Draft Report
Fire/EMS Operations Analysis
City of Steamboat Springs, Colorado
November 2011

FIRE/EMS OPERATIONS

CENTER FOR PUBLIC SAFETY MANAGEMENT

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ICMA
Leaders at the Core of Better Communities

General Information

ICMA Background

The International City/County Management Association (ICMA) is the premier local government leadership and management organization. Since 1914, ICMA's mission has been to create excellence in local governance by developing and advocating professional local government management worldwide. ICMA provides an information clearinghouse, technical assistance, training, and professional development to more than 9,000 city, town, and county experts and other individuals throughout the world.

ICMA Consulting Services

The ICMA Consulting Services team helps communities solve critical problems by providing management consulting support to local governments. One of ICMA Consulting Services' areas of expertise is public safety services, which encompasses the following areas and beyond: organizational development, leadership and ethics, training, assessment of calls-for-service workload, staffing requirements analysis, design of standards and hiring guidelines for police and fire chief recruitment, police/fire consolidation, community-oriented policing, and city/county/regional mergers.

Performance Measures

The reports generated by the operations and data analysis team are based upon key performance indicators that have been identified in standards and safety regulations and by special interest groups such as the International Association of Fire Chiefs, International Association of Fire Fighters, Association of Public Safety Communication Officials International, and through the Center for Performance Measurement of ICMA. These performance measures have developed following decades of research and

are applicable in all communities. For that reason, comparison of reports will yield similar reporting formats but each community's data are analyzed on an individual basis by the ICMA specialists and uniquely represent the compiled information for that community.

Methodology

The ICMA *Center for Public Safety Management* team follows a standardized approach to conducting analyses of police and other departments involved in providing safety services to the public. We have developed this standardized approach by combining the experience sets of dozens of subject matter experts who provide critical roles in data and operations assessments in the areas of police, fire, and EMS. Our collective team has more than a combined 100 years of conducting such studies for cities in the United States and internationally.

We begin most projects by extracting calls for service and raw data from an agency's computer aided dispatch system. The data are sorted and analyzed for comparison to nationally developed performance indicators. These performance indicators (response times, workload by time, multiple unit dispatching) are valuable measures of agency performance regardless of departmental size. The findings are shown in tabular as well as graphic form and are organized in a logistical format. While most of our documents' structure as well as the categories for performance indicators are standard, the data reported are unique to the cities. Due to the size and complexity of the documents, this method of structuring the findings allows for simple, clean reporting.

We then conduct an operational review alongside the data analysis. Here the performance indicators serve as the basis for those operational reviews. Therefore, and in addition to the standardized reporting process, the review process follows a standardized approach comparable to that of national

accreditation agencies. Prior to any on-site arrival of an ICMA *Public Safety Management team*, we ask agencies to compile a number of key operational documents (e.g., policies and procedures, assets lists, etc.). Most on-site reviews consist of interviews with management and supervisors as well as rank-and-file officers; we also interview city staff.

As a result of any on-site visits and data assessments, our subject matter experts produce observations and recommendations that highlight strengths, weaknesses, opportunities, and threats of all areas under review, including, fire personnel, interviews, research, relevant literature, statutes, regulations, comparative evaluation of fire service industry standards, meetings, and other areas specifically included in a project's scope of work.

We have found that this standardized approach ensures that we measure and observe all of the critical components of a fire agency, which in turn provides substance to benchmark statistics for cities with similar profiles. We are able to do this because we recognize that while agencies may vary in size and challenges, there are basic commonalities and best practices in use throughout the country.

We liken this standardized approach to the manner of the scientific method: we ask questions and request documentation upon project startup; confirm accuracy of information received; deploy operations and data analysis teams on site to research the uniqueness of each environment; perform data modeling and share preliminary findings with each city; assess any inconsistencies reported by client cities; and finally, communicate our results in a formal, written report, and occasionally through an in-person presentation by the project team and other key contributors.

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I. Executive Summary

- Implementation of recommendations made here should result in annual savings of $252,000.
- In addition to the $252,000 of savings mentioned above there is an opportunity for further savings which could result from the recommendations for further research on privatization and the change to three-person staffing.
- After clear direction is established in the relationship between the Steamboat Springs Fire Department and the Rural Fire Protection District, the fire department should develop a strategic plan.
- The leadership of the department should be asked to manage a reduction in overtime expenses.
- Engine companies should begin a program of fire inspections of existing buildings.
- Engine company personnel should be utilized to conduct public education programs for fire and medical issues.
- The city should commit to a program of providing Automatic External Defibrillators throughout the community, including in police cars.
- The department should reduce the number of personnel on duty from 8 p.m. to 8 a.m. through the use of some 12-hour shifts to save an estimated $156,000 per year.
- The department should utilize part-time firefighters in addition to full-time staff so as to reduce costs and increase flexibility. (This will provide an estimated annual savings of $96,000.)
- The city should undertake further research on a change from mandatory four-person staffing of fire apparatus at the mountain station to three-person staffing.

- It is recommended that the current governance arrangement be continued, but modified in order to address existing concerns of both the city and the district.
- It is recommended that the present service delivery method of a single integrated department be continued, but with the implementation of the nontraditional staffing recommendations found elsewhere in the report.
- Further research should be conducted on the possibility of privatizing either the EMS function or the entire department.
- A revised funding arrangement is proposed which keeps city funding at current levels while property taxes are increased in the district. This will fund expanded service provided outside the city limits.

II. Operational Analysis

A. Governance and Administration

Steamboat Springs Fire Rescue operates as a department of the city; the department was established by city ordinance. It operates with a fire chief as the director of the department; he reports to the city manager in a council-manager government. There is also an assistant chief - who has historically been in charge of emergency medical services - and a fire marshal. Three lieutenants serve as shift supervisors, one for each of the three platoons.

There is a formal organization chart for the department which reflects the authorized strength of thirty full-time positions and six part-time positions. Steamboat Springs' status as a career department has been in existence a relatively short period of time. The current department was created as a result of the merger of the emergency medical services function – which had been performed by the rural fire district – and the city volunteer fire department.

The fire chief is a career professional, and was most recently the chief of the fire district in Fort Collins, Colorado. He holds a Master's degree, as well as the highly regarded Executive Fire Officer certification from the U.S. Fire Academy. Others in leadership positions in the department have many years of service in the fire/rescue profession. Due to the recent formation of the department, lieutenants and those in lower ranks have relatively short experience in a career department.

Since the arrival of Chief Lindroth the department has been developing policies and procedures for the effective functioning of the department. Great work has been accomplished to date; however, the evolution from a

volunteer department to a career organization continues to be a work in progress.

Steamboat Springs Fire Rescue is unique in that it provides all fire and emergency medical services to both the City of Steamboat Springs and to a significantly larger rural fire district. The Steamboat Springs Rural Fire Protection District is governed by an elected board of trustees, and contracts with the city to provide service. Funding for the district is generated through a property tax levy of slightly more than six mills. The district has the legal authority to levy up to nine mills.

A major portion of this report consists of a review of governance, service delivery, and financing options. Those discussions can be found in Sections J, K, and L.

B. Assessment and Planning

The department has undertaken an informal assessment of risks and hazards in the community. However, the department does not have a formally adopted strategic plan that includes a discussion of vision, mission, values, and strategies. Nor does the department have a long-range plan for vehicle replacements, capital improvements, or other strategic concepts. In large part this lack of formal planning is the result of the ongoing evaluation of the current relationship between the rural fire protection district and the City of Steamboat Springs, a situation that has led to this review.

C. Goals and Objectives

Steamboat Springs Fire Rescue uses the National Fire Protection Association (NFPA) suggested measurement of response time as a primary performance measure for the organization. During calendar year 2010 the average response time by the department for calls within the city limits was 9.6 minutes, which is longer than recommended by the NFPA. The response

time to calls in the rural district is dramatically longer at 19.2 minutes for responses outside the city limits.

The department does not have a system of formal goals and objectives and which holds leadership personnel accountable for achievement of these goals and objectives. Data are collected but it appears that little formal analysis is undertaken.

D. Financial Performance

The department has a budget for fiscal year 2011 of $2.83 million. That amount is slightly less than the previous year's budget. However, overall expenses for fire and emergency medical services have risen significantly since the time when the department was a volunteer department. The projected expenses for FY 2011 are 9.7 percent higher than the FY 2009 budget and there is significant concern that future growth in fire and EMS costs will force cutbacks in other important and popular city services.

Even with the growth in expenses, departmental expenditures appear to be within the norm for similar departments. As with any fire and rescue department, the great bulk of expenses are in personnel services. Therefore, meaningful opportunities for cost containment or cost reductions are most likely to be found in the areas of personnel costs. It does not appear that salaries are excessive, but there are opportunities for savings in the areas of staffing and overtime.

The overtime budget for the combination of scheduled and unscheduled overtime is $177,000 for fiscal Year 2011. The use of overtime should be carefully scrutinized to ensure that no more than the minimum necessary is used. One of the significant overtime expenses is paying time-and-a-half to employees who are working an extra shift or portion of a shift to meet minimum staffing requirements for the department. When minimum staffing

is established for a piece of apparatus and that staffing is met through scheduling off-duty personnel, a significant expense is incurred. The extra expense can be limited with creative staffing approaches and through clear management directives. Another overtime expense is calling in numerous off-duty personnel when there is an actual fire call. The leadership of the department should be held accountable for overtime usage. While some overtime is absolutely unavoidable for situations such as being on a call which extends through a shift change, much overtime usage can be more closely controlled by making such control a departmental priority. This will be discussed in more detail in the Human Resources and Staffing Section later in the report.

E. Physical Resources

The department operates from two stations. The downtown station consists of two buildings, one housing fire apparatus and the other housing rescue (ambulance) equipment and other specialty equipment. The mountain station is located on the eastern side of town near the ski area. The downtown station is staffed with two firefighters on each shift who respond with either ambulance or fire apparatus depending on the nature of the call. The mountain station has an engine staffed with four personnel and a rescue (ambulance) unit staffed with two firefighters on each shift. The mountain station is in good condition, while the two buildings downtown are in only adequate condition. All equipment appears to be well maintained.

F. Programs

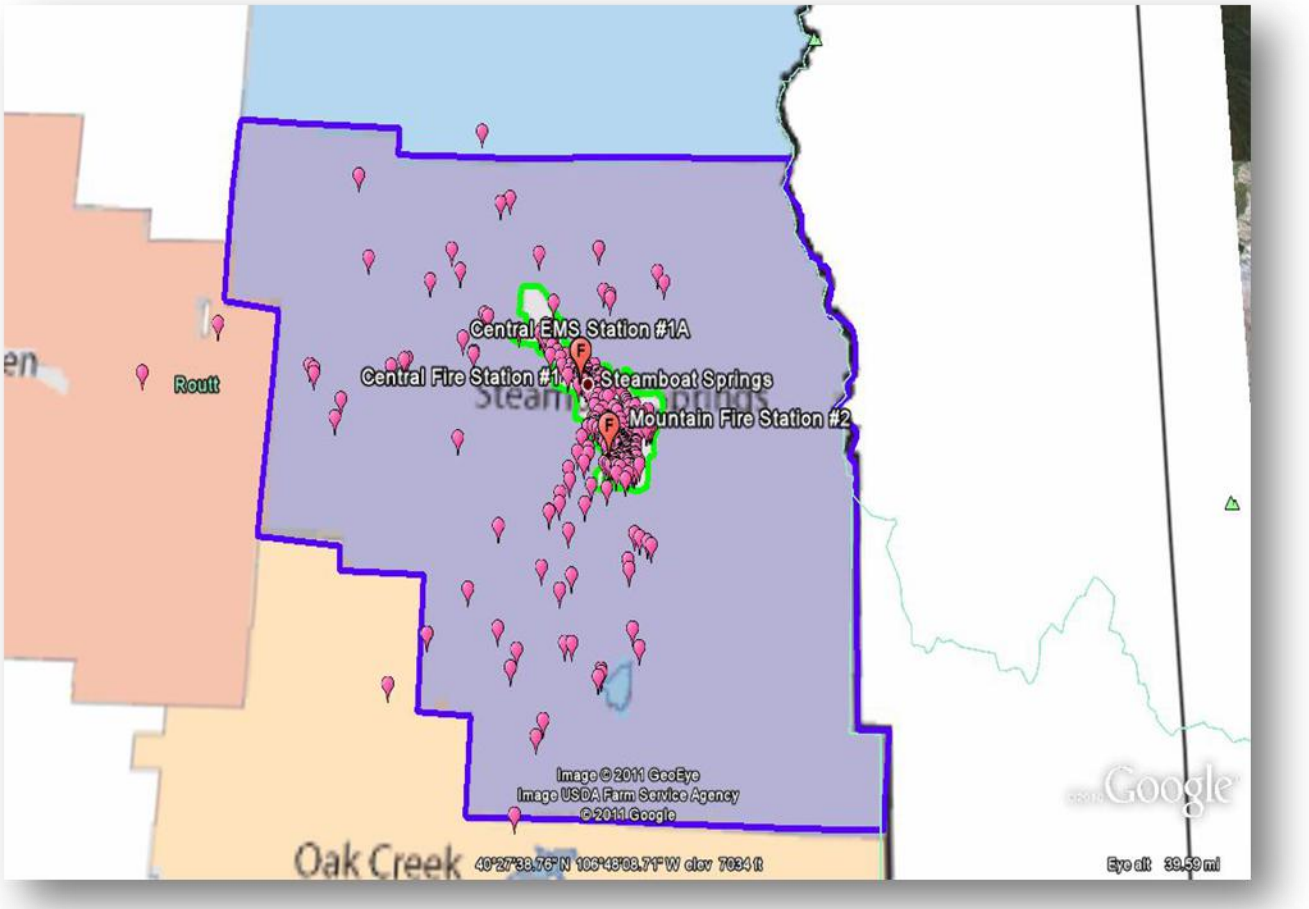
1. Fire suppression

The department has one engine located at the mountain station and it is staffed with a four-person company. The fire apparatus located downtown

has staffing of two firefighters who also respond on a rescue unit when they are dispatched for an emergency medical call.

