	**100.0**

Observations:

- Logan Health ambulances responded to 490 calls, including four agency assist calls.
- Interfacility transfer calls totaled 199 (41 percent of EMS calls).

Logan Health Ambulance Calls by Month and Hour of Day

FIGURE 5-21: Logan Health Ambulance Calls by Month

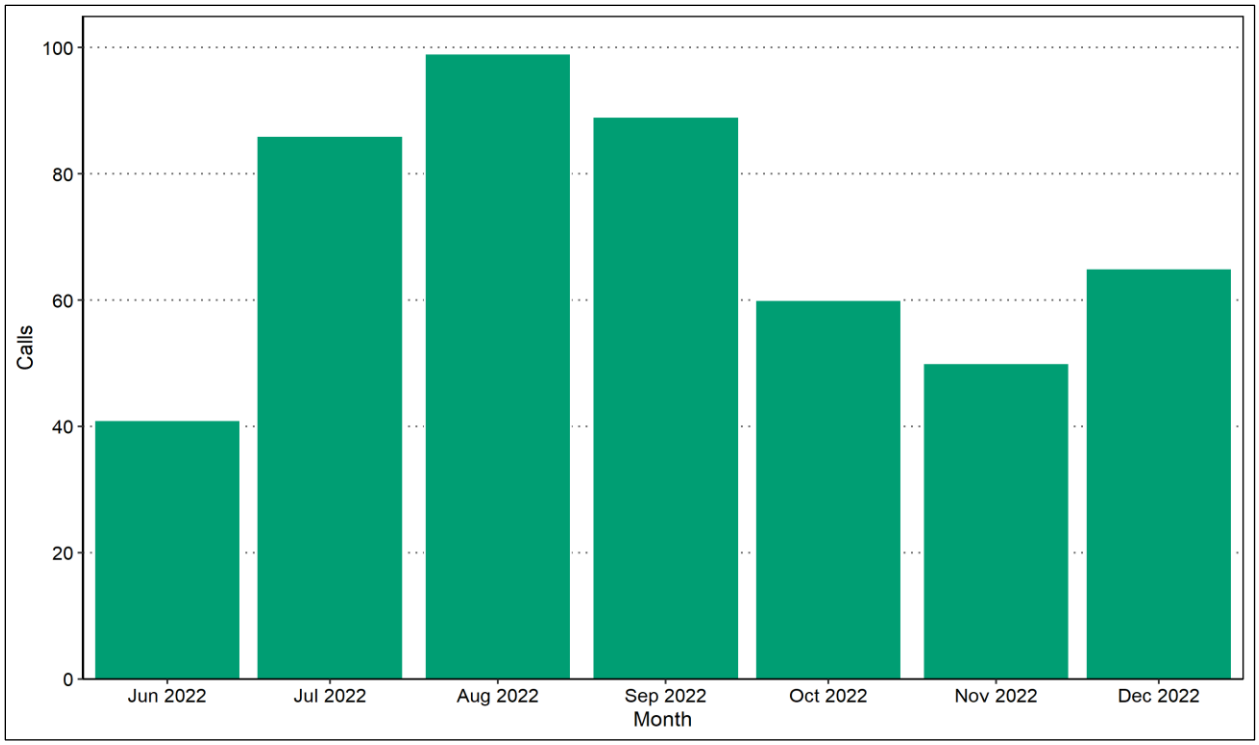
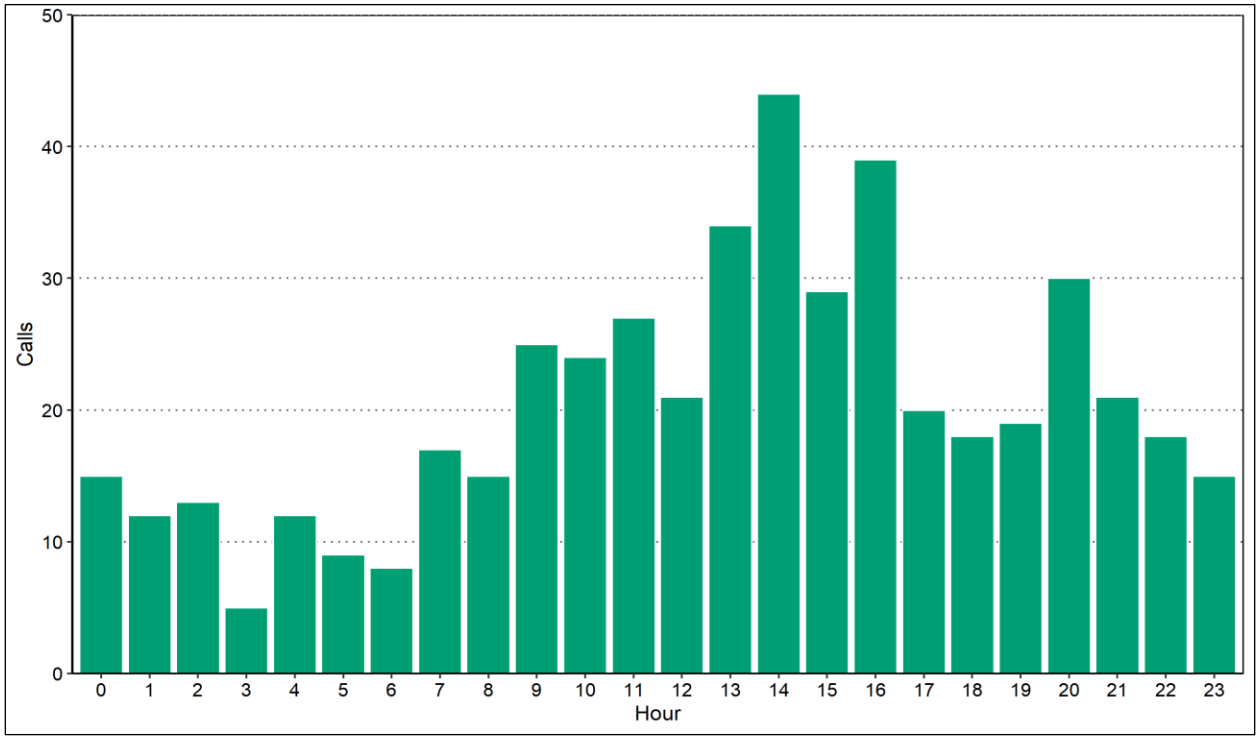


