



2007 EMS Strategic Plan



9.25.07

PFA and Emergency Medical Services Response

The PFA Emergency Medical Services (EMS) is an extremely cost-effective service provided to the citizens of our district. Ranked as a high priority in our Citizen surveys, EMS response is considered an essential service that is provided by all fire service organizations serving similar sized cities in the Western United States. The PFA, as a tax based entity, is uniquely positioned to leverage funding to provide quality EMS response as a value added service with little additional cost (3.64% of the Operations Budget, or \$67.81 per EMS incident in 2007) since the structure, equipment and staffing already exist.

Firefighters must be ready to respond at a moments notice to a wide-range of emergencies; from a broken arm to a building on fire. To maintain timely response, efficiency and effectiveness, PFA responds to all emergency calls prepared for any contingency. This is accomplished by teaming firefighters with a wide range of equipment carried on the fire engine, wherever they go.

The elements of a good Emergency Medical response include the swift response to an emergency, appropriate care and, when needed, rapid transport to the appropriate facility. The PFA EMS service does not duplicate services provided by Poudre Valley Health Systems (PVHS) EMS which provides advanced life support care and transport services. PFA has 10 career stations staffed 24 hours/day and 3 volunteer stations, which assures a consistent and secure basic life support (BLS) response for our citizens in the most efficient and effective manner possible.

A 2007 analysis for PFA's EMS response identified the following costs:

EMT Tech pay	\$236,340
EMS Coordinator	\$ 96,545
EMS Budget	<u>\$ 46,674</u>
Total	\$379,559
Fuel Costs (\$6.89/call X 9,000)	\$ 62,010
Capital Replacement (\$18.75/call X 9,000)	<u>\$168,750</u>
Total	\$610,319

This represents 3.64% of the Operation Budget or \$67.81 per EMS response. For a very small proportion of the overall budget, the citizens of our district can rely on a PFA response that will care for all medical and traumatic emergencies whenever and wherever they occur.

Table of Contents

I.	Introduction	3
II.	Planning Assumptions	4
III.	EMS Mission Statement & Goals	5
IV.	Performance Standards	10
V.	Recommendations	15
VI.	Implementation Criteria	17

APPENDIX

	Executive Summary	20
	PFA Organization and EMS Plan Committee	32
	Community EMS Risk Assessment with 2006 Data	33

I. INTRODUCTION

The 2007 EMS strategic plan is intended to assist PFA in identifying and meeting community needs for the next 10 years. This plan represents the original work completed by committee in 2004 and another subsequent 18 months of work by PFA staff and employees and is an addendum to the 2004 Strategic Plan. All data is based off the 2004 Strategic Plan where applicable with noted adjustments.

This plan addresses both long-term (strategic) needs, short-term needs and the PFA's ability to meet those needs. This plan outlines specific actions required to address pressing current issues, which will lead to an improved ability to reach strategic goals.

The 10 year scope of this plan allows for substantive programmatic and resource planning. This plan focuses on community needs without regard to funding and/or a set timeline with the understanding that in some areas internal and external environments will change which will impact this plan. For this reason, some of the recommendations are dependent on events rather than time.

The EMS Strategic Plan objectives will be evaluated annually in conjunction with the PFA Strategic Plan and reported in the PFA Annual Report.

Additional research was conducted for this plan during the last 18 months in an effort to provide the most up to date information for comparisons between PFA and local, regional and national data. (See Appendix)

II. PLANNING ASSUMPTIONS

EMS Assumptions

The following planning assumptions are future system expectations derived from current data and institutional knowledge. These assumptions provide the framework that the EMS Strategic plan is based upon.

1. PVHS EMS will provide transport and advanced life support for the community and PFA will provide immediate BLS and rescue response.
2. PFA will respond to all 911 EMS calls.
3. Population growth for the City of Fort Collins and Poudre Valley Fire Protection District is predicted, which will result in an increase in the number and percentage of EMS calls for PFA.
4. The rise in the geriatric population will become a larger percentage of PFA's current EMS response profile.
5. Changes in National and State regulatory requirements will require additional time, funding and training to maintain and improve EMS services.
6. The continued assessment of our EMS System is essential to assure operational efficiencies of the system, contain cost and meet the future demands placed on EMS.

III. EMS MISSION STATEMENT AND GOALS

The central focus for the 2004 Strategic Plan is exemplified in PFA's Mission statement:

“To protect citizens and their property by being prompt, skillful, and caring”

When a citizen calls 911, our mission is to get there quickly, have the necessary skills to effectively and appropriately respond to their emergency and provide care and comfort for the citizen and their family. For those who are critically ill or injured, proper care can literally be the difference between life and death. PFA can make a sustentative difference in the lives and well being of our patients when we reach them on time and apply our skills effectively. Incidents of a less serious nature are no less significant to those who require our assistance. Our goal is to provide skillful care, to make each person feel that everything that could be done was done, and that their emergency, large or small, is important to us.

High quality out-of-hospital emergency care is an important part of the United States health care system and an expectation of our citizens. The majority of our citizens have come to expect EMS care to be delivered by our firefighters. It is incumbent upon PFA to be proactive in prevention and response, following the successful model established in the fire services over the last 30 years.

EMS Mission

The prompt, skillful, and caring aspects of the PFA Mission Statement are also the core values of EMS response and patient care. The PFA's EMS Mission goals are to:

“Be PROMPT by responding to EMS critical calls in no more than 5 minutes”

The 5 minute response (1 minute turnout, 4 minute en route) criterion is an industry standard referenced by the National Fire Protection Association (NFPA) and utilized by fire departments and BLS EMS providers nationwide and is based on citizen survival potential from cardiac arrests. If resuscitation efforts can begin within this time-frame, brain, and heart damage may be minimized.

“Be SKILLFUL by certifying and maintaining 100% of PFA field personnel as EMS responders and achieving all EMS key performance measures”

PFA will utilize the National EMS Assessment Measurement model to assure that critical criteria is met including: level of training and number of EMS responders; response time; and key performance measures. This model will serve to assess individual and service quality and identify areas of need in order to maintain safety and quality care for our citizens.