Of a total of 1,771 calls for service in calendar 2010 only 589 or 33.3percent were responses to fire calls; 985 or 55.6 percent of the calls were emergency medical responses; and the remaining 11.1percent were canceled calls. Of the 589 fire calls, only 18 or 1.5 calls per month were structure fires. Additional data regarding types of calls can be found in Table 1 of the Data Analysis Section of the report. Figures 1, 2, and 3 illustrate the fire call distribution and density respectively within the Steamboat Springs Rural Fire Protection District and the City of Steamboat Springs.

Figure 1. Fire Call Distribution within Steamboat Springs Rural Fire Protection District and City of Steamboat Springs.



*Magenta balloons = single incident and/or multiple calls in cases of overlap.
*Red balloons = fire station locations.

Figure 2. Fire Call Distribution within the City of Steamboat Springs

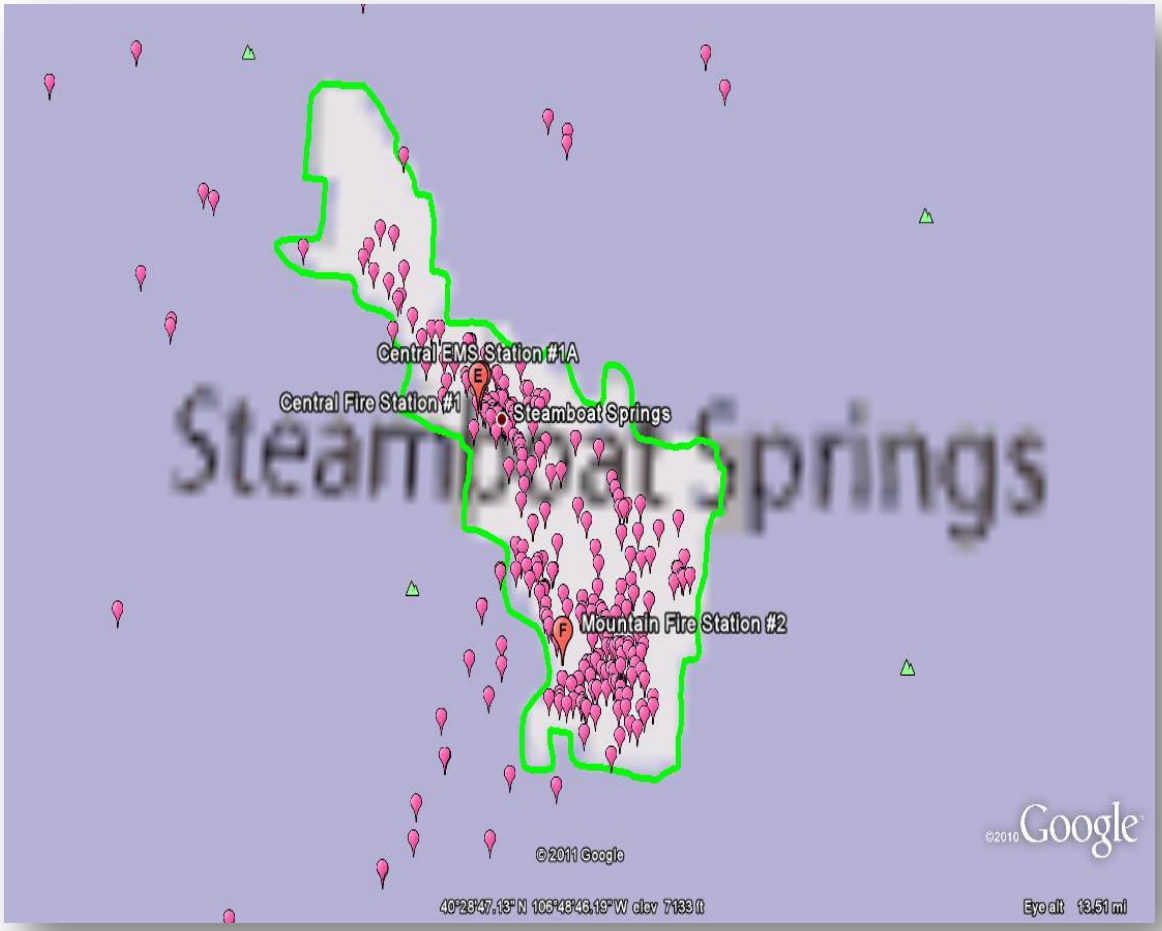
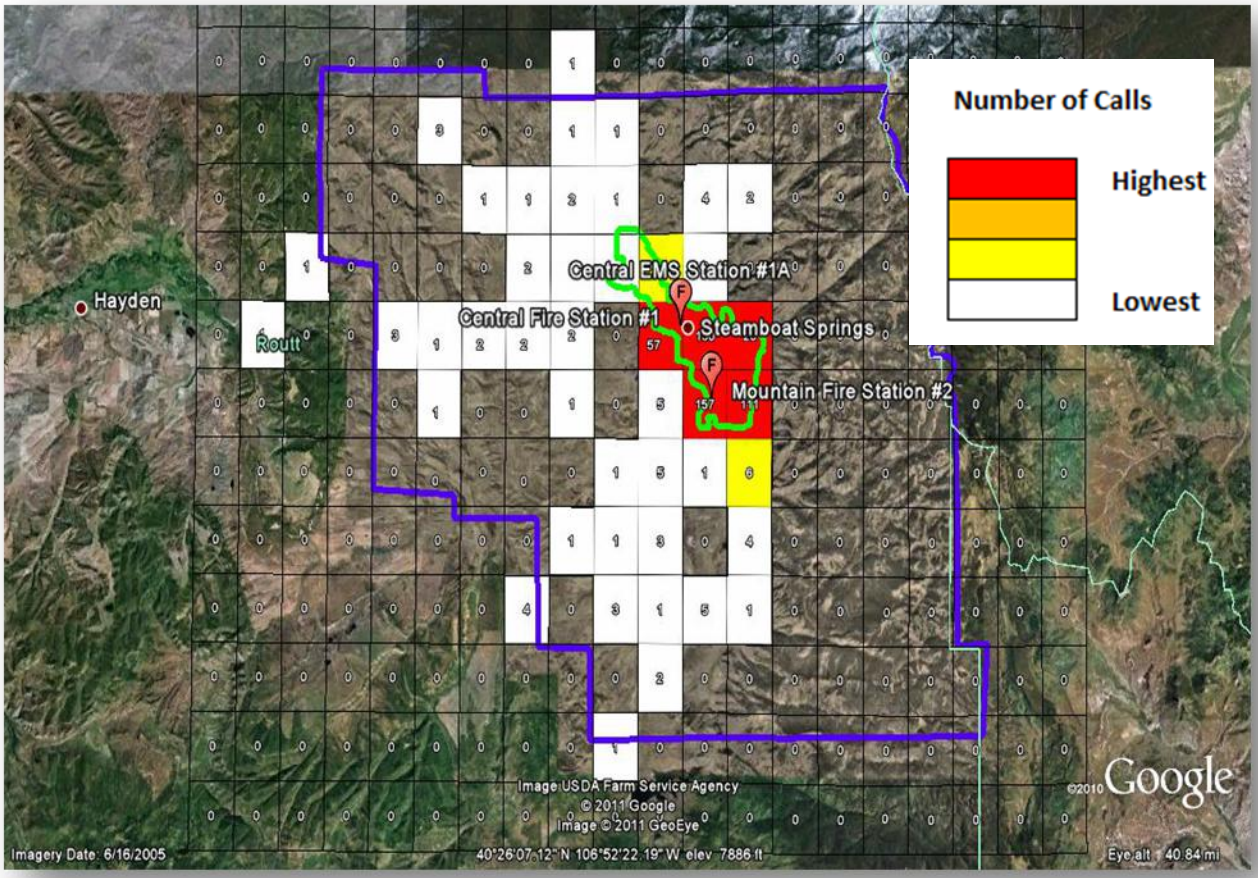


Figure 3. Fire Call Density within Steamboat Springs Rural Fire Protection District and City of Steamboat Springs.



As can be seen in Figure 3, the majority of fire calls within the 50th percentile and above the 75th percentile are within or just outside the city boundaries.

In reviewing the data it is clear that there is adequate firefighting strength for fire calls in the city. Response times for fire calls in the rural district, however, are significantly longer than in the city. It should be noted that the vast majority of fire calls do not involve fires. Runs to actual fires occurred only thirty-six times or about six percent of the total of 589 fire calls last year.

In terms of actual time deployed on calls, the data in Table 7 indicate that the runs in the city averaged 34.6 minutes while runs outside the city averaged more than twice that amount (76.1 minutes). There were, however, roughly twice as many fire runs in the city as outside the city (419 vs. 213).

2. Prevention, public education, and safety

Steamboat Springs Fire Rescue has a fire marshal responsible for inspections. His office has both civilian and uniformed personnel. The department has only a minimal commitment to prevention. Inspections of existing structures are not mandatory. Engine company personnel do not provide inspections of any kind. There appears to be little formal public education programming.

Given the importance of prevention and the relatively small amount of time that engine company personnel are on calls, engine companies should begin a program of inspections of existing structures. The program should begin by offering courtesy inspections to commercial, institutional, and multifamily structures. With additional training, personnel could undertake mandatory inspections for which a fee could be charged, thereby providing an offset to the increasing expenditures in the fire department budget.

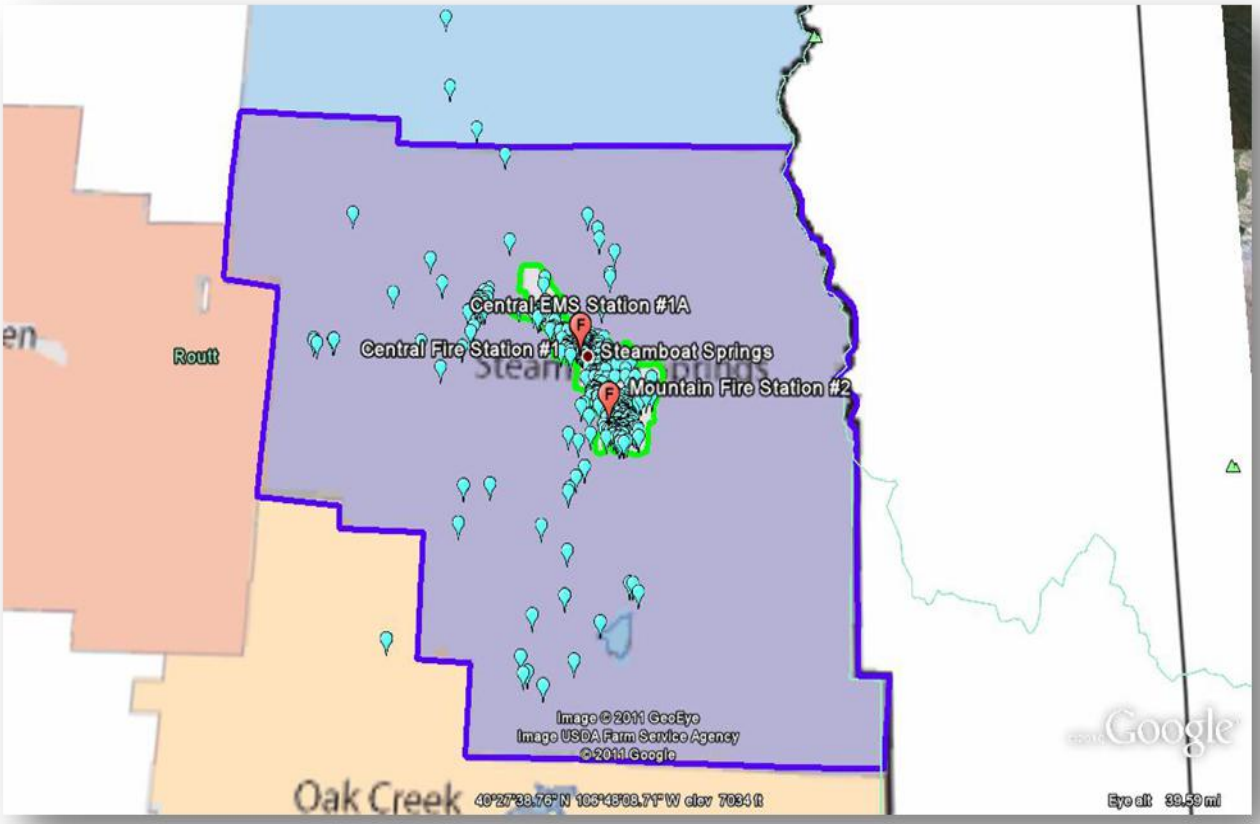
Engine company personnel can also be utilized in an ongoing, scheduled public education program for schools and other organizations. Public education programming need not be limited to fire prevention. It should be possible to include at least a minimal program of medical education on issues such as diabetes, hypertension, heart disease, water safety, and CPR. This expanded educational program can be provided within existing personnel costs and a relatively modest commitment to the purchase of educational materials.

One area of improved service that is relatively easy to implement is to provide for the expanded use of Automated External Defibrillators (AEDs). The department should encourage the location of AEDs throughout the community. The city should commit to a program of providing AEDs in all police vehicles and at all city facilities. Paramedic personnel in the fire department can assist in the training of police and other city personnel.

3. Emergency medical services

The department has two rescue (ambulance) units. One unit is located at the mountain station and is staffed at all times by two firefighters. The second unit is located at the downtown station and staffing is shared with fire apparatus by two firefighters at that station. As stated earlier, 55.6 percent or 985 of the department's total calls were emergency medical responses. Figures 4, 5, and 6 illustrate EMS call distribution and density respectively within the Steamboat Springs Rural Fire Protection District and the City of Steamboat Springs.

Figure 4. EMS Call Distribution within Steamboat Springs Rural Fire Protection District and City of Steamboat Springs.



*Green Balloons = single incident and/or multiple calls in cases of overlap.