FIGURE 5-22: Logan Health Ambulance Calls by Hour of Day



Logan Health Ambulance Calls by Type and Duration

Table 5-33 shows the duration of calls by type using four duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, and more than two hours.

TABLE 5-33: Logan Health Ambulance Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	Two or More Hours	Total
Assist agency	3	1	0	0	4
Breathing difficulty	2	17	3	2	24
Cardiac and stroke	2	19	4	0	25
Fall and injury	8	25	9	1	43
Illness and other	19	106	17	5	147
Interfacility transfer	2	35	91	71	199
MVA	5	2	0	0	7
Overdose and psychiatric	1	6	0	0	7
Seizure and unconsciousness	3	24	7	0	34
Total	**45**	**235**	**131**	**79**	**490**

Observations:

- A total of 280 calls (57 percent) lasted less than one hour, 131 calls (27 percent) lasted one to two hours, and 79 calls (16 percent) lasted two or more hours.

Logan Health Ambulance Runs and Deployed Time

Table 5-34 shows the total deployed time, both overall and broken down by type of run, for ambulances 2821 and 2822 between June 2, 2022, and December 31, 2022. Table 5-35 summarizes the annual workload of ambulances 2821 and 2822.

TABLE 5-34: Logan Health Runs and Deployed Time by Type

Run Type	Minutes per Run	Hours	Percent of Hours	Runs
Agency assist	12.2	1.4	0.2	7
Breathing difficulty	55.3	22.1	2.9	24
Cardiac and stroke	47.8	19.9	2.6	25
Fall and injury	54.4	39.0	5.0	43
Illness and other	49.9	124.8	16.2	150
Interfacility transfer	158.3	527.7	68.3	200
MVA	22.1	2.6	0.3	7
Overdose and psychiatric	34.0	4.0	0.5	7
Seizure and unconsciousness	54.0	30.6	4.0	34
Total	**93.2**	**772.1**	**100.0**	**497**

TABLE 5-35: Logan Health Ambulance Workload

Ambulance	Minutes per Run	Hours	Total Percent	Runs
2821	82.7	510.2	66.1	370
2822	123.8	261.9	33.9	127
Total	**93.2**	**772.1**	**100.0**	**497**

Observations:

- The total deployed time for the year was 772.1 hours.
- There were 497 runs.
- The average deployed time per run was 93.2 minutes.

Logan Health Ambulance Workload by Fire District

Table 5-36 breaks down the workload of Logan Health by the fire district or first due station where the calls occurred.