“Be *CARING* by providing comfort and compassion to citizens in need, as measured by a greater than 95% approval rating from our customer satisfaction survey”

The provision of comfort and compassion to citizens and their family members involved in EMS emergencies is one of the most important services that we provide. Outside of successful intervention in the patient’s medical emergency and assuring the safety of all involved, the care and comfort rendered by firefighter/EMT’s has a substantial impact and value to those involved. Although not often measured, an important factor in EMS response is the perception of support and care provided by PFA members. As this is a priority for our department, customer satisfaction surveys will continue to be an important tool in this goal.

EMS Strategic Goals

The goals outlined below are statements of qualitative purpose that establish direction under the general umbrella of the mission statement. They are divided into two categories; EMS System Goals, and PFA EMS Goals. The goals, furthermore, are the linkage between the mission, and the performance standards, which will come later. Neither the mission statement nor the goals can be specifically measured. The performance standards provide measurements at the strategic level and program objectives at the operational level. Together they form the standards to which PFA EMS actions are held.

EMS System Goals

Goal 1

“Develop and maintain a cooperative working relationship between EMS health providers”

It is essential that all EMS agencies operate collaboratively within PFA’s jurisdiction in order to assure that any emergency situation can be answered in an effective manner. These agencies include PFA, Dispatch, PVHS, TVEMS (Thompson Valley EMS) and AirLife. In order to evaluate and address EMS issues on a system wide basis, there has to be agreement among the participating agencies to use common standards, definitions and interactive data collection systems. PVHS is the major medical provider in the area. EMS coordinators of each EMS responding agency meet on a monthly basis and the EMS advisory committee convenes on an ad hoc basis. In addition, each major EMS response organization has representatives on communications and special services committees which assist in maintaining clear communications and good working relationships. Currently a single Medical Director provides medical direction for PFA EMT’s, PVHS EMS, Dispatch and local QRT’s (Quick Response Team). Protocol and scope of practice is uniform throughout the system under this arrangement.

Goal 2

“Adopt the IAFF/IAFC EMS System Performance Parameters as appropriate”

The collection of certain data points based on the IAFF/IAFC (International Association of Firefighters/ International Association of Fire Chiefs) EMS System Performance Measurement Model will provide standardized focus areas to work in cooperation with local EMS agencies. It will also provide a structure to compare our EMS system with regional and national statistics. This model will be modified as the national standards change providing us with a current baseline assessment of our system on an ongoing basis.

Goal 3

“Utilize nationally recognized standards to determine service needs”

A critical ongoing assessment of all aspects of the EMS system for PFA citizens is essential to assure that we are providing the most efficient, appropriate and cost effective EMS delivery system. National EMS standards including the EMS Agenda for the Future, National EMS Scope of Practice Model, American Heart Association Cardiac Care, the Pre-Hospital Trauma Life Support, pediatric EMS standards, and studies from the National Association of EMS Physicians are the primary resources for benchmarks in EMS. It is essential for all EMS Systems to measure the outcome and effectiveness of care. These measures will be the basis for change in care standards and delivery levels in order to provide the highest quality of care that is possible. Currently, the Ft. Collins EMS system is defined as basic and advanced services, which is becoming less common throughout the state and nation. The ability to compare our system with like communities will be essential for rational and effective response to change.

PFA EMS Goals

Goal 1

“Develop a clear and defined identity in EMS response both internally and externally”

PFA’s EMS response accounts for 74% of total calls yet there is no clear identification of this service on our apparatus or uniforms. Some of our citizens believe that PFA provides the ambulance service and all firefighters are paramedics. Other citizens question why a fire engine arrives at their home when there is a medical emergency. This is a national problem that has been exacerbated by the media’s portrayal of EMS providers in news reporting and entertainment. In less than 3 generations the fire service has grown to meet the need for rapid EMS response in both rural and urban areas which lends credence to media portrayals. In areas where there are no ambulance services, or in communities where EMS calls outnumber available services, the fire service delivers ALS services and in some areas, even transports patients. These differing models serve to explain public confusion.

All PFA uniforms and apparatus will have an identifiable EMS symbol signifying PFA's role in EMS. This identification will serve to focus resources, responsibilities and expectations internally and help define our multifaceted role to the community.

Goal 2

“To provide medical and emotional care, and assure safety during an EMS emergency for our citizens”

The strength of PFA's EMS response includes: our response time to a scene with adequate resources, the training and equipment to sustain life functions and assure the safety of the patient, family and responders during the emergency. PFA is also committed to providing the emotional support and needed information to patients and family members that are also affected. As the system becomes more complex our contact with patients is increasingly important. Increasing destination options, social service intervention, and other support services require knowledgeable personnel who can provide assistance in these areas. It is equally important to assure the safety of all personnel, patient and family members in any emergency. PFA's utilization of the ICS (Incident Command System) assures control, communications and coordination of the emergency response.

Goal 3

“Maximize customer satisfaction with PFA's EMS service, with customers defined as internal PFA members, co-responders in the PFA response area and patients.”

To obtain specific information about our quality of EMS service as perceived by the customer (patient or family), the PFA survey tool will be modified and utilized. Additionally, surveys will be administered to PFA, PVHS EMS, and other responder personnel in order to identify each group's perceptions of the quality of our EMS service. These surveys will serve to assess our success in meeting our goals and help us identify areas for improvement or change.

Additional resources to monitor the perceptions and satisfaction of all of the target audiences include the EMS coordinators of each EMS organization and the EMS Advisory Committee for the region. The EMS Coordinators are representatives of each agency who meet monthly to share ideas and information about the EMS system. The EMS Advisory Committee is an ad hoc group that identifies and discusses strategic issues in EMS.