*Red balloons = fire station locations

Figure 5. EMS Call Distribution within City of Steamboat Springs

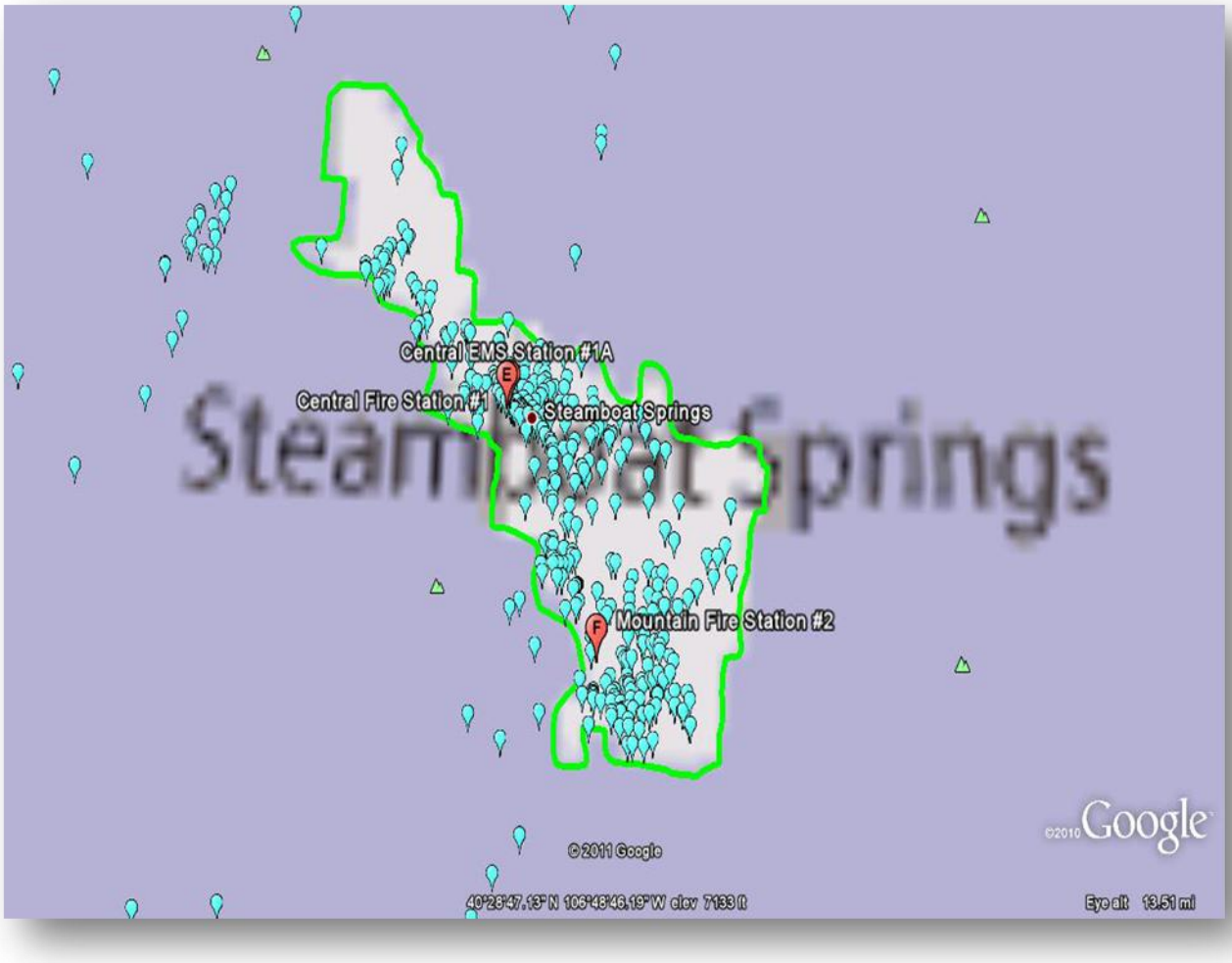
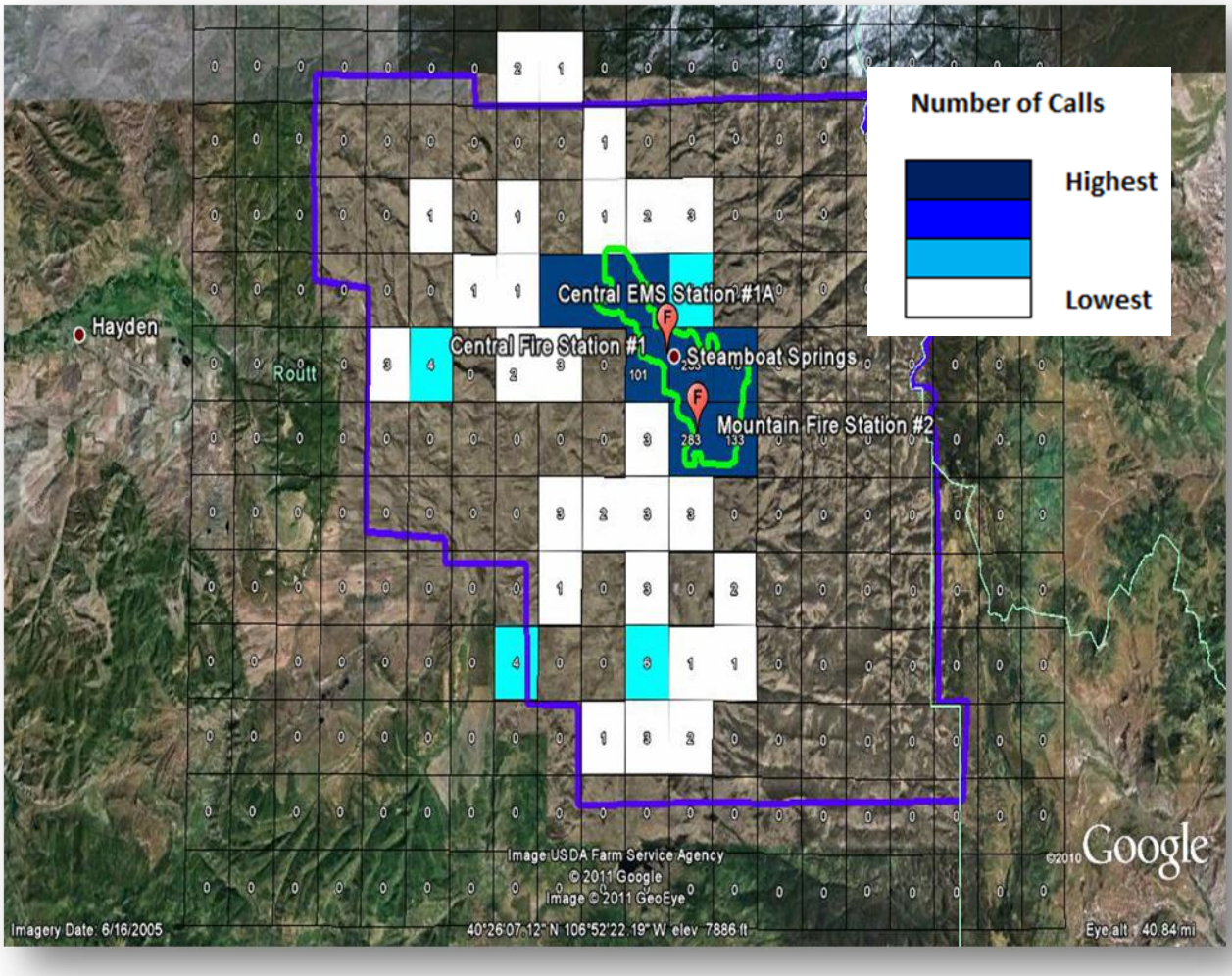


Figure 6. EMS Call Density within City of Steamboat Springs



As can be seen in the above, the majority of EMS calls above the 75th percentile are within or just outside the city boundaries.

In terms of actual time deployed on calls, the data in Table 7 indicate that EMS runs in the city averaged 42.3 minutes, while runs outside the city averaged 60.4 minutes. There were, however, more than three times as many EMS runs in the city as outside the city (1,077 vs. 350).

G. Training Programs

The department has limited training activities, and almost all training takes places as station-based training. The department is handicapped in that paramedic training is only available in Denver. For existing employees, it is a significant commitment of time and energy to move up from the emergency medical technician (EMT) level to the higher paramedic certification.

The fire chief should continue to be creative in making training available to existing personnel. Further training and professional development is an important component of being able to take the department to higher levels of performance.

H. Human Resources and Staffing

The greatest opportunity for cost savings in the department appears to be in the area of staffing of fire apparatus and rescue units. Traditionally, the career fire service has staffed equipment at the same level for all hours of a 24-hour period, no matter what the demand. Steamboat Springs Fire Rescue utilizes 24-hour shifts for all career, full-time suppression and EMS personnel.

However, the Great Recession has forced all local governments to look at other options for staffing their fire departments; including staffing that is based on the demand for service. Some departments have begun to staff based on how many calls for service are expected at different times of the day. For years, law enforcement agencies have recognized a need for greater staffing levels on Friday night at midnight than, for example, on Sunday morning at 10 a.m. and they have staffed accordingly. The opportunity is great to do demand-based staffing in Steamboat Springs.

Figure 4 and Table 3 of the Data Analysis Section of this report show the number of calls by two-hour blocks of time for the average 24-hour period. Using an 8 a.m. to 8 p.m. schedule, it is clear from the data that 69.6 percent of fire calls and 65.2 percent of EMS calls occur during that period. Stated differently, only a third (33.2 percent) of both fire calls and EMS calls are received during the other half of the day from 8 p.m. to 8 a.m.. Further justification for a change of schedule can be found in Figure 6 and Table 9, which identify the busiest times of the day as determined by the number of minutes equipment is in service for each two-hour block of time.

The implication of these data is that staffing could be reduced during the night period and the department would still have a response capability roughly comparable to the daytime period. Therefore, it is suggested that the department establish a staffing arrangement that utilizes only four personnel on duty from 8 p.m. to 8 a.m. at the mountain station. This would remove two employees from minimum staffing during those twelve hours.

It must be noted that it is NOT suggested that either the rescue unit or the engine company be taken out of service, but rather that the remaining employees at the mountain station will respond in the rescue unit if there is an emergency medical call and will staff the fire apparatus if there is a fire call. This is essentially the same arrangement for staffing the different types of equipment as is in place at the downtown station. It may be desirable to increase the number of paramedics in the department to ensure the best response to medical emergencies. It is expected that this change would result in savings of $156,000 per year.

As the department moves to a greater use of 12-hour shifts, it should also consider a significant utilization of part-time rather than full-time firefighters to staff these 12-hour shifts. Part-time employees will provide

significantly greater flexibility in scheduling, and therefore, should result in significantly less scheduling taking place where it is necessary to pay overtime just to meet daily staffing needs.

It should be possible to hire certified firefighters as part-time employees working perhaps two 12-hour shifts per week. It is recommended that all part-time employees meet the same standards as full-time employees and that they be paid the same hourly rate as 24-hour shift personnel. However, they would not receive fringe benefits and the city would, therefore, not have to contribute a percentage of payroll for pension purposes. If the department then recruits full-time personnel from the pool of existing part-time firefighters, there should be an adequate supply of those willing to work in a part-time capacity or a couple years until such time as they can be hired as full-time firefighters. It is estimated that this approach could result in an annual savings of $96,000.

Another consideration for cost saving is the use of three-person staffing on the pumper at the mountain station rather than minimum staffing of four-persons. While staffing with four is the standard recommended by the National Fire Protection Association (NFPA), it must be understood that the standard is a recommendation, not a requirement. By far the great majority of fire departments in the country do not have mandatory four-person staffing.

In fact, recent research conducted by the National Institute of Standards and Technology (NIST) suggests that there is very little difference in the amount of time it takes for a three-person crew to perform the critical fire functions necessary at a fire scene compared to a four-person crew. This staffing and deployment study can be found at www.nist.gov.

There are essentially two different staffing methods used by departments that do not mandate four-person crews. The first approach calls for

assigning four persons to the apparatus and then the department simply relies on only three employees when there is a vacancy due to illness or vacation or for any other reason. The second approach establishes a three-person staffing requirement, and apparatus is never staffed with four employees. There are implications for each staffing approach. Other departments also rely on dispatching additional apparatus to provide staffing at a fire scene so as to provide four employees for an interior attack on a fire. Due to its size there is limited assistance that can be provided from other stations in Steamboat Springs.