TABLE 5-36: Annual Workload of Logan Health by District

District / Station Area	Calls	Percent Calls	Runs	Minutes Per Run	Work Hours	Percent Work
KFD Station 61	2	0.4	2	42.9	1.4	0.2
KFD Station 62	394	80.4	401	87.8	587.0	76.0
Glacier Park Intl Airport	9	1.8	9	119.9	18.0	2.3
Evergreen FD (MID)	5	1.0	5	236.1	19.7	2.5
Marion FD (West)	3	0.6	3	219.8	11.0	1.4
Olney FD	1	0.2	1	1.6	0.0	0.0
Whitefish FD	76	15.5	76	106.6	135.0	17.5
Total	**490**	**100.0**	**497**	**93.2**	**772.1**	**100.0**

Logan Health Ambulance Response Time by Type of Call

In this analysis, we excluded 199 interfacility transfer calls, four agency assist calls, eight calls where no units recorded a valid on-scene time, six calls with a total response time exceeding 30 minutes, and 40 calls where one or more segments of the first arriving unit's response time could not be calculated due to missing or faulty data. As a result, in this section, a total of 233 calls are included in the analysis.

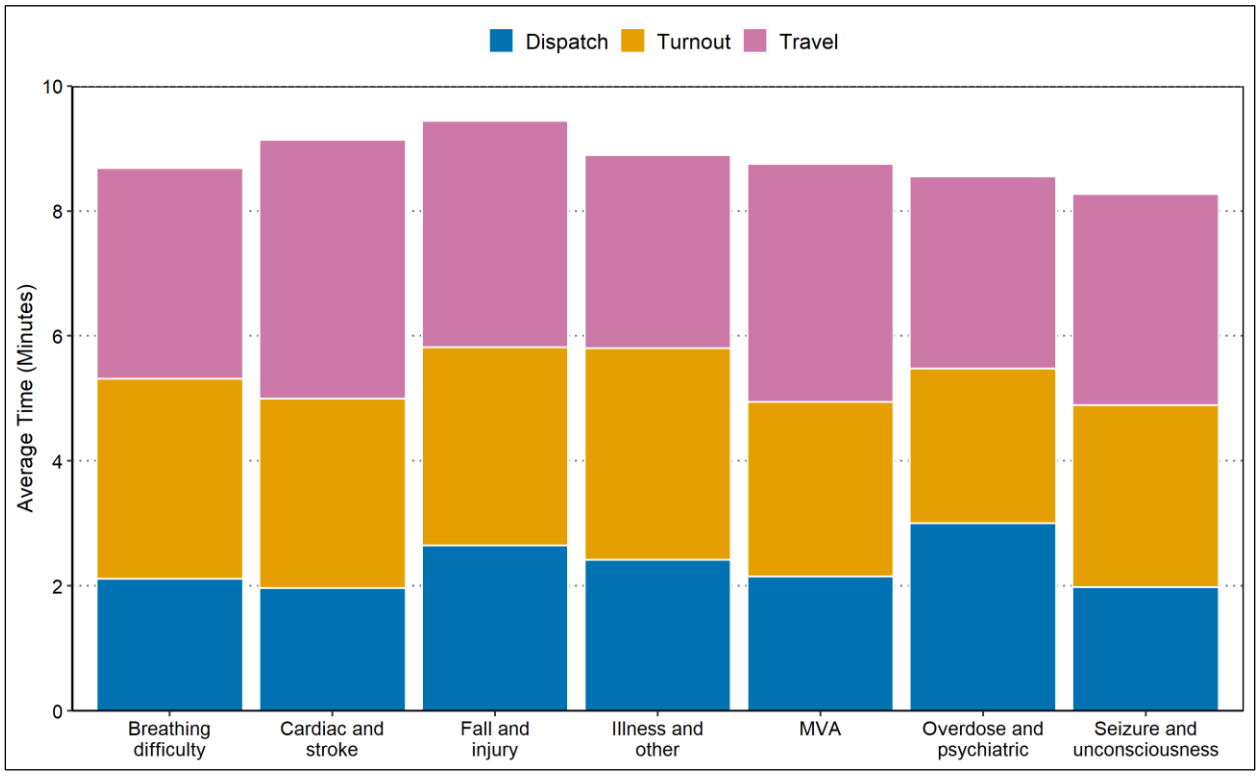
Table 5-37 breaks down the average and 90th percentile dispatch, turnout, travel, and total response times by call type. Figure 5-23 illustrates the average response time for each type of EMS call.