Additional data that will be tracked is included in the EMS Systems Assessment Model, which includes employee turnover, changes in certification levels and number of complaints which correlate with internal satisfaction issues.

Goal 4

“Improve the citizens understanding and utilization of the EMS system provided by PFA through education”

An increasing demand on the emergency healthcare system combined with a greater proportion of our population who have less access to preventative healthcare, will result in an increase in the abuse and misuse of the 911 emergency system. Public education programs for citizen groups and schools will be made available in conjunction with dispatch, police and PVHS EMS to help educate our citizens on when and how to use the 911 system. PFA personnel, with PVHS EMS will also host open houses and other educational opportunities during the year. Citizens are also able to obtain blood pressure checks at any station, during which time further information regarding PFA’s role in EMS can be shared.

Goal 5

“Utilize a data system that provides systematic tracking and analysis of EMS response and care.

The ability to critically assess performance, our future role in EMS response, and to identify areas for improvement requires accurate and timely data. Currently, the EMS data, including patient information is not shared between PFA and PVHS due to IT (Information Technology) systems that cannot interface. PFA requires a system that has a strong fire reporting component, which precludes the use of one of the many available dedicated EMS programs. Although there are significant limitations to shared systems, both PVHS and PFA are exploring this as an option. Ideally, having PVHS switch to an EMS program compatible with PFA’s RMS (Record Management System) package would allow for effective and efficient data sharing.

Continuity of patient care is a primary goal, and although the multiple agencies do not have a shared system, the need to utilize common definitions and data points is essential. PFA must upgrade to a more flexible and accurate software system which increases the accuracy of the data and provides targeted data for ongoing assessment of our system.

Goal 6

“Develop plans to address EMS needs during large-scale events.

Specific and organized response plans assure that PFA personnel will be protected and able to communicate with their families during a disaster situation. Post analysis of previous medical disasters teach us that emergency personnel must have the proper training and equipment, and know that their families are provided for and are safe. It has been documented that up to 1/3 of the workforce will not come into work if those parameters are not assured, regardless of their devotion and commitment. Internal disaster plans and communication plans must be tested on a regular basis. Current healthcare systems are not designed to handle large scale medical events, and in many situations, outside help will not be available. The need for plans, training, back up resources and assured interoperability between EMS responders is essential.

IV. PERFORMANCE STANDARDS

Use of Standards in 2007 EMS Strategic Plan

Strategic goals are long-term in nature. The following performance standards are verifiable, measurable tools to assess the progress toward these strategic goals. The twenty eight performance standards in this plan are organized into the three EMS System Goals and the six PFA EMS Goals outlined in the previous section.

EMS System Goals

Goal 1

*“Develop and maintain a cooperative working relationship
between EMS agencies”*

Performance Standard 1:

Memorandum of Understanding (MOU) with PVHS EMS

Performance Standard 2:

System response parameters and Patient Outcome measurements will share common definitions and will be available to all essential providers for a valid system assessment.

Performance Standard 3:

Address 100% of all written concerns regarding EMS issues or personnel.

Performance Standard 4:

EMS Advisory Committee will meet as needed and representatives of all EMS system providers and policy makers will be represented.

Performance Standard 5:

Conduct interagency field exercises annually.

Goal 2

“Adopt the IAFF/IAFC EMS System Performance Parameters as appropriate”

Performance Standard 1:

100% of PFA’s EMS system data will utilize common definitions, as outlined in the EMS System Performance Measurement Model. These definitions and data will be made available to all EMS agencies.

Goal 3

“Utilize nationally recognized standards to determine service needs”

Performance Standard 1.

Utilize national Emergency Medical Services standards as approved by the Medical Director.

Performance Standard 2

Measure the outcome and effectiveness of care from QA/QI (Quality Assurance/Quality Insurance) reports to determine service needs.

PFA EMS Goals

Goal 1

“Develop a clear and defined identity in EMS response both internally and externally”

Performance Standard 1:

All PFA uniforms and apparatus will have an identifiable EMS symbol.

Performance Standard 2:

Utilize a survey tool to measure the perception of PFA’s role in EMS.

Goal 2

“To provide excellent medical and emotional care, and assure safety during an EMS emergency for our citizens”

Performance Standard 1:

Meet greater than 90% of Medical Protocol criteria.

Performance Standard 2:

Identify and provide information to patients who may need additional support services that are not addressed by 911 services (such as Adult Protective Services, Larimer Public Health, and the Family Wrap-Around Program).

Performance Standard 3

Participate in local area efforts to identify and address unmet needs in the EMS community.

Performance Standard 4:

Limit any further injury to patient or responders in greater than 95% emergency response situations encountered by PFA.

Performance Standard 5:

PFA will respond to critical EMS incidents in less than or equal to 5 minutes 90% of the time.

Performance Standard 6:

Ensure that 100% of field personnel hold EMS Certification at some level.

Goal 3

“Maximize customer satisfaction with PFA’s EMS service, with customers defined as internal PFA members, co-responders in the PFA response area and patients”

Performance Standard 1:

Achieve a greater than 90% “extremely satisfied” rating from all customer satisfaction surveys.

Performance Standard 2:

Ensure 100% resolution of dissatisfied and/or negative responses from customer satisfaction surveys.

Performance Standard 3:

Utilize PFA’s internal expertise, experience and feedback on EMS system performance.

Goal 4

“Improve the citizens understanding and utilization of the EMS system provided by PFA through education”

Performance Standard 1:

Identify reasons for inappropriate utilization of the 911 the system.

Performance Standard 2:

Develop and make available EMS education programs to targeted audiences

Performance Standard 3:

Identify strategies to respond efficiently and appropriately to non-emergent EMS calls.

Performance Standard 4:

Develop a response strategy to deal with non-emergent users of the EMS system.

Goal 5

“Utilize a data system that provides systematic tracking and analysis of EMS response and care.”

Performance Standard 1:

Define and utilize common definitions in EMS data programs that will allow accurate evaluation of PFA’s system performance.