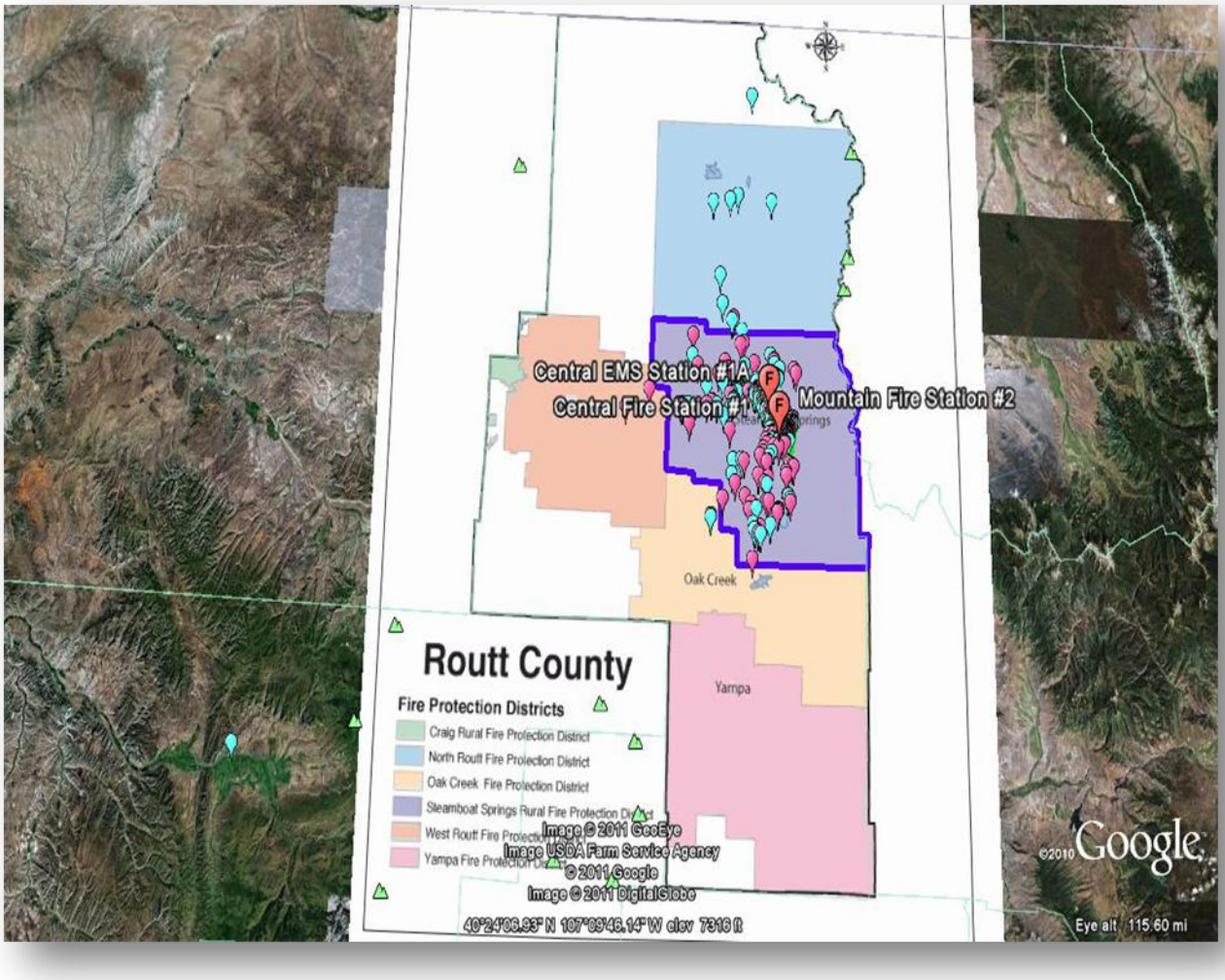
To determine the optimum option, it is suggested that the city undertake further research to determine if either approach is appropriate for the City of Steamboat Springs. Since the outcome of that research is uncertain, we do not identify cost savings her, but there would be significant savings if there were not mandatory four-person staffing.

I. External System Relationships

While the department has mutual aid agreements with surrounding jurisdictions, the great distances involved make mutual aid of limited value to Steamboat Springs. The agreements are, however, important in the event of an extreme emergency situation. The department should continue to explore other opportunities for regional cooperation in areas such as training, which could prove to be mutually beneficial.

Figure 7 shows Steamboat Springs (outlined in blue) and surrounding fire protection districts.

Figure 7. Routt County Fire Protection Districts with Fire and EMS Call Distribution



*Green balloons = EMS call location(s); Magenta balloons = Fire call location(s)

J. Governance Options

We present three options for the future direction of the governance issues surrounding the provision of fire and EMS services to the city and the rural district. After each option a list of pros and cons for that option are offered. Then we provide our recommendation.

1. Status quo

The first option is to continue the status quo of having a contract for services between the city and the rural fire protection district, with the city providing the services.

Pro

- This arrangement appears to have worked generally well for a number of years and service is better than it used to be.
- Having a single provider of service results in economies of scale and the efficiency of integrating fire and EMS services into a single cost-effective organization.

Con

- The city has been concerned that costs are escalating rapidly to meet the needs of service delivery outside the city limits, thus forcing the city to commit a higher level of resources than desired.
- The district believes that it has given up the power or ability to influence its destiny and that the city does not communicate well with its board.
- The district is desirous of expanded service and is unable to secure it.

2. Separation

This second option would eliminate the current agreement and let each jurisdiction be responsible for providing its own fire and rescue services. A mutual aid agreement could be negotiated between the parties to keep some level of benefit resulting from a single provider.

Pro

- The leadership of both the city and the district would have total autonomy to determine what level of service to provide and how to pay for it within their respective jurisdictions.
- This arrangement would fix authority and responsibility so that citizens would know who to contact regarding service and funding issues.

Con

- It is very likely that the city will have to incur close to the same level of expenditures as is currently authorized. The existing staffing, or modified staffing as proposed in this report, would be necessary to continue an adequate service level for both fire protection and emergency medical services. With the loss of the district revenue, net costs for the city will most likely increase.
- For the rural district, costs will likely exceed current contracted amount that is provided to the city in order to match or exceed the service that is provided today. Additional fire and rescue stations would likely need to be built within the district. Given that the geography of the district represents the doughnut, with Steamboat Springs being the doughnut hole, station location would be difficult to establish in a way to keep response times at a minimum.

3. New combined district

This option would establish a new fire protection district by combining the geography of the present rural district and the city limits of Steamboat Springs. The present rural district would be abolished. The new district would be autonomous from the City of Steamboat Springs. It would function much like the preset district except that the board of trustees would be elected by city residents as well as the residents of the former rural district.

Pro

- This option would retain the advantages that are found in the current arrangement of having a single service.

Con

- The city would lose its current control over fire and emergency medical services that are provided to its citizens.
- The district would have to be funded from property taxes, which would be a new levy established on city residents.
- This arrangement could not be established without a referendum, which would likely have some opposition.

Recommendation:

It is recommended that the status quo continue as the method of governance for fire and EMS services. The criticisms that exist of the present arrangement are real, but we believe that with modest changes such as improved communication mechanisms, the great majority of concerns can be resolved within the current governance framework.

K. Service Delivery Options

A number of models could be considered as the primary way to provide fire and EMS services to the City of Steamboat Springs and/or the rural fire protection district. Each of the following six options could be considered either by the city or the district or both. As in the governance discussion above, pros, cons, and a recommendation are provided.

1. Status quo

The first option is to provide fire protection and EMS services through a single integrated department. This is the current arrangement, with the city being the provider.

Pro

- An integrated department is the traditional way to provide high-quality service. The integration of fire and EMS provides for cross-training and greater efficiency than separate departments.
- Most likely to lead to a professional department (industry standard)

Con

- Some have suggested that this option has led to unionization of the functions, resulting in difficulty of managing due to union political power.
- There is pressure to follow national standards (e.g., NFPA), which may be overly expensive.

2. Status quo with nontraditional staffing

This option is the same as Option 1, except it incorporates the staffing recommendation found earlier in this report.

Pro

- Same as (1) above except staffing will be less expensive.

Con

- Some will suggest that not following all national standards compromises service delivery and/or safety.

3. Fire protection services provided by a government department with EMS contracted to a private company

A number of private providers are available to provide EMS services.

Pro

- EMS services can likely be provided at less cost than if provided by a local government

Con

- It is more difficult to integrate fire and emergency medical services when there are two providers, one with a service motive and the other with a profit motive.
- To be successful at saving money in the fire department budget, care must be taken that the EMS provider have staffing adequate so as to provide the first response, eliminating the need to have a fire department response in addition to the EMS provider response. If the fire department continues to staff at previous levels and to respond to EMS calls, there may be no savings.

- Unlike a larger metropolitan area such as Denver, where there a number of private providers of EMS services, it may be difficult to find a provider interested in Steamboat Springs.
- The private company with the EMS contract may also exercise political pressure similar to that of a union.

4. Outsource both fire and EMS functions to a private company

There are a limited number of providers in the country which provide an integrated service for both functions. The Rural Metro Company of Scottsdale, Arizona, is one provider who does offer both services.

Pro

- Both services will likely be provided at less cost than a governmental provider.

Con

- There is a reluctance to turn a major public safety function over to a private company because of a loss of control by the public through its representatives.
- Citizens are less likely to trust having private company employees rather than city public safety employees enter their property at a time of crisis in their lives.

5. Merge the city fire rescue department with the city police department

A new job classification of public safety officer would be established for employees who would be trained in both law enforcement and fire and emergency medical services. This approach is a dramatically different service delivery model that would require considerable research beyond the scope of this study. An ICMA publication that addresses this concept in great detail has been provided to the city. (This option could also be used

by the district to combine district fire and EMS functions with the sheriff if the separation governance model is selected.)

Pro

- Likely to result in the most efficient use of personnel through the integration of all public safety services.

Con

- This arrangement would be difficult to implement if the status quo governance option is adopted due to the complications of merging with a different law enforcement organization outside the city limits.
- All of the public safety functions have become so specialized and technical that it is difficult to find employees in a small market who are proficient at all law enforcement functions as well as all fire and medical emergency functions.
- May receive significant opposition from both police and fire employees.

6. Return to a volunteer fire department and privatize the EMS function

Pro

- Likely to result in the least cost of all options.

Con

- Government loses some control of a privatized function.
- Changing from a career fire department to a volunteer department will result in a significant reduction of service to citizens of both the city and the district.

- The fire hazard in the city, and therefore the potential risk of loss of life and property, is much greater than would normally be protected by a volunteer department.

Recommendation

Option 2 is our recommendation, as we judge it to represent the option that provides the greatest opportunity for high-quality service while addressing cost containment goals. It also represents the least significant change that still provides improvement in cost control. If the city had excessively high costs, or if management authority was severely constrained by burdensome union work rules, we may have recommended a more radical direction for the future. We believe the recommended approach is the best fit for the circumstances that exist in Steamboat Springs at this time. If those circumstances change, other approaches should be considered.

We do believe, however, there is value in conducting further research on privatization to determine if there are companies that are interested in providing service in Steamboat Springs. In that way the city is much more able to keep its options open for the longer term.

L. Financing Options

We offer four options for consideration as the future financing plan for fire and emergency medical services for the City of Steamboat Springs and the Rural Fire Protection District. A similar format is used for the discussion of pros and cons and for offering the recommended course of action.

1. Status quo

This option continues the current arrangement whereby the district levies a property tax of slightly in excess of six mills and provides that funding as payment for services contracted from the city. The city funds the remaining share of the fire department budget through the city general fund, which relies on the resort tax as its primary revenue source.

Pro

- This system represents a known quantity with an acceptable level of citizen support, since it has been in place for many years.

Con

- Reliance on the resort tax exempts large property owners from assisting in the financial burden for the fire service.
- Due to the fact that fire protection is a service provided primarily to property, reliance on the property tax by the city might be a more appropriate revenue source.

2. District continues to levy property tax while the city replaces resort tax funding for fire and EMS with a property tax

Pro

- Property tax is a more appropriate tax.
- Could free up resort tax for other city services

Con

- Citizen opposition is likely unless there is a guarantee of reducing the resort tax or some other revenue by a like amount.

3. City continues same funding, both level and source, while the district levies a higher property tax levy to fund expanded service outside the city limits

Expanded service could include some of the creative approaches proposed by the fire chief, such as resident volunteer stations, volunteer stations, and part-time firefighters. Nontraditional staffing should be the norm, not the exception, for this expanded service.

Pro

- Provides a mechanism for the district to exercise its desire to have a higher level of service than it is currently receiving without placing a financial burden on city residents.
- Would result in improved service in the district, with tangential benefits inside the city as well.

Con

- Would require negotiation of a major modification to the current contract for services.

4. Establish a common property tax level in both the city and the district

This approach would provide property tax funding to both the district and the city to pay each jurisdiction's share of the cost. The same millage rate would be established in each jurisdiction.

Pro

- Might be perceived to be fair and equitable to citizens both inside and outside of the city limits.

Con

- Would generate higher tax revenue in the city.
- Would represent an increase in the financial commitment by the city to fire and EMS services.
- Likely to be strongly opposed by city residents unless there is a guarantee of reducing other taxes by at least a like amount as the property tax revenue.

Recommendation

Option 3 is recommended in that it meets a major concern expressed by the district, with no real downside for the city. In this arrangement the district should be able to contract for a higher level of services uniquely tailored to the need for expanded service as that would be defined by the district. This option will require significant negotiation between the city and the district to ensure equity, but the advantages to all parties should be very attractive.

Draft Data Analysis Report
Fire and Emergency Medical Services
City of Steamboat Springs, Colorado
September 2011

FIRE/EMS OPERATIONS

CENTER FOR PUBLIC SAFETY MANAGEMENT

Submitted by and reply to:
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ICMA
Leaders at the Core of Better Communities

ICMA Background

The International City/County Management Association (ICMA) is the premier local government leadership and management organization. Since 1914, ICMA's mission has been to create excellence in local governance by developing and advocating professional local government management worldwide. ICMA provides an information clearinghouse, technical assistance, training, and professional development to more than 9,000 city, town, and county experts and other individuals throughout the world.

ICMA Center for Public Safety Management

The ICMA Center for Public Safety Management helps communities solve critical problems by providing management support to local governments. Our area of expertise is public safety services, which encompasses the following areas and beyond: organizational development, leadership and ethics, training, assessment of service call workload, staffing requirements analysis, design of standards and hiring guidelines for police and fire chief recruitment, police/fire consolidation, community-oriented policing, and city/county/regional mergers.

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Tables

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Introduction

The city of Steamboat Springs's Fire Department regularly staffs eight full-time firefighters in two stations. In the mountain station, an engine is staffed with four firefighters and an ambulance is staffed with two firefighters. In the downtown station, an ambulance or fire equipment (engine, ladder truck, brush truck) is staffed with two firefighters.

Our data analysis is divided into five sections. The first section focuses on call types and dispatches. The second section explores the workload of individual units. The third section presents response time analysis.

The data in this report cover all service calls between January 1, 2010, and December 31, 2010. During this period, Steamboat Springs's Fire Department received 1,574 fire and emergency medical service (EMS) calls and 197 canceled calls. A total of 2,942 Steamboat Springs units were dispatched to calls during this period. This number is higher than the total number of calls because multiple units often respond to calls. The total combined yearly workload (also called deployed time or busy time) for all units was 2,146 hours. Last, for calls within the city and not supporting the police department, the average total response time was 9.3 minutes for EMS category calls, 8.8 minutes for structure fire calls, and 9.4 minutes for outside fire calls. Please note that the data in the tables (e.g., percentages or daily average statistics) may not add up to expected totals due to rounding.