TABLE 5-37: Average and 90th Percentile Response Time of First Arriving Logan Health Ambulance, by Call Type

Call Type	Average Response Time, Min.				90th Percentile Response Time, Min.				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
Breathing difficulty	2.1	3.2	3.4	8.7	3.3	5.6	5.2	11.2	19
Cardiac and stroke	2.0	3.0	4.1	9.1	4.6	5.2	8.9	16.7	19
Fall and injury	2.6	3.2	3.6	9.4	5.9	5.4	5.2	13.8	36
Illness and other	2.4	3.4	3.1	8.9	3.8	5.5	5.1	11.2	120
MVA	2.1	2.8	3.8	8.8	5.4	4.9	5.1	11.3	5
OD*	3.0	2.5	3.1	8.6	5.5	6.0	4.2	11.2	6
Seizure and UNC**	2.0	2.9	3.4	8.3	3.4	6.3	5.5	10.4	28
Total	**2.3**	**3.2**	**3.3**	**8.9**	**3.9**	**5.4**	**5.2**	**11.4**	**233**

Note: *OD= Overdose and psychiatric; **UNC=Unconsciousness.

FIGURE 5-23: Average Response Time of First Arriving Logan Health Ambulance, by Call Type



Observations:

- The average dispatch time was 2.3 minutes.
- The average turnout time was 3.2 minutes.
- The average travel time was 3.3 minutes.
- The average total response time was 8.9 minutes.
- The 90th percentile dispatch time was 3.9 minutes.
- The 90th percentile turnout time was 5.4 minutes.
- The 90th percentile travel time was 5.2 minutes.
- The 90th percentile total response time was 11.4 minutes.

Logan Health Ambulance Transport Calls by Type

Due to the incomplete time stamps of unit status in interfacility transport data, the 199 interfacility transfer calls were not included in the transport analysis for Logan Health. Table 5-38 shows the number of 9-1-1 calls by call type broken out by transport and non-transport calls. Figure 5-24 shows the number of 9-1-1 EMS and transport calls received each hour.

TABLE 5-38: Logan Health Ambulance Transport Calls by Call Type

Call Type	Number of Calls			Conversion Rate
	Non-transport	Transport	Total	
Agency assist	1	3	4	75.0
Breathing difficulty	7	17	24	70.8
Cardiac and stroke	4	21	25	84.0
Fall and injury	10	33	43	76.7
Illness and other	27	120	147	81.6
MVA	5	2	7	28.6
Overdose and psychiatric	1	6	7	85.7
Seizure and unconsciousness	5	29	34	85.3
Total	**60**	**231**	**291**	**79.4**