Performance Standard 2:

Make PFA EMS data available to other EMS providers.

Performance Standard 3:

Improve medical record keeping methods to assure accuracy and accountability for continuity of patient assessment and care.

Goal 6

“Develop plans to address EMS needs during large scale events”

Performance Standard 1:

Develop a resiliency training program for PFA personnel

Performance Standard 2:

Develop a PFA continuity of operations plan for disaster situations.

V. RECOMMENDATIONS

Strategic Plan EMS Priorities

Immediate Needs – Top Priority

Record Management System (RMS)

The current RMS package does not provide the flexibility to collect and process the data necessary to accurately analyze our EMS system activity and performance. Without this data, a meaningful analysis of the system cannot occur. Decisions are often made based on professional judgment and experience, which is often subject to debate by staff and policy makers alike. The use of accurate and relevant data provides an objective measure to make decisions and often will identify problems in service delivery before professional intuition recognized a problem exists

EMS reporting and data collection is just one aspect of the new RMS program which is needed. Consolidation of all data into one program will greatly enhance PFA's ability to utilize the information for strategic planning.

2007 cost estimate of new RMS - \$150,000.

EMS Certification for All Uniformed Fire Personnel

The majority of PFA's uniformed personnel are certified as EMT-Basic's but there is no requirement to maintain this certification. The majority of PFA's emergency responses are EMS related (74%), and requiring all line personnel to maintain a level of EMS certification will underscore the importance of the service and provide a higher level of legal protection for the organization.

2007 cost estimate for training and certification - \$7,500.

Conduct an ongoing assessment of PFA's roles, responsibilities and capabilities in EMS

In order to assure PFA's current level of service and proactively deliver cutting edge EMS care, an ongoing assessment is vital. Working with our Medical Director, PFA will continually evaluate our roles, responsibilities and capabilities in EMS.

2007 administrative, and development cost estimates for EMS protocol standards - \$1,500

Formalize EMS Medical Direction

Medical Direction for PFA is provided at no cost by a single system medical director at this time. National standards focus on specific criteria concerning the time and activity of a medical director as a quality indicator. The current medical director has the responsibilities of PVHS EMS employees, QRT responders and PFA EMS personnel. With the growth of EMS in the community PFA will require a more significant amount of dedicated time. PFA EMS needs a more formalized structure in our medical direction and response to training and operational needs to assure continued quality and consistency.

Contract development and part-time salary for medical director - \$30,000

Future Needs

Develop a Community Outreach Program

The medical community provides a number of outreach programs however, certain individuals do not have the ability to access those programs. What PFA provides, are strategically located facilities and medically trained fire personnel who could offer services allowed under their scope of practice. Blood pressure checks, glucometry and other basic health care assistance may in the future answer unmet needs. PFA should initiate discussions with its partner EMS providers to explore the possibilities of such a program.

Develop a Seamless EMS System for the PFA Jurisdiction

It is PFA's goal to be part of a fully integrated EMS system, providing a seamless delivery of emergency medical services from the initial 911 call to release from a medical facility by 2016. Integration is best achieved through the development of a regional EMS strategic plan developed by PVHS and its EMS partners, including PFA.

VI. IMPLEMENTATION CRITERIA

“Maintain and expand emergency services in a manner consistent with community needs.”

Ongoing evaluation of community service needs is accomplished through community risk assessment, utilizing service implementation criteria and the collection of objective data needed to make service level adjustments. This allows PFA to respond in a timely manner to changing fire protection and other emergency services needs of the community.

Implementation criteria have been used for determining the need for new fire stations since the 1987 Strategic Plan. The 2004 Strategic Plan expands the use of this concept to determine when truck and squad companies, battalion chiefs, and support staff are needed. The completion of the EMS section of the plan has added the following EMS implementation criteria.

Implementation Criteria

EMS Emergency Operations

EMT-Basic special skills as need areas are identified which will require additional equipment, training and QI resources.

The addition of EMS resources employing advanced skills will require the development of specific criteria for system performance and a joint commitment to monitor the system criteria. Criteria will be developed by a joint committee of all EMS providers in our response area and will require annual re-evaluation. Performance measures to be defined would include:

- Time to delivery of advanced medical intervention to critical patients
- At scene time before arrival of ALS and/or extended on-scene time before transport
- Seamless patient care

EMS Support Staff

Identification of support staffing needs and implementation time lines will be determined by two methods.

The first method requires a needs analysis to identify those support services essential to maintaining primary response and risk prevention services. Once identified, job descriptions must be developed, from which workload requirements can be calculated to determine the staffing needs of PFA.

The second method requires a cost/benefit analysis of positions which will be continually monitored to ensure that services are being appropriately provided.

APPENDIX

Executive Summary

PFA Organization and EMS Plan Committee

Community Risk Assessment with 2006 Data

EXECUTIVE SUMMARY

Prologue

This prologue is intended to set forth those events and actions which have driven the planning process and the resulting recommendations. A historical and process review of the Poudre Fire Authority's Emergency Medical Services (EMS) program will be followed by a discussion of demographic response activity and resource changes, which have taken place throughout the twelve years since the 1995 strategic plan.

Strategic Planning Process

The Poudre Fire Authority Board of Directors adopted the 2004 Strategic Plan in July, 2005. At the time, Staff made the decision to exclude the EMS portion based on multi-jurisdictional issues that were at the forefront of public debate. Although some of these issues are yet to be resolved, the public debate has diminished, which allows, in Staff's opinion, work on the EMS portion of the Strategic Plan to proceed. Also, recent events have presented opportunities to work in cooperation with key EMS providers to develop, and implement a system based plan that includes PFA, Poudre Valley Health Systems (PVHS) and other EMS agencies involved in a regional response.

District and PFA Board members may remember Staff indicated that the EMS portion of the Strategic Plan would be the focus for 2006, and that the Board's would have its first discussion with Staff on the subject the latter part of 2006. The initial presentation at the November Board meeting was designed to provide information regarding the focus of the EMS plan, gain input, and direction from the Board members. The draft document was presented to the Board members in May, 2007.