I. Aggregate Call Totals, Dispatches, and Deployed Time

During the year studied, the city of Steamboat Springs's Fire Department received 1,771 calls. There were 18 structure fire calls and 18 outside fire calls. We categorized calls based on the NFIRS call type code. NFIRS clearly identifies cancelled calls.

Table 1. Calls by Type

Call Type	Number of Calls	Calls per Day	Call Percentage
EMS Other	934	2.6	52.7
MVA	51	0.1	2.9
EMS Total	**985**	**2.7**	**55.6**
Structure Fire	18	0.0	1.0
Outside Fire	18	0.0	1.0
Hazard	84	0.2	4.7
Alarm	397	1.1	22.4
Good Intent	36	0.1	2.0
Standby	36	0.1	2.0
Fire Total	**589**	**1.6**	**33.3**
Canceled	197	0.5	11.1
Total	**1,771**	**4.9**	**100.0**

Observations:

- The Fire Department responded to 1,771 calls, including 197 canceled, averaging 4.9 calls per day.
- EMS calls for the year totaled 985 (55.6 percent of all calls), or about 2.7 per day.
- Fire category calls for the year totaled 589 (33.3 percent of all calls), or about 1.6 per day.
- Structure and outside fire calls combined for the year totaled 36.

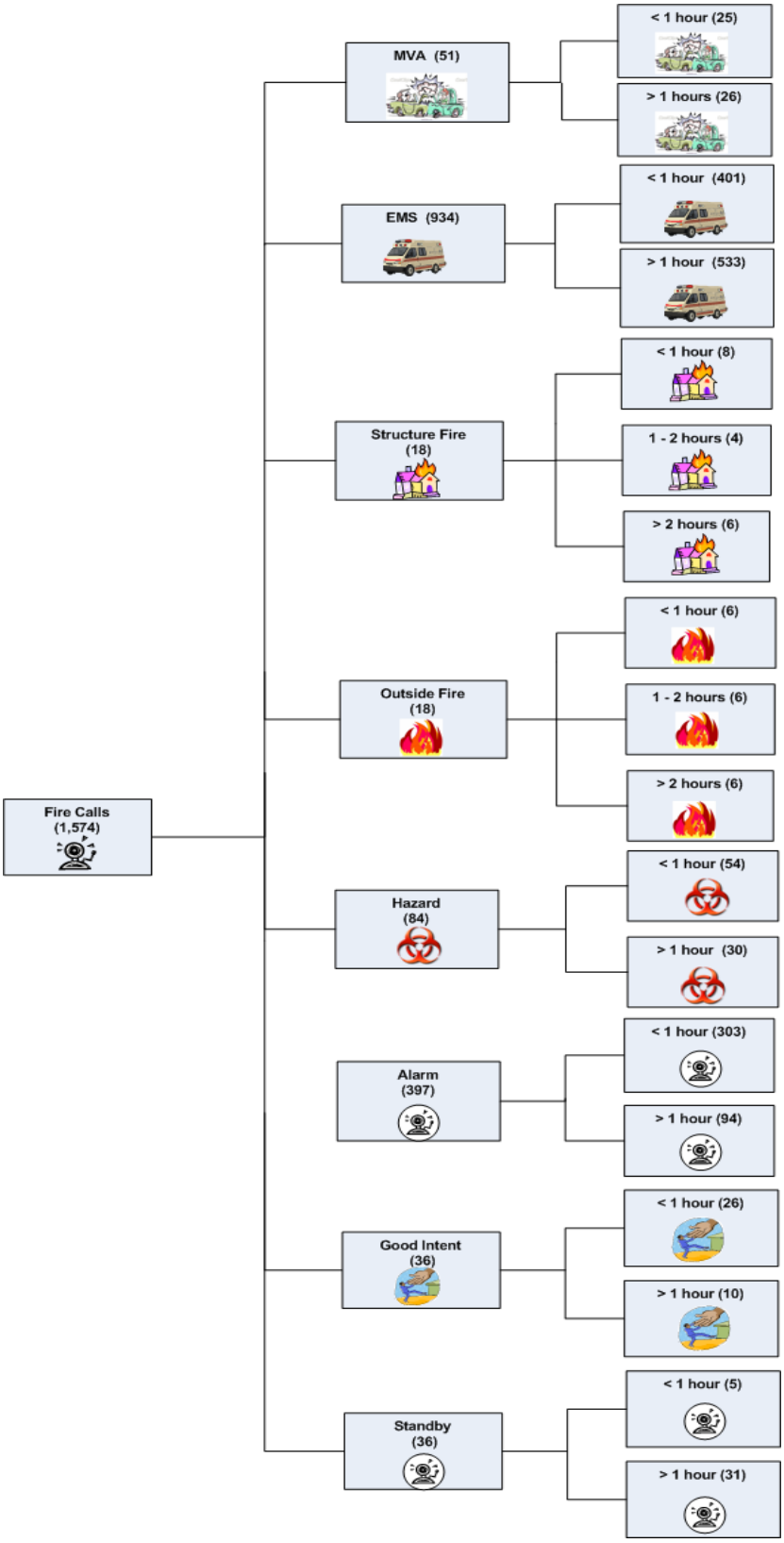
Table 2. Calls by Type and Map Area

Map	EMS	Structure and Outside Fire	Fire Other	Canceled	Total	Call Percentage
1 Downtown	200	6	127	19	352	19.9
2 Fish	88	0	42	25	155	8.8
3 East	32	0	9	0	41	2.3
4 Mountain	265	8	256	73	602	34.0
4A Ski	148	0	3	0	151	8.5
5 West of City	68	2	18	4	92	5.2
6 Fair	10	0	3	0	13	0.7
Within the City	**811**	**16**	**458**	**121**	**1,406**	**79.4**
7 South	54	6	54	41	155	8.8
8 West of County	61	10	20	10	101	5.7
9 North	22	2	18	13	55	3.1
10 Rabbit	20	1	2	11	34	1.9
11 Mutual	17	1	1	1	20	1.1
Outside the City	**174**	**20**	**95**	**76**	**365**	**20.6**

Observations:

- Within the city, the Mountain area received the most calls, which had 34 percent of total calls, followed by the Downtown area, which had 20 percent of calls received.
- A total of 365 calls (20.6 percent) occurred outside of the city in the larger fire rescue area. The most fire calls were in the Southern portion of the county's rescue area followed by the Western portion. The most medical calls were in the Western portion of the county's rescue area followed by the Southern portion.
- A total of 16 structure and outside fire calls occurred within the city limits and 20 occurred outside the city limits.

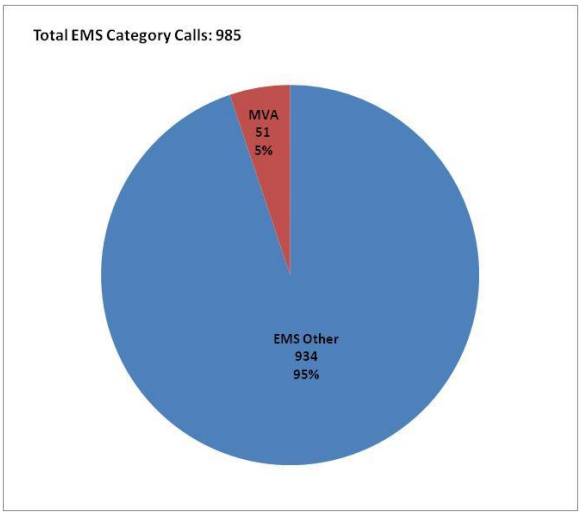
Figure 1. Calls by Type and Duration

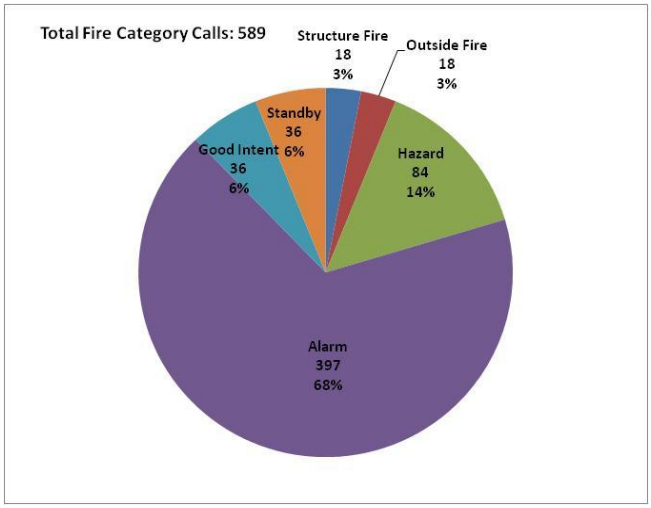


Observations:

- A total of 426 EMS calls (43 percent) lasted less than one hour; 505 EMS calls (51 percent) lasted between one and two hours; and 54 EMS calls (5 percent) lasted more than two hours. On average, one-and-a-half EMS category calls per day lasted more than an hour.
- Out of 18 structure fire calls, four (22 percent) lasted between one and two hours; six (33 percent) lasted more than two hours; and eight (44 percent) lasted less than one hour.
- Out of 18 outside fire calls, six (33 percent) lasted between one and two hours; six (33 percent) lasted more than two hours; and six (33 percent) lasted less than one hour.
- Overall, the fire department handled 746 calls (47 percent) that lasted more than one hour and averaged about two long calls per day.

Figure 2. EMS and Fire Calls by Type

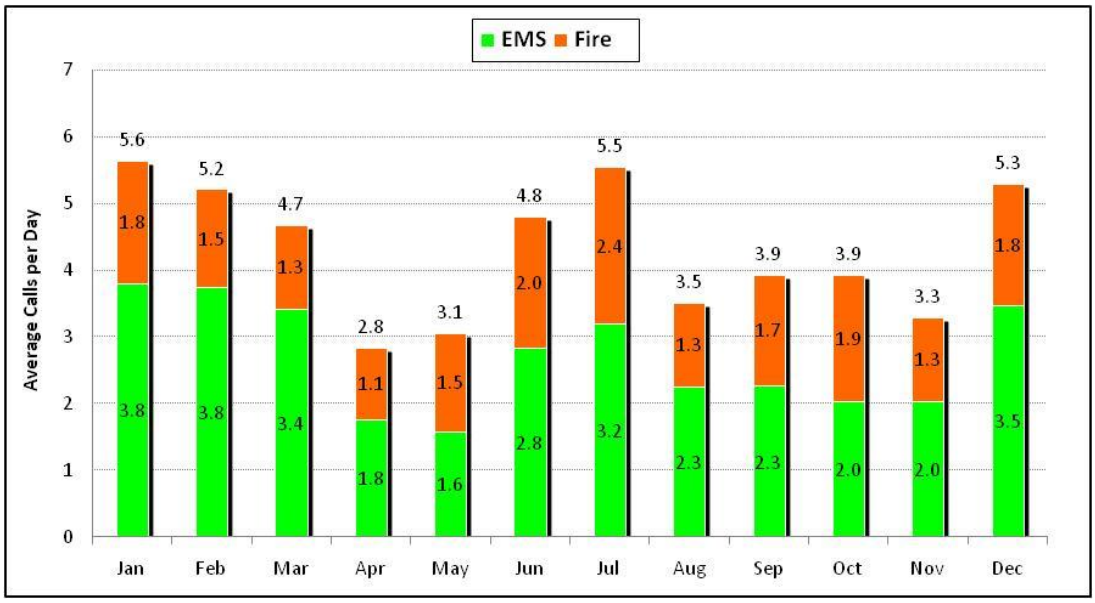




Observations:

- A total of 36 structure fire and outside fire calls accounted for 6 percent of the fire category total.
- Alarm calls accounted for 68 percent of the fire category calls.
- Hazardous condition calls accounted for 14 percent of the fire category total.
- Good intent calls accounted for 6 percent of the fire category total.
- Standby calls accounted for 6 percent of the fire category total.
- A total of 51 motor vehicle accident calls accounted for 5 percent of the EMS category total.
- EMS other calls accounted for 95 percent of the EMS category total.

Figure 3. Average Calls per Day by Month



Observations:

- Average calls per day ranged from a low of 2.8 calls per day in April 2010 to a high of 5.6 calls per day in January 2010. The highest monthly average was 100 percent greater than the lowest monthly average.
- In January, a total of 60 and 47 calls occurred in the Mountain and Ski map areas respectively. In April, 26 and five calls occurred in Mountain and Ski map areas respectively.
- Average EMS calls per day varied from a low of 1.6 calls per day in May 2010 to a high of 3.8 calls per day in January and February 2010.
- Average fire category calls per day varied from a low of 1.1 calls per day in April 2010 to a high of 2.4 calls per day in July 2010.

Figure 4. Calls by Hour of Day

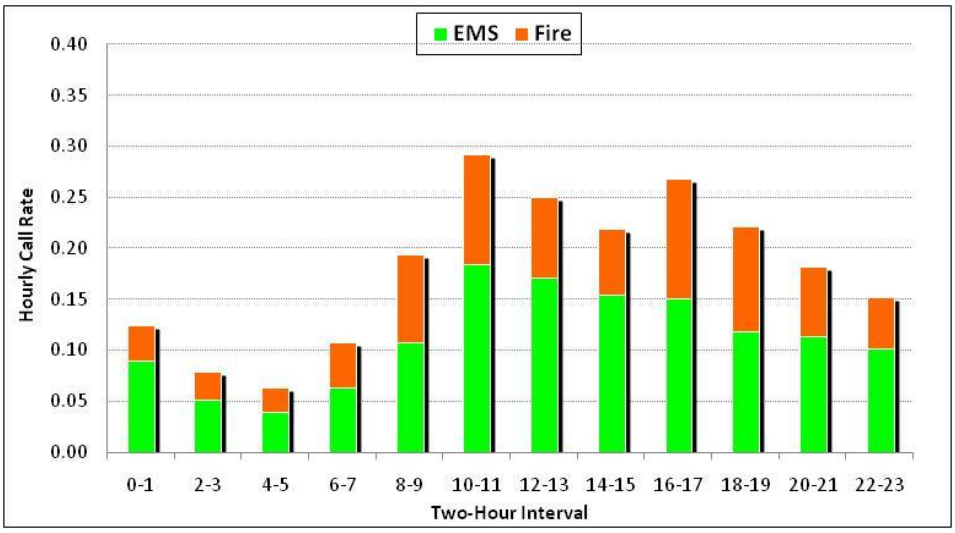


Table 3. Calls by Hour of Day

Two-Hour Interval	Hourly Call Rate		
	EMS	Fire	Total
0-1	0.09	0.03	0.12
2-3	0.05	0.03	0.08
4-5	0.04	0.02	0.06
6-7	0.06	0.05	0.11
8-9	0.11	0.09	0.19
10-11	0.18	0.11	0.29
12-13	0.17	0.08	0.25
14-15	0.15	0.06	0.22
16-17	0.15	0.12	0.27
18-19	0.12	0.10	0.22
20-21	0.11	0.07	0.18
22-23	0.10	0.05	0.15
Calls per Day	**2.70**	**1.61**	**4.31**

Note: Average calls per day shown are the sum of each row multiplied by two, since each row represents two hours.