FIGURE 5-24: Logan Health Ambulance Transport Calls by Hour

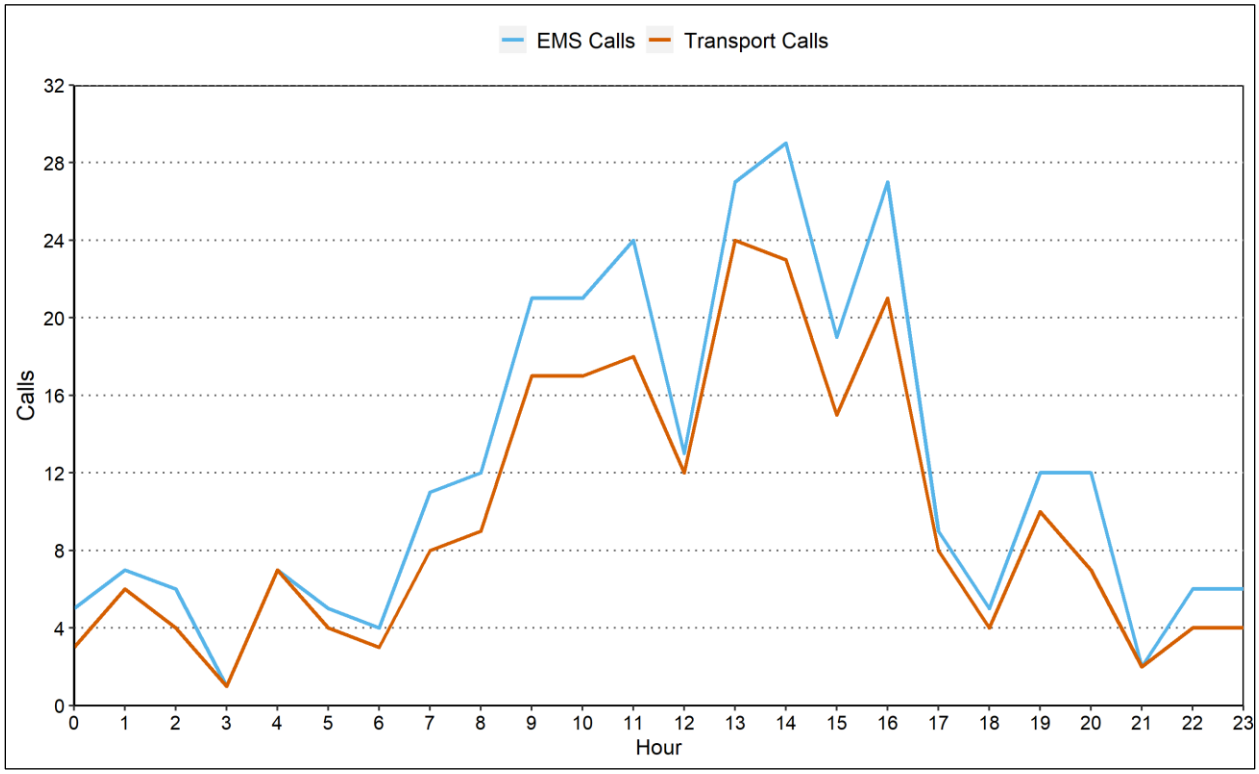


Table 5-39 shows the average duration of transport and non-transport EMS calls by call type. Table 5-40 gives the average deployed time for an ambulance on a transport call, along with three major components of the deployed time: on-scene time, travel to hospital time, and at-hospital time. Table 40 analyzes times by run. Normally, the number of runs (234) exceeds the number of calls (231) as a call may have multiple runs. In addition, average times may differ slightly from similar averages measured per call.

TABLE 5-39: Logan Health Ambulance Transport Call Duration by Call Type

Call Type	Non-transport		Transport	
	Average Duration	Number of Calls	Average Duration	Number of Calls
Agency assist	1.6	1	24.1	3
Breathing difficulty	54.9	7	55.5	17
Cardiac and stroke	50.8	4	47.3	21
Fall and injury	42.7	10	57.9	33
Illness and other	39.5	27	53.3	120
MVA	14.6	5	40.6	2
Overdose and psychiatric	33.1	1	34.2	6
Seizure and unconsciousness	39.0	5	56.5	29
Total	**39.7**	**60**	**53.0**	**231**

Note: The duration of a call is defined as the longest deployed time of any of the units responding to the same call.

TABLE 5-40: Time Component for Logan Health Ambulance Transport Runs by Type

Call Type	Average Time Spent per Run, Minutes				Number of Runs
	On Scene	Traveling to Hospital	At Hospital	Deployed	
Agency assist	2.7	0.1	8.0	13.7	5
Breathing difficulty	23.5	2.8	22.8	55.5	17
Cardiac and stroke	21.9	5.6	13.3	47.3	21
Fall and injury	23.7	3.0	23.4	57.9	33
Illness and other	20.9	3.6	21.6	53.0	121
MVA	26.0	2.0	10.2	40.6	2
Overdose and psychiatric	18.2	1.1	9.7	34.2	6
Seizure and unconsciousness	23.8	3.3	22.6	56.5	29
Total	**21.5**	**3.5**	**20.6**	**52.4**	**234**

Note: Average unit deployed time per run is lower than the average call duration for some call types because call duration is based on the longest deployed time of any of the units responding to the same call.

ATTACHMENT V: CALL TYPE IDENTIFICATION

When available, NFIRS data serves as our primary source for assigning call categories. For calendar year 2022, 1,148 of the 4,056 calls inside KFD Station 61 and 62's jurisdictions, NFIRS incident type codes were used to assign call types for canceled, fire, and motor vehicle accident (MVA) calls (Table 5-41). For 2,908 EMS calls that do not have NFIRS incident types, we instead used their Criteria Based Dispatch (CBD) codes in the CAD data to assign call categories (Table 5-42). The 237 mutual aid calls were not included.