Since the formation of the Authority in 1981, PFA has used the strategic planning process as a primary tool for identifying community emergency service needs. This process has been a very effective tool, allowing PFA to identify and plan those actions necessary to help keep the department up to date with the increasing needs of the community. The previous plans have very accurately predicted future needs of the organization. Most recommendations made in these plans have been successfully integrated into department operations thereby enhancing services. The PFA strategic plans have been reviewed and updated every five to ten years, with progress toward meeting plan recommendations monitored annually during the budget process. The use of specific benchmarks and implementation criteria has also enhanced the value of the strategic planning process.

Long-Range Financial Planning

PFA's EMS services are currently funded through the Authority's general budget, which like most fire service agencies, relies on revenue generated from property, and sales taxes. As demand for EMS increases, it may become necessary to look for alternative revenue sources in order to meet the additional demand placed on PFA's resources. When exploring options to fund

EMS for PFA, it may be worthwhile to look at how other EMS services generate revenue. The private EMS provider has traditionally funded services through fees-based models per individual use (either to the individual or third-party payers). Fire-based EMS systems typically utilize a combination of property, sales tax and fees to pay for EMS services. Regardless of the funding model used, re-examination of the current funding model will have to be considered.

Community and PFA Changes

In the decade following the 1995 Strategic Plan, the community's demographics and emergency response demands have dramatically changed. These changes are punctuated by a 25.9% increase in population, and a 52.2% increase in emergency responses by fire equipment. It is expected that these factors will grow at an overall annual rate of 2.0% during the next decade. The number of uniformed firefighters during the same period decreased from .95 firefighters per 1,000 population to .86 in 2006.

EMS calls will continue to dominate PFA's emergency response profile increasing from 64% of total responses in 1996 to an estimated 88% in 2016. With the rising growth of the Fort Collins population (population projection for 2020 of 252,000), including a predicted high proportion of geriatric citizens, the number of EMS related emergencies will continue to increase. The expected sharp increase in the geriatric population as well as an increase in the use/abuse of the 911 system to access primary healthcare (rather than just life-threatening events) will also play a major role in the percentage increase in EMS calls.

The PFA's Current EMS Role in the Community

PFA's primary responsibility to the community is, and will be for the foreseeable future, fire protection. No one else is structured to provide this. Current staffing is provided to see that the citizens fire protection needs will be met in a timely and effective manner. Although critical, fires make up only a small portion of the incidents PFA responds to (4.1% in 2006). In order to make the most of the resources PFA must have for fire protection, firefighters provide other "value added" services to the community such as EMS. Medical response is an ideal additional service to the community due to the distribution of fire stations, and firefighters throughout the jurisdiction. EMS incidents have dominated PFA's emergency responses (74.9% in 2006) for decades, and are predicted to increase as a percentage of total calls. As one of the primary public safety agencies in the region, PFA must come to terms with its role as an EMS provider in the community; continue as a separate support entity, or become a part of a regional integrated EMS system. It is time to recognize PFA's EMS role for what it is; an essential and primary service to the community.

PFA EMS not only saves lives, but provides our community with a trained and committed force to provide excellence in care, comfort and safety to our customers. In order to be effective, these services must be available within a short response time in order to decrease the impact of the medical or traumatic emergencies to the individual and the community.

We believe our value lies in preventing further harm and providing quality care as well as emotional and medical assistance to those in need. Our commitment to quality EMS care

changes lives and the provision of consistent and competent medical care is essential to our mission.

The public, per citizens' survey, has high expectations that PFA will provide high quality emergency medical response. PFA responds with trained personnel and equipment that provides critical interventions. PFA assures the safety of those at the scene and provides comfort and care for the well-being of our citizens in an emergency. The number and position of the stations assures the best possible response to the community.

Providing emergency medical response that is dependable, predictable, appropriate and responsive to the community's growth and safety needs is the challenge that faces us.

Evolving Technology and EMS Practices

The equipment and standard of care in EMS dramatically changes every 5 years due to technological advances. The EMS National Scope of Practice is currently being rewritten to reflect these new medical realities, and PFA will have to commit additional EMS training and equipment to meet the changes and expectations.

Changes already in progress include equipment and treatments such as: 12 lead EKG's, carbon monoxide poisoning monitors, positive pressure ventilation for patient's in respiratory distress, and equipment for the identification of diabetic conditions. The increasing numbers of public and private AED's, home health care equipment for critical patients, and telemedicine for the rural areas require EMS personnel to be able to understand and utilize a growing knowledge base. These improvements allow for early and more effective treatment of critical patients, and may increase the survival rate as well as decrease the time patients spend in the hospital. Future technology is already on the horizon to stop bleeding in trauma patients, while telemedicine is reaching into the most rural populations in our area, allowing EMS providers more possibilities of treating at the scene without transport.

One of the primary components that PFA must address is the adoption of a data system that provides standardized, user friendly, accessible shared information via portable and flexible technologies. In order to efficiently manage the rate of growth and demands upon our operational system, we must be able to identify the need areas and cooperatively determine how those needs will be met. A data system that is user friendly, flexible and concurrent with the other agencies information is essential.

Impacts on EMS Response

Total responses during the last 11 years increased from 8,087 incidents in 1996 to 12,309 incidents in 2006. This is a 52.2% increase in calls, or on average, 5.2% per year. If incident responses continue to increase at this rate, by the year 2016 the PFA will be responding to 18,710 incidents, or on average, 52 responses during each 24 hour period. Of these, 45 will be EMS related.

Certain population groups will begin to dominate the frequency and types of EMS calls during the next decade. High risk groups that will have the most impact include the elderly, homeless/transient, undocumented, and the underinsured/uninsured population. As the population increases, there will be an increase in trauma from altercations, motor vehicle accidents and drug use.