Observations:

- Hourly call rates were highest between 10 a.m. and 8 p.m., averaging between 0.22 and 0.29 calls per hour, which is about one call every three to 5 hours.
- Call rates were lowest between 2 a.m. and 8 a.m., averaging fewer than 0.12 calls per hour, which is about one call every eight hours.

Figure 5. Number of Units Dispatched to Calls

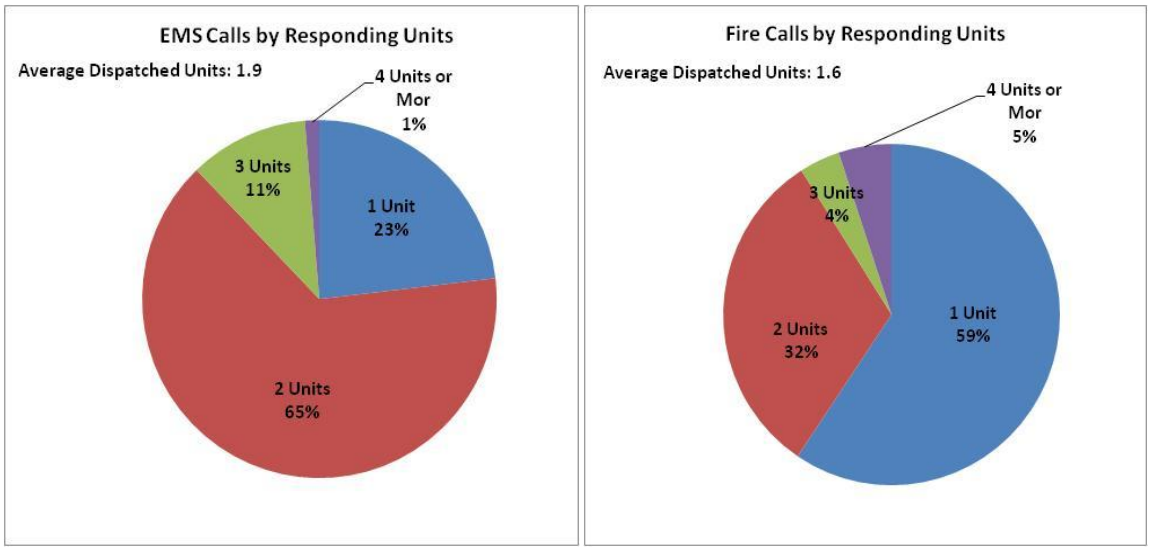


Table 4. Number of Units Dispatched to Calls

Call Type	Unit				Total
	One	Two	Three	Four or More	
EMS Other	225	614	89	6	934
MVA	3	23	18	7	51
EMS Total	**228**	**637**	**107**	**13**	**985**
Structure Fire		2	3	13	18
Outside Fire	4	5	6	3	18
Hazard	32	36	3	13	84
Alarm	268	124	4	1	397
Good Intent	13	16	7		36
Standby	33	3			36
Fire Total	**350**	**186**	**23**	**30**	**589**
Grand Total	**578**	**823**	**130**	**43**	**1,574**
Percentage	**36.7**	**52.3**	**8.3**	**2.7**	**100**

Observations:

- The department regularly staffs one engine and one ambulance with six firefighters at the mountain station, and one ambulance with two firefighters at the downtown station.
- Overall, three or more units were dispatched to 11 percent of calls.
- On average, 1.9 units were dispatched per EMS call.
- For EMS calls, one unit was dispatched 23 percent of the time; two units were dispatched 65 percent of the time; and three or more units were dispatched 12 percent of the time.
- On average, 1.6 units were dispatched per fire category call.
- For fire category calls, one unit was dispatched 59 percent of the time; two units were dispatched 32 percent of the time; and three or more units were dispatched 9 percent of the time.
- For structure fire calls, four or more units were dispatched most often, which is 72 percent of the time; three units were dispatched 17 percent of the time; and two units were dispatched 11 percent of the time.
- For outside fire calls, one unit was dispatched 22 percent of the time; two units were dispatched 28 percent of the time; three units were dispatched 33 percent of the time; and four or more units were dispatched 17 percent of the time.

Table 5. Frequency Distribution of the Number of Calls in an Hour

Number of Calls in an Hour	Frequency	Percentage
0	7369	84.12%
1	1227	14.01%
2	148	1.69%
3	13	0.15%
4	3	0.03%

Observations:

- During 16 hours (0.18 percent of all hours) in the year, three or four calls occurred. In other words, approximately once every 23 days, the fire department responded to three or four calls in an hour.
- During 148 hours (1.69 percent of all hours) in the year, two calls occurred. In other words, approximately once every 2.5 days, the fire department responded to two calls in an hour.

Table 6. Annual Deployed Time by Call Type

Call Type	Average Busy Minutes per Run	Annual Busy Hours	Percent of Busy Hours	Busy Minutes per Day	Number of Runs	Runs per Day
EMS Other	44.7	1,299	60.6	214	1,744	4.8
MVA	57.5	128	5.9	21	133	0.4
EMS Total	**45.6**	**1,427**	**66.5**	**235**	**1,877**	**5.1**
Structure Fire	89.7	129	6.0	21	86	0.2
Outside Fire	94.5	71	3.3	12	45	0.1
Hazard	31.5	90	4.2	15	173	0.5
Alarm	27.6	244	11.4	40	533	1.5
Good Intent	25.6	28	1.3	5	66	0.2
Standby	193.3	126	5.9	21	39	0.1
Fire Total	**43.9**	**688**	**32.0**	**113**	**942**	**2.6**
Canceled	15.3	31	1.5	5	123	0.3
Total	**43.8**	**2,146**	**100.0**	**353**	**2,942**	**8.1**

Observations:

- Total deployed time for the year, or annual busy hours, was 2,146 hours.
- There were a total of 2,942 runs, averaging 8.1 runs per day.
- Fire category calls accounted for 32.0 percent of the total workload.
- There were a total of 131 runs for structure and outside fire calls, with a total workload of 200 hours. This accounted for 9.3 percent of the total workload. The average busy time for structure fire calls was 89.7 minutes, and the average busy time for outside fire calls was 94.5 minutes.
- EMS calls accounted for 66.5 percent of the total workload. The average busy time for EMS calls was 45.6 minutes.

Table 7. Annual Deployed Time by Call Type and Map Areas

Call Type	Within the City			Outside the City		
	Average Busy Minutes per Run	Annual Busy Hours	Number of Runs	Average Busy Minutes per Run	Annual Busy Hours	Number of Runs
EMS	42.4	1,035	1,465	56.9	264	279
MVA	39.3	42	64	74.5	86	69
EMS Total	**42.3**	**1,077**	**1,529**	**60.4**	**350**	**348**
Structure Fire	69.3	50	43	110.1	79	43
Outside Fire	24.3	8	20	150.6	63	25
Hazard	30.7	74	144	35.7	17	29
Alarm	24.4	181	448	44.4	63	85
Good Intent	23.6	17	44	29.8	11	22
Standby	177.7	89	30	245.2	37	9
Fire Total	**34.6**	**419**	**729**	**76.1**	**269**	**213**
Canceled	10.2	10	61	20.3	21	62
Total	**39.0**	**1,506**	**2,319**	**61.7**	**640**	**623**

Observations:

- Total deployed time for the year, or annual busy hours, was 1,506 hours (70.2 percent) for calls within the city.
- There were a total of 2,319 runs (78.9 percent) for calls within the city, averaging 6.4 runs per day.
- Total deployed time for the year was 640 hours (29.8 percent) for calls outside the city.
- There were a total of 623 runs (21.1 percent) for calls outside the city, averaging 1.7 runs per day.
- The average busy minutes for EMS calls within the city was 42.3 minutes. It was 60.4 minutes for EMS calls outside the city.
- The average busy minutes for fire category calls within the city was 34.6 minutes. It was 76.1 minutes for EMS calls outside the city.

II. Workload by Individual Unit— Calls and Total Time Spent

In this section we look at the actual time spent by each unit on every call. We report two types of statistics: workload and runs. Canceled calls are not included. After the introductory table, we present run data and workload data for every unit, as well as the daily average for the engine and ambulance units.

Table 8. Call Workload by Unit and Station

Station	Unit Type	Unit ID	Average Busy Minutes per Run	Number of Runs	Runs per Day	Busy Minutes per Day	Annual Busy Hours
Central	Ambulance	AM62	64.4	305	0.8	53.8	327
	Ambulance	AM63	47.8	419	1.1	54.8	334
	Engine	EN62	52.0	167	0.5	23.8	145
	Fire Prevention Car	F60	85.0	45	0.1	10.5	64
Mountain	Ambulance	AM61	44.7	331	0.9	40.4	246
	Ambulance	AM64	44.1	356	1.0	43.0	262
	Engine	EN63	37.1	1,196	3.3	121.3	738

Note: Engine unit EN61 had 20 runs and was combined into EN62. Brush truck BR62 had three runs and was combined into engine EN62. Ladder truck TR61 had seven runs and was combined into engine EN62. Tanker unit TE61 had 13 runs and was combined into EN62.

Engine unit EN64 had six runs and was combined into EN63. Brush truck BR64 had 17 runs and was combined into EN63. Ladder truck TR62 had 27 runs and was combined into EN63.

All fire prevention cars are combined as F60.

Observations:

- Ambulance AM62 made 305 runs, averaging 0.8 runs and 53.8 minutes of busy time per day.
- Ambulance AM63 made 419 runs, averaging 1.1 runs and 54.8 minutes of busy time per day.
- Engine EN62 made 167 runs, averaging 0.5 runs and 23.8 minutes of busy time per day.

- Fire prevention cars combined made 45 runs and were busy for 64 hours in a year.
- Ambulance AM61 made 331 runs, averaging 0.9 runs and 40.4 minutes of busy time per day.
- Ambulance AM64 made 356 runs, averaging 1 run and 43.0 minutes of busy time per day.
- Engine EN63 made 1,196 runs, averaging 3.3 runs and two hours and 1.3 minutes of busy time per day.

Figure 6. Busy Minutes by Hour of Day

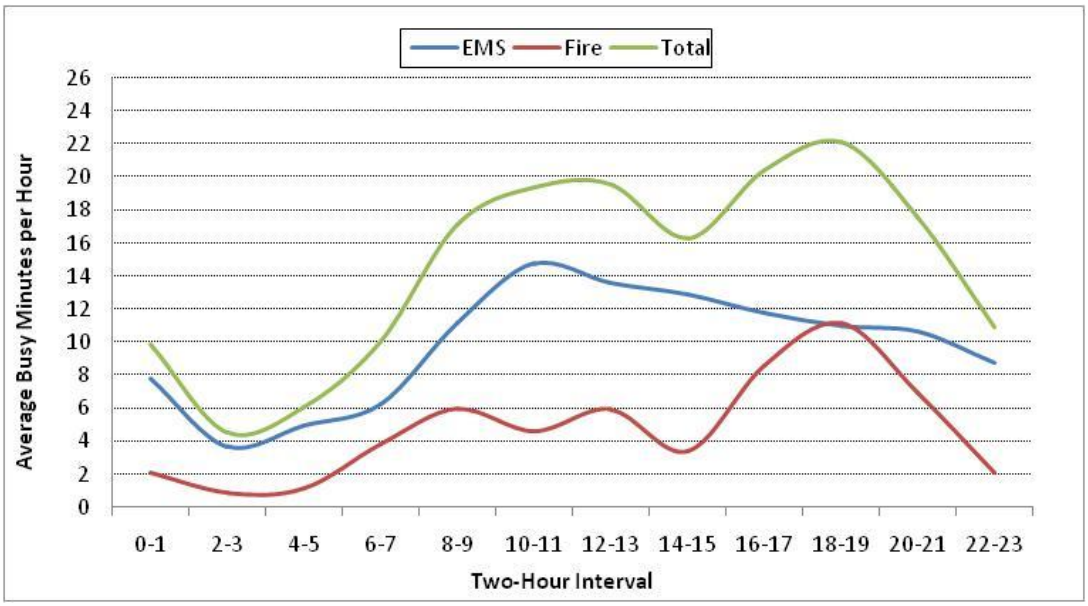


Table 9. Busy Minutes by Hour of Day

Two-Hour Interval	EMS	Fire	Total
0-1	7.8	2.1	9.9
2-3	3.7	0.9	4.5
4-5	4.9	1.1	6.0
6-7	6.2	3.8	10.0
8-9	11.2	6.0	17.1
10-11	14.8	4.6	19.4
12-13	13.6	5.9	19.5
14-15	12.9	3.4	16.3
16-17	11.8	8.6	20.4
18-19	11.0	11.1	22.1
20-21	10.6	6.9	17.6
22-23	8.8	2.1	10.9
Daily Total	234.6	113.0	347.6

Note: Daily totals shown equal the sum of each row multiplied by two, since each row represents two hours.

Observations:

- Hourly busy minutes were the highest between 8 a.m. and 10 p.m., averaging between 17.1 and 22.1 minutes per hour.
- Hourly busy minutes were the lowest between midnight and 8 a.m., averaging less than or equal to 10 minutes per hour.