TABLE 5-41: Call Type by NFIRS Incident Type Code and Description

Call Type	Code	Description	Call Count
Canceled	611	Dispatched and canceled en route	210
	621	Wrong location	1
	622	No incident found on arrival at dispatch address	108
False Alarm	700	False alarm or false call, other	29
	710	Malicious, mischievous false alarm, other	2
	711	Municipal alarm system, malicious false alarm	3
	714	Central station, malicious false alarm	2
	715	Local alarm system, malicious false alarm	2
	730	System or detector malfunction, other	3
	731	Sprinkler activated due to the failure or malfunction	4
	732	Extinguishing system activation due to malfunction	1
	733	Smoke detector activation due to malfunction	14
	735	Alarm system sounded due to malfunction	19
	736	CO detector activation due to malfunction	8
	740	Unintentional transmission of alarm, other	7
	741	Sprinkler activation, no fire - unintentional	4
	743	Smoke detector activation, no fire - unintentional	16
	744	Detector activation, no fire - unintentional	3
	745	Alarm system activation (no fire) - unintentional	92
	746	Carbon monoxide detector activation (no CO)	8
Good Intent	600	Good intent call, other	16
	631	Authorized controlled burning	3
	650	Steam, other gas mistaken for smoke, other	1
	651	Smoke scare, odor of smoke, not steam	19
	652	Steam, vapor, fog, or dust thought to be smoke	1
	653	Smoke from barbecue or tar kettle (no hostile fire)	1
	661	EMS call where injured party has been transported by a non-fire service agency or left the scene prior to arrival	1
	671	Hazardous material release investigation	2

Call Type	Code	Description	Call Count
Hazard	400	Hazardous condition (no fire), other	1
	411	Gasoline or other flammable liquid spill	3
	412	Gas leak (natural gas or LPG)	46
	422	Chemical spill or leak	2
	424	Carbon monoxide incident	11
	440	Electrical wiring/equipment problem, other	1
	442	Overheated motor or wiring	2
	444	Power line down	15
	445	Arcing, shorted electrical equipment	14
Motor Vehicle Accident	322	Motor vehicle accident with injuries	42
	323	Motor vehicle/pedestrian accident	6
	324	Motor vehicle accident with no injuries	111
Outside Fire	131	Passenger vehicle fire	6
	140	Natural vegetation fire, other	4
	141	Forest, woods, or wildland fire	1
	142	Brush or brush-and-grass mixture fire	1
	143	Grass fire	2
	150	Outside rubbish fire, other	1
	151	Outside rubbish, trash, or waste fire	4
	154	Dumpster or other outside trash receptacle fire	1
	160	Special outside fire, other	4
	172	Cultivated orchard or vineyard fire	1
Public Service	353	Removal of victim(s) from stalled elevator	2
	381	Rescue or EMS standby for hazardous conditions	1
	500	Service call, other	12
	520	Water problem, other	2
	522	Water or steam leak	6
	531	Smoke or odor removal	4
	550	Public service assistance, other	35
	551	Assist police or another governmental agency	4
	552	Police matter	8
	553	Removal of victim(s) from stalled elevator	37
	554	Assist invalid	136
	561	Unauthorized burning	15
	911	Citizen's complaint	1

Call Type	Code	NFIRS Incident Type Description	Call Count
Structure Fire	100	Fire, other	2
	111	Building fire	9
	112	Fire in structure, other than in a building	1
	113	Cooking fire	7
	114	Chimney or flue fire	1
	118	Trash or rubbish fire in a structure	4
	122	Fire in a motor home, camper, or recreational vehicle when used as a structure	2
Total			**1,148**

TABLE 5-42: Call Type by Emergency Medical Dispatch Code and Description

Call Type	Code	Description	Calls
Breathing Difficulty	05	Breathing difficulty	237
	08	Choking	7
Cardiac and Stroke	06	Cardiac arrest	14
	07	Chest pain/discomfort/heart problem	219
	18	Stroke	71
Fall and Injury	21	Assault/trauma	483
	23	Drowning/diving or water-related injury	1
	24	Falls/accident/pain	18
Illness and Other	02	Anaphylaxis/allergic reaction	12
	04	Bleeding – non-traumatic	262
	09	Diabetic	56
	10	Environmental/toxic exposure	15
	12	Head/neck	3
	15	Pregnancy/childbirth/gyn	6
	17	Sick (unknown/other)	163
	20	Pediatric emergencies	11
	NA	Other with NFIRS 320 and 321 codes	748
Motor Vehicle Accident	25	MVA	5
Overdose and Psychiatric	13	Mental/emotional/psychological	50
	14	Overdose/poisoning	71
Seizure And Unconsciousness	16	Seizures	110
	19	Unconscious/unresponsive/syncope	346
Total			**2,908**

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