Of these groups, the elderly will be the fastest growing population in Larimer County, which is predicted to almost double in size to 74,000 in 2020. Geriatric populations have more complicated medical histories and access the EMS system more often than other groups. As the cost of medical care increases, those people on fixed incomes will delay accessing the medical system until it becomes a crisis.

The estimated population of homeless/transient people in the Ft. Collins greater area in 2007 is approximately 1,400, and is expected to grow to 2,300 by 2030. Although less than 1% of the general population, these individuals account for (5-10%) of EMS responses. Factors contributing to this disparity include such things as frequent exposure to the elements, poor nutrition, substance abuse, little, if any, preventative health care, and poor physical/mental health. As this population grows, so shall the frequency of calls for assistance.

The undocumented, underinsured, and uninsured populations share a common factor, which forces them to turn to the EMS system for health care; inadequate, or no health insurance. Individuals in these populations are often employed, but lack the financial ability to maintain health insurance coverage. Therefore, preventative health care or treatment for illness or other medical conditions is often delayed. When these untreated problems reach an acute level, the EMS system is called in to meet the need. As the cost of health care increases, the percentage of the uninsured population will accelerate, which will mean an increasing reliance on the EMS system for care.

There are other factors which will cause a greater reliance on the EMS system by the jurisdictions population and impact delivery of EMS services. Some of these include:

- Increased home health care of critical patients
- A 20% increase of the student population at CSU – more injury, and substance abuse calls
- More traffic congestion – increase in vehicle accidents, and longer response times caused by the same traffic
- Public reliance on the 911 system for solving problems
- An increasing number of family physicians directing after-hours patients to go to the ER or call 911
- More institutional and home based care facilities for the aging population
- More isolated patients with no support; i.e. family and/or friends
- Increasing number of suicides, more Alzheimer's and dementia patients
- Decreasing of federal funding, and changes in the Medicare/Medicaid rules
- The aging of the workforce – more injuries and health issues at work, related to age

Three major factors stand out as elements, which will accelerate the frequency of EMS related calls, and the need for more complex care in the field by paramedics, and firefighters; age;

medical costs, and the increasing expectation that the EMS system will be readily available to respond. An ever growing elderly population will increase the number of injury and illness events in the community. The rising costs of health care will force many of the elderly to turn to the EMS system for treatment and care. Resources for EMS services will have to increase if the system is to meet the increased demand.

Cultural Changes in the Fire Service

Historically, the men and women who have made the fire service a career have done so primarily for the firefighting aspects of the job. Duties related to fire prevention, public education, and emergency medical care were often viewed as “have to” duties in order to get to fight fires. Currently, many larger metropolitan fire departments, particularly in the east, do very little, if any, duties other than fire suppression. This is due primarily to heavy fire call loads which limits the availability of fire companies for EMS related calls.

In the west, fire departments have been active in these “have to” duties, particularly emergency medical care since the early 1970’s. The popular TV series “Emergency” that premiered in 1972, dramatized the introduction of paramedics in the fire service in Orange County, California. This show became the catalyst for the modern fire-based EMS of today. The paramedic squad is now a common feature of many fire departments, particularly in the western United States, and is utilized in many Colorado fire organizations. A significant number of career fire departments in Colorado provide Advanced Life Support (ALS) in their daily response.

Ft. Collins was at the forefront of EMS in Colorado during the late 1970’s by being one of the first fire departments in Colorado to extensively utilize emergency medical technicians (EMT’s) when responding to requests for medical assistance. In the mid 1980’s PFA was the first fire department in Colorado to introduce the use of Automated External Defibrillators (AED’s) by firefighters for citizen’s who were in cardiac arrest. As fire based EMS in Colorado progressed to a higher level of care (paramedics), PFA continued at the EMT, basic life support services (BLS) level, while advanced life support services (ALS) was assumed by PVHS. This model, though different from what most Colorado cities provide, has served the Ft. Collins area population well.

Over the last decade the influx of new firefighters within the PFA has led to an evolving culture within the organization that sees the provision of EMS services as a high priority. This increase in interest has been fueled by the addition of an EMS Coordinator who has brought a higher level of structure, and professionalism to the EMS program than we had before. A renewed focus on customer service has emphasized the need to sharpen firefighter’s EMS skills so that the citizens we interact the most with (at EMS incidents) feel they received the best treatment possible from compassionate and caring EMS professionals. This focus should be part of the development of a professional and effective regional EMS response by all agencies. Citizens should receive the most effective and consistent emergency care possible.

Methodology

The PFA's vision of an ideal EMS system provides a road map for the future. Development of implementation criteria and data collection allows PFA to plan and implement emergency services and support services in a timely manner.

The EMS strategic plan will be based upon an assessment of the community's future demographics, the location and densities of at-risk populations, and internal analysis of how PFA may provide EMS services to our citizens. Careful review of information from planning documents developed by the City of Fort Collins, Larimer County government, the State of Colorado, national EMS standards, and past internal statistics were the basis of the assumptions and development of the goals.

Overview

Introduction

The last 18 months have been devoted to determining what the EMS challenges will be for PFA during the next 10 years and identifying the resources necessary to meet these challenges. Individuals from both within and outside the organization have participated in this process as part of an EMS planning team.

Immediate Concern

The success and relevancy of any plan is predicated on the ability to collect and track accurate data. The current PFA Record Management System (RMS) package lacks the flexibility and scope to collect the local data needed to successfully analyze EMS system performance. This is necessary in order to make adjustments to keep the service level consistent with what the community expects and to identify areas needing improvement.

The RMS system needs the ability to develop a template that will collect data that is common and relevant to PFA, PVHS and other related agency responses. PFA is only one part of the communities EMS system, and it is imperative that decisions be made based on valid system wide data.

Immediate Community Needs and System Impacts

Community and healthcare leaders have identified the growing stresses upon the EMS system from the homeless, psychiatric and underinsured populations but have not yet developed a plan to address those factors. At this time, the EMS System will continue to see a high percentage of these patients in "repeat" responses, sometimes on a daily basis.