Table 10. Fire Units: Annual Total and Daily Average Number of Runs by Call Type

Unit	EMS	MVA	**Structure Fire**	**Outside Fire**	Hazard	Alarm	Good Intent	Standby	**Total**	**Runs per Day**
EN62	75	9	**21**	**5**	13	38	4	2	**167**	**0.5**
EN63	640	48	**21**	**24**	83	348	31	1	**1,196**	**3.3**
F60	2	3	**19**	**4**	13	2	2		**45**	**0.1**

Observations:

- EN63 made 1,196 runs during the year, averaging 3.3 runs per day. It was dispatched to calls involving actual fires 45 times during the year.
- EN62 made 167 runs during the year, averaging 0.5 runs per day. It was dispatched to calls involving actual fires 26 times during the year.
- Fire prevention cars made 45 runs during the year. It was dispatched to calls involving actual fires 23 times during the year.

Table 11. Fire Units: Daily Average Deployed Minutes by Call Type

Unit	EMS	MVA	**Structure Fire**	**Outside Fire**	Hazard	Alarm	Good Intent	Standby	**Total**	**Fire Category Calls Percentage**
EN62	7.7	2.7	**5.3**	**2.3**	1.4	3.5	0.2	0.6	**23.8**	**67.6**
EN63	66.9	6.1	**4.8**	**6.9**	7.7	26.2	2.6	0.0	**121.3**	**44.8**
F60	0.2	0.4	**6.3**	**1.8**	1.2	0.5	0.1		**10.5**	**98.1**

Note: The percentage of time spent on fire category calls is the sum of average deployed minutes per day of all non-EMS calls divided by the total deployed minutes per day.

Observations:

- On average, engine EN63 was busy two hours and 1.3 minutes per day. Fire category calls accounted for 44.8 percent of its daily workload.
- On average, engine EN62 was busy 23.8 minutes per day. Fire category calls accounted for 67.6 percent of its daily workload.
- On average, fire prevention cars were busy 10.5 minutes per day. Fire category calls accounted for 98.1 percent of its daily workload.

Table 12. Ambulance Unit: Annual Total and Daily Average Number of Runs by Call Type

Unit	EMS	MVA	Structure and Outside Fire	Fire Other	**Total**	**Runs per Day**
AM62	211	14	8	72	**305**	**0.8**
AM63	311	25	8	75	**419**	**1.1**
AM64	269	18	13	56	**356**	**1.0**
AM61	236	16	8	71	**331**	**0.9**

Observations:

- Ambulances in central station (AM62 and AM63) combined made 724 runs in a year, averaging 2.0 runs per day.
- Ambulances in mountain station (AM61 and AM64) combined made 687 runs in a year, averaging 1.9 runs per day.

Table 13. Ambulance Unit: Daily Average Deployed Minutes by Call Type

Unit	EMS	MVA	Structure and Outside Fire	Fire Other	**Total**	**EMS Calls Percentage**
AM62	30.1	3	1.3	19.4	**53.8**	**61.5**
AM63	42.3	3.3	1.7	7.5	**54.8**	**83.2**
AM64	34.7	3.3	1.2	3.8	**43.0**	**88.4**
AM61	31.8	2.0	1.1	5.5	**40.4**	**83.7**

Observations:

- On average, ambulances in central station (AM62 and AM63) combined were busy for one hour and 48.6 minutes per day. EMS calls accounted for 66.7 percent of its daily workload.
- On average, ambulances in mountain station (AM61 and AM64) combined were busy for one hour and 23.4 minutes per day. EMS calls accounted for 79.7 percent of its daily workload.

III. Dispatch Time and Response Time

In this section we present dispatch and response time statistics for different call types and units. We identified calls initiated by the Police Department and analyzed dispatch time and response time. Excluding calls initiated by police, we analyzed the response time in different areas, and focused on response time analysis for calls that were within the city limits. For structure and outside fire calls, we analyze the response time of the first and second arriving fire vehicles (no ambulance unit) within the city and outside the city.

We use different terms to describe the components of response time.

- *Dispatch processing time* is the difference between the call receipt time at the dispatch center and the unit dispatch time.
- *Turnout time* is the difference between the unit dispatch time and the unit time en route.
- *Travel time* is the difference between the unit time en route and the unit on-scene arrival time.
- *Response time* is the difference between the call receipt time and the unit on-scene arrival time.

During the study period (January 1, 2010, to December 31, 2010), the average dispatch time was 2.4 minutes, the average turnout time was 2.5 minutes, and the average travel time was 4.5 minutes for calls that were not initiated by police and within the city limit. The average response time for EMS calls was 9.3 minutes, and the average response time for structure and outside fire calls was 8.8 and 9.4 minutes respectively.

Table 14. Average Dispatch, Turnout, Travel, and Response Time of First Arriving Unit by Primary Agency

Initiation	Dispatch Time	Turnout Time	Travel Time	Response Time	Number of Calls
Fire / Other	2.6	2.6	6.2	11.4	1,263
Police Department	12.1	2.4	4.1	18.6	113

Observations:

- Police-initiated calls had significantly longer dispatch times since the on-scene police unit only requested an additional fire unit or ambulance as needed.

Table 15. Average Dispatch, Turnout, Travel, and Response Time of First Arriving Unit by Map Area

Map Area	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size
1 Downtown	2.2	2.3	4.2	8.7	232
2 Fish	3.3	2.4	5.0	10.7	108
3 East	1.8	2.1	2.5	6.4	32
4 Mountain	2.3	2.6	4.1	9.0	446
4A Ski	2.4	2.5	6.3	11.2	137
5 West of City	2.8	2.8	8.1	13.7	67
6 Fair	2.4	2.1	4.9	9.3	13
Within the City	**2.4**	**2.5**	**4.7**	**9.6**	**1,035**
7 South	2.2	2.6	11.5	16.4	92
8 West of County	3.3	3.2	13.4	19.9	74
9 North	3.1	2.7	13.0	18.9	34
10 Rabbit	5.6	3.6	14.7	24.0	19
11 Mutual Aid	8.8	3.4	22.3	34.4	9
Outside the City	**3.2**	**2.9**	**13.1**	**19.2**	**228**

Note: Calls with the police department as the primary agency are excluded.

Observations:

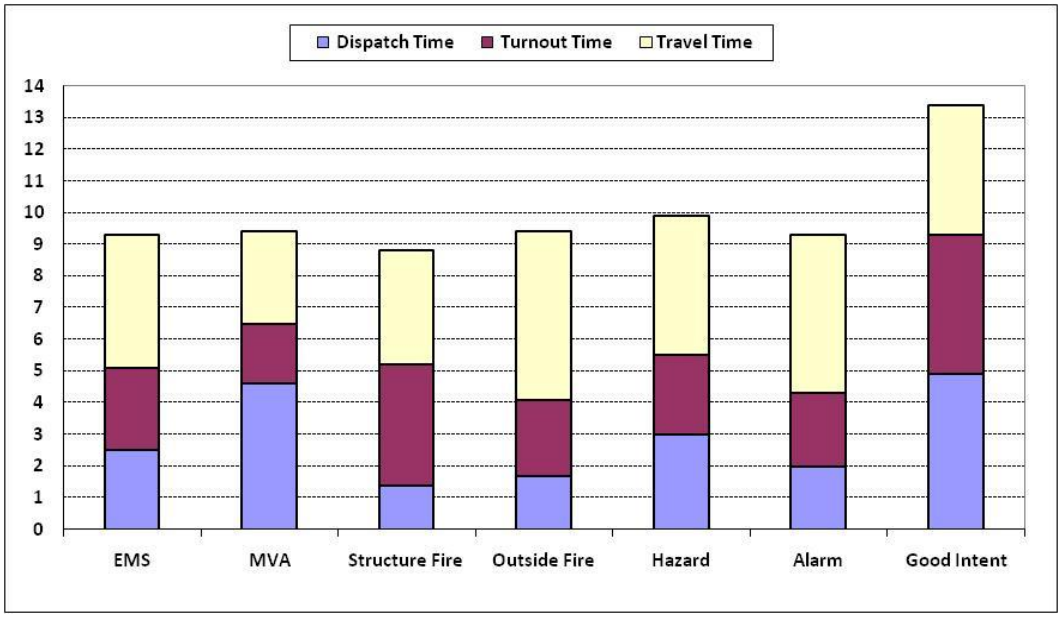
- Calls beyond the city limits, either within the larger fire rescue area or mutual aid calls, showed longer travel times. The average travel time was more than eight minutes longer outside the city limits than within.
- The response time in the Ski map area was 11.2 minutes. In this area, the fire department is rarely the first responder, but focuses mainly on medical transport.
- The response time in the East map area was the shortest, 6.4 minutes.
- Except for areas beyond the city limits, the response time in West map was the longest and averaged 13.7 minutes.
- Response times beyond the city limits averaged 19.2 minutes. This dropped slightly to 18.6 minutes when mutual aid calls are excluded.

The following tables and figures exclude calls handled primarily by the Police Department and focus on response time analysis for calls in the city limits, defined by map areas 1 through 6.

Table 16. Average Dispatch, Turnout, Travel, and Response Time and 90th Percentile Response Time of First Arriving Unit by Call Type

Call Type	Dispatch Time	Turnout Time	Travel Time	Response Time	90th Percentile Response Time	Sample Size
EMS	2.5	2.6	4.2	9.3	13.3	483
MVA	4.6	1.9	2.9	9.5	15.6	21
EMS Total	**2.6**	**2.5**	**4.2**	**9.3**	**13.4**	**504**
Structure Fire	1.4	3.8	3.6	8.8	15.9	9
Outside Fire	1.7	2.4	5.3	9.4	16.2	7
Hazard	3.0	2.5	4.4	9.9	16.3	57
Alarm	2.0	2.3	5.0	9.3	13.1	303
Good Intent	4.9	4.4	4.1	13.3	29.8	18
Fire Total	**2.2**	**2.4**	**4.9**	**9.5**	**14.2**	**394**
Total	**2.4**	**2.5**	**4.5**	**9.4**	**13.8**	**898**

Figure 7. Average Dispatch, Turnout, and Travel Time of First Arriving Unit by Call Type



Observations:

- The average dispatch time was 2.4 minutes. The average dispatch time for EMS calls was 2.6 minutes, which was significantly longer than other call types.
- The average turnout time was 2.5 minutes.
- The average travel time was 4.5 minutes.
- The average response time for EMS category calls was 9.3 minutes and the 90th percentile response time was 13.4 minutes.
- The average response time for fire category calls was 9.5 minutes and the 90th percentile response time was 14.2 minutes.
- The average response times for structure fire and outside fire calls were 8.8 and 9.4 minutes, respectively.

Figure 8. Average Dispatch, Turnout, Travel, and Response Time of First Arriving Unit by Hour of Day

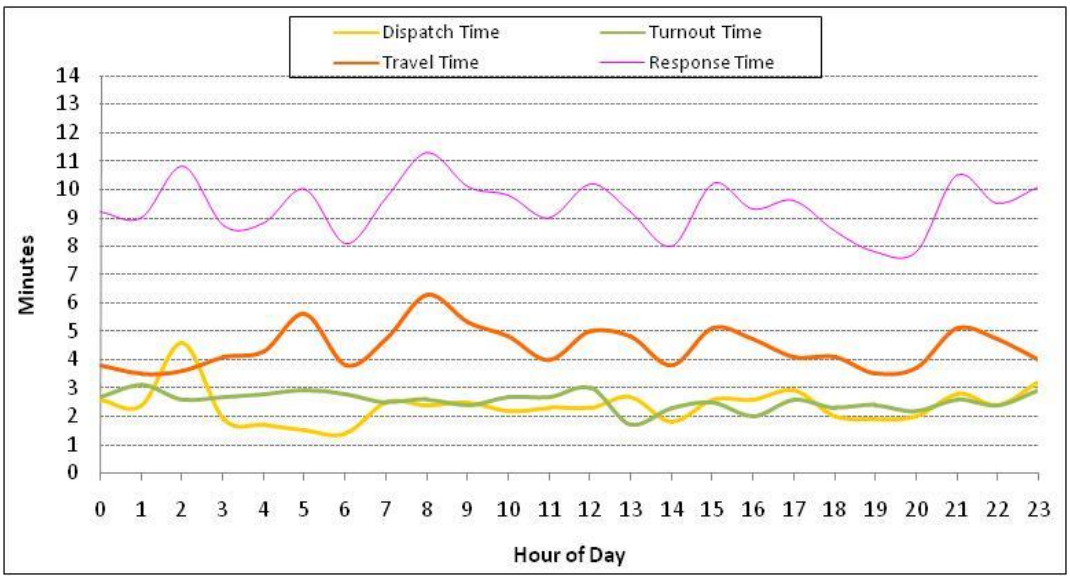


Table 17. Average Dispatch, Turnout, Travel, and Response Time of First Arriving Unit by Hour of Day

Hour	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size
0	2.6	2.7	3.8	9.2	27
1	2.4	3.1	3.5	9.0	22
2	4.6	2.6	3.6	10.8	15
3	1.9	2.7	4.1	8.7	16
4	1.7	2.8	4.3	8.8	13
5	1.5	2.9	5.6	10.0	14
6	1.4	2.8	3.8	8.1	15
7	2.5	2.5	4.7	9.7	33
8	2.4	2.6	6.3	11.3	43
9	2.5	2.4	5.3	10.1	41
10	2.2	2.7	4.8	9.8	53
11	2.3	2.7	4.0	9.0	59
12	2.3	3.0	5.0	10.2	50
13	2.7	1.7	4.8	9.2	46
14	1.8	2.3	3.8	8.0	39
15	2.6	2.5	5.1	10.2	46
16	2.6	2.0	4.7	9.3	65
17	2.9	2.6	4.1	9.6	64
18	2.0	2.3	4.1	8.5	56
19	1.9	2.4	3.5	7.8	36
20	2.0	2.2	3.7	7.8	47
21	2.8	2.6	5.1	10.5	39
22	2.4	2.4	4.7	9.5	30
23	3.2	2.9	4.0	10.1	29
Total	2.4	2.5	4.5	9.4	898

Observations:

- Average dispatch time was usually quite consistent; however, between 2 a.m. and 3 a.m., it averaged 4.6 minutes.
- Average turnout time was between 1.7 and 3.1 minutes. The average turnout time between midnight and 7 a.m. was more than 2.6 minutes.
- Average travel time was between 3.5 and 6.3 minutes.
- Average response time was between 7.8 and 11.3 minutes.