The expansion of the trauma system with the opening of the Medical Center of the Rockies is expected to change the dynamics of EMS response which will be monitored closely by PFA and PVHS. The increase in helicopter responses and population growth in our rural areas will require PFA personnel to act in multiple roles in order to meet the EMS needs of the citizens.

EMS System Overview

PFA is unique within the structure of the EMS community. The majority of paid fire departments with our population base, and mixed urban/rural response provide ALS services (with or without transport capabilities). Ambulance services in these communities work in a competitive environment frequently dictated by contracts with city entities. PFA provides BLS services with a sole provider (PVHS) ambulance service providing all ALS and transport services to our community. At this time, all services between PFA and PVHS are through verbal agreements and rely on the direction of the Leaders of each service. We have not been able to identify any like communities with this same structure for comparisons.

The three most common models in providing EMS are the private provider model (private ambulance services that bill the individual or third party payer); Public utility model (tax based), or a third service public safety model (billing model but run by public safety). The level of EMS services range from BLS (AED; no invasive procedures), Intermediate Life Support (better airway control, IV capability, some medications, AED) and Paramedic. All three levels require a medical director, and as it progresses, higher levels of training and more equipment.

Decisions on what level of services should be provided rest upon a fundamental issue: Is there a measurable correlation between the actions of EMS providers in the field and the recovery of treated patients? This is difficult to do, but without it there is no meaningful way to tell how well the EMS system is doing. The emotional component of caring, the ability of an EMS provider to identify a problem before it becomes life threatening, and the intervention to decrease disability for a patient's life span are parts of the whole package. Cost and resources must be weighed against the desire to provide the best of all options for all emergencies our citizens may have.

The issues facing PFA rest upon a realistic vision of what should be provided to its citizens. We know the number of patients and problems are increasing every year. We anticipate that the complexity of EMS calls will increase with a growing geriatric and underserved population. How PFA will address these demands depends on close monitoring of calls, resource availability, how the current providers meet those needs and being prepared to meet unmet needs should they arise.

PFA EMS

The question is often asked, "Why does the fire engine show up when I call for an ambulance?" or "Why does the fire department go to medical calls?" The reason lies in the modern standard for EMS response systems. Our EMS system is structured as a tiered EMS response which focuses on getting EMS providers that can provide safety and life support to the victim as quickly as possible. This allows more time for the ALS providers to arrive, and in a joint effort, treat the patient with more advanced skills and then transport the patient to the appropriate facility. Having PFA trained personnel arrive at all emergencies provides the security of being able to meet any unexpected problem (medical or other) as well as provide caring support and information for the family and community in a crisis situation.

2007 PFA/PVHS Tiered EMS Response System

EMS SYSTEM IS ACCESSED

Patient or bystander accesses the EMS system by calling 911.

TRIAGE BY DISPATCHER

Calls to 911 are received and assessed by trained professional dispatchers at one dispatch center for the response area. Criteria Based Dispatching Guidelines are utilized to provide uniform triaging and determining what resources are paged out. BLS and ALS units are paged out concurrently.

BASIC LIFE SUPPORT (BLS)

BLS personnel (PFA) arrive at the scene in less than 5 minutes as an average for emergent EMS responses.

ADVANCED LIFE SUPPORT (ALS)

ALS services are provided primarily by PVHS services with at least one Paramedic to each call. If additional help is needed, PFA EMT's can assist the Paramedic during transport to the hospital.

ADDITIONAL MEDICAL CARE

Patients are transported to the appropriate facility for additional medical assessment and care. The new implementation of a cardiac "alert" program (certain patients are taken directly to the cardiac catheterization lab and bypass the emergency department), the redirection of Level 1 trauma patients to the Medical Center of the Rockies and the increase of helicopter utilization for transport is a significant change for our communities EMS system.

PFA's BLS response is an essential element of the community's overall EMS response system. PFA provides 10 strategically positioned career fire stations, and 12 fire staffed apparatus and 3 volunteer stations staffed with EMT's in order to meet the 5 minute BLS response goal. In addition, PFA provides the extra personnel that are needed to assist with cardiac arrests, trauma injuries, multiple patient incidents, Hazardous Materials, and extrication of trapped citizens.

EMS In 2017

In 2006, the Committee on the Future of Emergency Care in the United States Health System published its report, the “Future of Emergency Care; Emergency Medical Services at the Crossroads”. This study was commissioned, and supported by the National Academy of Sciences, the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, and the Department of Transportation’s National Highway Traffic Safety Administration. “The committee’s task was to examine the full scope of emergency care, from 911 and medical dispatch, to hospital-based emergency and trauma care. They set out to examine the emergency care system in the U.S.; explore its strengths, limitations, and future challenges; describe a desired vision of the emergency care system; and recommend strategies required to achieve that vision”.

This is the first study conducted by the Institute of Medicine, of the National Academies in 10 years, and only the 3rd since the 1966 landmark report, Accidental Death and Disability: The Neglected Disease of Modern Society, which many believe marked the birth of the modern emergency care system. All of the previous studies have had major impacts on how emergency care is provided, and it is expected that this 2006 report will be important as well. Many of the recommendations outlined in the report have already been put to practice, or at least are in the process of doing so.

Based on the 2006 reports vision, the following description is representative of what the EMS system within the PFA jurisdiction would look like.

The “Future of Emergency Care; Emergency Medical Services at the Crossroads” states “ In this new system, dispatchers, EMS personnel, medical providers, public safety officers, and public health officials will be fully interconnected and united in an effort to ensure that each patient receives the most appropriate care, at the optimal location, with the minimum delay. From the patient’s point of view, delivery of services for every type of emergency will be seamless. The delivery of all services will be evidence-based, and innovations will be rapidly adopted and adapted to each community’s needs. Standby capacity appropriate to each community based on disaster risks will be embedded in the system. The performance of the system will be transparent, and the public will be actively engaged in its operation through prevention, bystander training, and monitoring of system performance”.