Figure 9. Number of Total Calls by First Arriving Unit

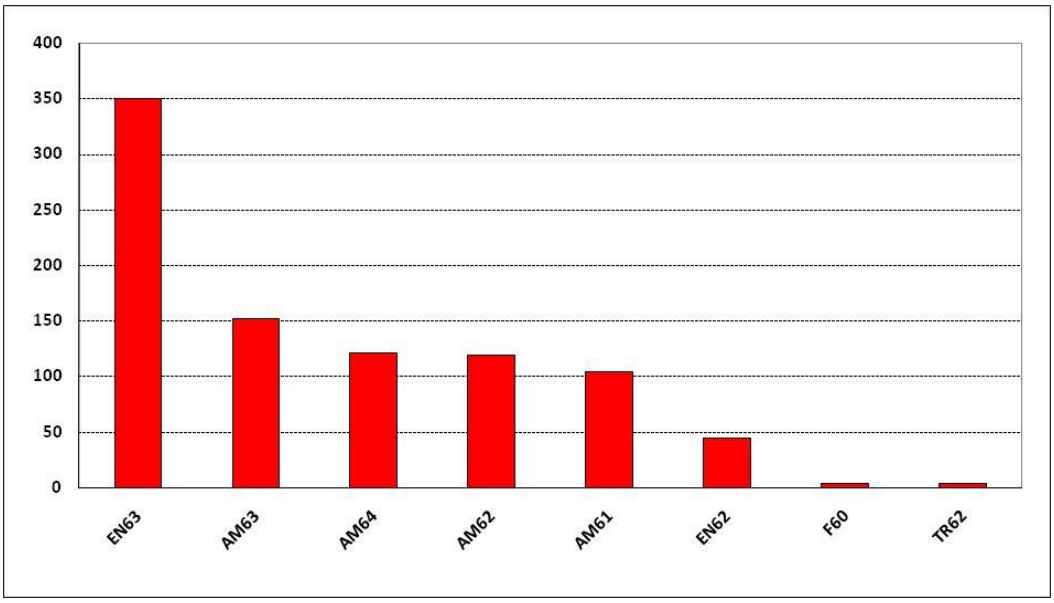


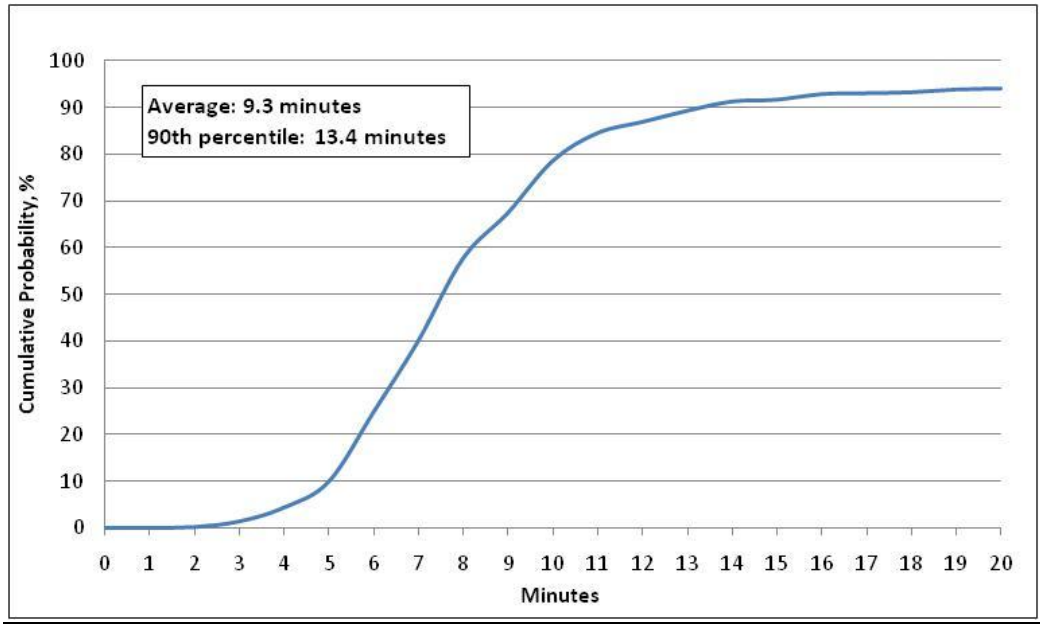
Table 18. Number of Total Calls by First Arriving Unit

Unit	EMS	Structure and Outside Fire	Fire Other	Total	Percentage	Cumulative Percentage
EN63	69	9	272	350	39.0	39.0
AM63	127	1	24	152	16.9	55.9
AM64	105	1	15	121	13.5	69.4
AM62	98	2	19	119	13.3	82.6
AM61	87	1	16	104	11.6	94.2
EN62	15	0	29	44	4.9	99.1
F60	2	1	1	4	0.4	99.6
TR62	1	1	2	4	0.4	100.0

Observations:

- Engine unit EN63 arrived first on scene most often, followed by engine units ambulance units AM63 and AM62. The top three first arriving units accounted for 69.4 percent of the first arrivals at calls.
- For structure and outside fire calls, engine EN63 arrived on scone most often.

Figure 10. Cumulative Distribution Function (CDF) of Response Time of First Arriving Unit for EMS Calls



Reading the CDF Chart

The vertical axis is the probability or percentage of calls. The horizontal axis is response time. For example, with regard to EMS calls, the 90 percent probability line intersects the graph at about 13.3 minutes. This means that units responded in less than 13.3 minutes for 90 percent of EMS calls.

Table 19. Cumulative Distribution Function of Response Time of First Arriving Unit for EMS Calls

Response Time	Frequency	Cumulative Percentage
0 - 1 min.	0	0.0
1 - 2 min.	1	0.2
2 - 3 min.	6	1.4
3 - 4 min.	15	4.4
4 - 5 min.	28	9.9
5 - 6 min.	75	24.8
6 - 7 min.	77	40.1
7 - 8 min.	89	57.7
8 - 9 min.	49	67.5
9 - 10 min.	56	78.6
10 -11 min.	30	84.5
11 - 12 min.	12	86.9
12 - 13 min.	12	89.3
13 - 14 min.	10	91.3
14 - 15 min.	2	91.7
15 - 16 min.	6	92.9
16 - 17 min.	1	93.1
17 - 18 min.	1	93.3
18 - 19 min.	3	93.8
19 - 20 min.	1	94.0
>= 20 min.	30	100.0

Observations:

- The average response time for EMS calls was 10.8 minutes.
- For 90 percent of EMS calls, the response time was less than 13.3 minutes.

Response Time Analysis for Structure and Outside Fire Calls

The following tables and charts report response time analysis of first arriving fire units for structure and outside fire calls. The analysis includes engine, brush, and ladder trucks.

Table 20. Average Response Time for Structure Fire and Outside Fire Calls by First Arriving Fire Unit

First Arriving Unit	Outside Fire				Structure Fire			
	Outside the City		Within the City		Outside the City		Within the City	
	Response Time	Number of Calls	Response Time	Number of Calls	Response Time	Number of Calls	Response Time	Number of Calls
BR64	41.5	2						
EN61			18.4	1			8.0	1
EN62					18.2	1	7.1	1
EN63	33.4	3	8.2	6	20.4	8	9.4	6
TR62							15.9	1

Note: Map areas 1 through 6 are grouped as within the city. Map areas 7 through 11, including mutual aid calls, are grouped as outside the city.

Observations:

- A total of five outside fire calls had no valid unit on-scene arrival time to report response time.
- For structure fire calls, engine EN63 was the first fire unit on scene most often and had the average response time of 9.4 and 20.4 minutes for calls within the city and outside the city respectively.
- For outside fire calls, engine EN63 was the first fire unit on scene most often and had an average response time of 8.2 and 33.4 minutes for calls within the city and outside the city respectively.

Table 21. Average Response Time for Structure Fire and Outside Fire Calls by Second Arriving Fire Unit

Second Arriving Unit	Outside Fire				Structure Fire			
	Outside the City		Within the City		Outside the City		Within the City	
	Response Time	Number of Calls	Response Time	Number of Calls	Response Time	Number of Calls	Response Time	Number of Calls
BR62	71.1	1	10.5	1				
BR64	44.5	1	18.8	1				
EN63	16.2	1					20.2	1
EN64	24.8	1						
TE61					25.2	5		
TR61							11.8	3

Observations:

- For structure fire calls, tanker TE61 was the second unit on scene most often and had an average response time of 25.2 minutes. Ladder truck had the shortest average response time of 11.8 minutes for calls outside the city.
- For outside fire calls, brush trucks (BR62 and BR64) and engines (EN63 and EN64) combined were the second unit on scene six times.

Figure 11. Cumulative Distribution Function of Response Time of First Arriving Fire Unit for Structure and Outside Fire Calls within the City

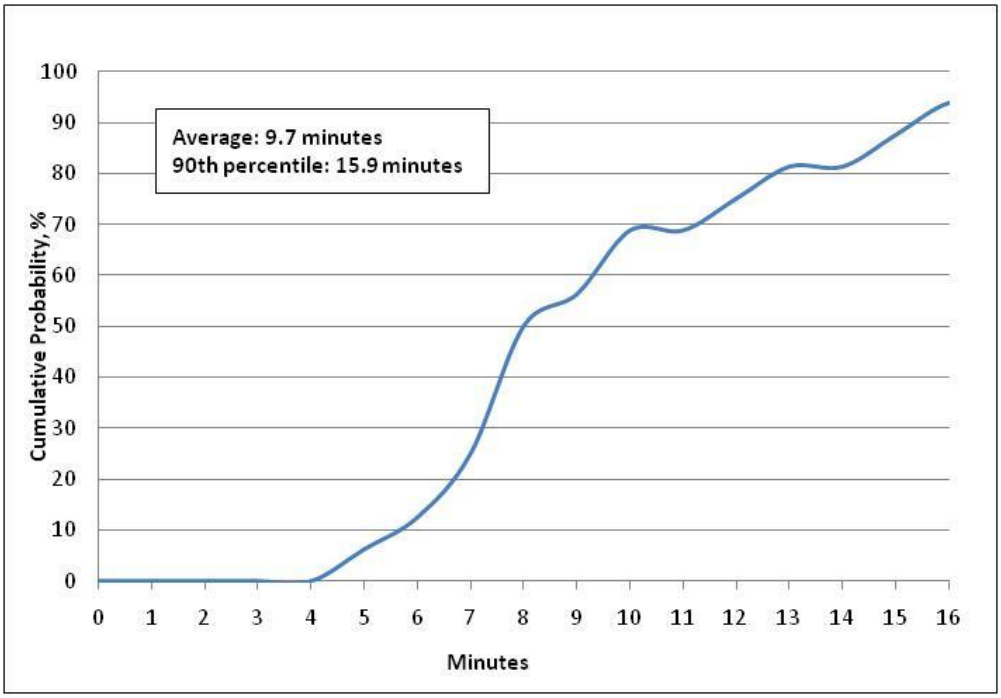


Table 22. Cumulative Distribution Function of Response Time of First Arriving Fire Unit for Structure and Outside Fire Calls within the City

Response Time	Frequency	Cumulative Percent
0 - 1 min.	0	0.0
1 - 2 min.	0	0.0
2 - 3 min.	0	0.0
3 - 4 min.	0	0.0
4 - 5 min.	1	6.3
5 - 6 min.	1	12.5
6 - 7 min.	2	25.0
7 - 8 min.	4	50.0
8 - 9 min.	1	56.3
9 - 10 min.	2	68.8
10 -11 min.	0	68.8
11 - 12 min.	1	75.0
12 - 13 min.	1	81.3
13 - 14 min.	0	81.3
14 - 15 min.	1	87.5
> 15 min.	2	100.0

Observations:

- On average, the first fire unit's response time was 9.7 minutes for structure and outside fire calls within the city.
- 90 percent of the time, the first fire unit's response time was less than 15.9 minutes for structure and outside fire calls within the city.

Appendix I. Property and Content Loss Analysis for Structure Fire Calls

Call Type	Property Loss			Content Loss		
	Number of Calls	Total	Average	Number of Calls	Total	Average
Structure Fire	9	$ 952,176	$ 105,797	3	$ 100,300	$33,433

Observations:

- A total of nine structure fire calls had property loss and the average property loss value was $105,797. A total of three structure fire calls had content loss and the average content loss value was $33,433.

Appendix II. Patient Charges Analysis for EMS Calls

Call Type	Total Charges	Number of Calls	Average Charges
EMS	$ 739,719	704	$ 1,051
MVA	$ 48,863	42	$ 1,163
Total	$ 788,582	746	$ 1,057

Observations:

- The total patient charges in a year were $788,582 for 746 EMS calls, averaging $1,057 per call.

Appendix III. Analysis of EMS Calls by Initial Condition and Response Mode

Call Type	Initial Condition	Response Mode			Total
		Emergent	Non Emergent	Missing Value	
EMS Other	Green	252	163		415
	Yellow	280	117		397
	Red	30	8		38
	Black	7	1		8
	Missing Value		2	74	76
	EMS Other Total	**569**	**291**	**74**	**934**
MVA	Green	29	4		33
	Yellow	13			13
	Red	4			4
	Missing Value			1	1
	MVA Total	**46**	**4**	**1**	**51**
	Total	**615**	**295**	**75**	**985**

Observations:

- The fire department has responded to 615 (62 percent) EMS calls in the emergent mode.
- A total of 38 (4 percent) EMS other calls involved patients with critical conditions (code red).
- A total of four (8 percent) MVA calls involved patients with critical conditions (code red).
- A total of eight EMS calls involved a dead person before the occurrence of calls.