Translated to the local level, a seamless, fully integrated model EMS system in 2017 would have the following challenges and characteristics:

The system will produce predictable and appropriate results regarding citizen requests for medical aid. From the time the citizen accesses the 911 system to the time they return home, they will receive rapid response from the dispatcher they talk to, the responding EMS professional, and the medical facility that treats them. Technological developments will play a large part in what services and treatments are available to our citizens, but that will come at a cost. Citizen expectations for rapid and well trained response will certainly stay high. The ability of the U.S. primary health care system to meet basic health care needs is failing. The EMS system will assume more responsibility for the care of those who are older and less able to

access preventative health care. The need for critical interventions to save lives will continue as well as an increasing need to triage patients that are not critical, but cannot access health care. Our objective would be to work in conjunction with dispatch and our partner EMS agencies, to identify needs and utilize all possible resources in the community to keep our citizens safe and healthy. We also need to be focused on meeting the needs of our own personnel in both safety and training. Maintaining a quality system will depend upon our ability to retain personnel who have experience, dedication and abilities.

In 10 years, the EMS system in this area will need to answer service demands in a multi-layered approach to be the most effective with the expected limited resources. The challenge is to develop a system that provides seamless and appropriate patient care for our citizens. This approach will have to include:

Mitigation

Prevention and Intervention programs to prevent acute medical emergencies such as Prevention Programs for Citizen use of 911, AED availability, CPR in the schools; Fall Safety Home assessments for geriatric patients and BP/diabetics for the citizens in the area of each station will be essential.

Identification and Response

Improved communications systems would include dedicated call takers and dedicated dispatching personnel, with specialized phone triage and information in Dispatch. This would include a nurse triage line to direct non-emergent callers to appropriate resources, and a possible triage of non-emergent calls for delayed response of specially trained EMS personnel. Technical communication capabilities between responders will have been expanded and improved. Electronic capabilities to transmit patient information to the hospital and their personnel records accessible at the scene will be an industry standard. This improved telecommunication with hospital personnel will make treat and release options available when the patient does not require hospitalization. Electronic protections for all communications will improve but will also require updates on equipment and training.

The use of appropriate and efficient resources to deal with stresses on the response systems will include advanced skills for First Responders, and utilizing specialized, non-engine response for Alpha and Bravo calls (medical conditions that are not immediately life-threatening).

Patient Care

Continuity of patient care will be a primary focus. System data feedback will be swift, and accurate enough to determine if an increase in level of care at the scene is needed, and what kind of transport will be required. Critical skills to be considered would include: aggressive airway control and breathing assistance; cardiac assessment and intervention; administration of life-saving medications; and the ability to stop severe hemorrhaging.

PFA first response will have more strategies, and skills to act as an advocate and support force for the patient, and their family in order to access needed services. There will be many more options for the patient and family, and many more uncertainties where they will need an informed advocate to help them in an emergency.

Other Considerations

PFA internal needs will be met by specialized EMS response teams. They will monitor firefighters during and after major responses, provide care for hazardous materials response personnel in cooperation with other EMS responders, and provide a safety net to care for our citizens should the system need additional personnel.

Improvements in personal protective and patient handling equipment will allow us to stay safe and provide innovative and excellent care to our citizens who have unusual needs (infectious disease issues; obesity; dementia, etc...).

Success will be a result of interoperability in communications, training, equipment and skills between all parts of the EMS response services. This will keep the system progressive, flexible and allow for immediate expansion of services should the community require it (pandemics, medical disasters, mass disasters).

The system will have systematic evaluation capabilities to assure that we are meeting the need and dynamic communications to include response and training to assure that we are prepared and confident in meeting our mission.

The public has high expectations for its EMS system, and they expect a prompt, skilled, and caring response from EMS system responders. The “Community, Business, and Constituent Perceptions of the Poudre Fire Authority” 2006 research study conducted by David I. Gilliland, PhD of Colorado State University, documents the importance of EMS to the public. In the 10 years that follow, PFA and its partners in EMS must work together to meet the citizen’s expectations regarding emergency care.

Summary

The overall goal of this strategic plan is to develop, in conjunction with PFA’s EMS partners, a coordinated system-wide approach for delivery of quality and effective EMS services to the community. The system must have the ability to coordinate the collection and analysis of data necessary to identify deficiencies in current operations, to anticipate future service needs, work as a coalition to meet those needs, and educate the citizens about the system and how to use it.

The mission of the EMS response system must be unified for all agency providers to be effective. Although each agency may word it differently, all share the common mission to be “**Prompt, Skilled, and Caring**”. Whether a citizen walks into the Emergency Room or calls 911, we as care givers need to contact and address the citizen’s concerns in a timely manner. Each agencies goal for doing this must be ambitious, challenging, and communicated as a high priority to its employees. Employees should be given ongoing training at the highest skill that the

community can afford. The “EMS Agenda for the Future” highlights the fact that the more highly skilled the personnel that respond to EMS related incidents are, the more favorable the outcome for the patient will be. The citizens whom are served within the PFA jurisdiction deserve no less than this. Compassionate and thoughtful consideration of patient, and family needs is a powerful tool for all medical providers from the first responder up to the specialist in the hospital. Emotional care and logistical support reduces the anxiety level of patient and family alike. It is also a powerful tool in gaining public support for services when additional funding or services are needed.

Performance standards and appropriate EMS response must be monitored at all levels of the EMS system if it is to be maintained and improved. EMS personnel must be provided with an environment that promotes constructive critique of performance and patient care. An accurate and transparent data system that can deliver data from the full response of the EMS System (from Dispatch to the patient’s health care outcomes) is essential to realize a proactive and responsive EMS response for our community. This will allow for timely adjustments to the system in order to maintain service levels. Decisions can be objectively made, which will help determine what needs to be done, and who is best to do it. The staff and policy makers for the participating agencies must have the courage to make the necessary changes, and seek the funding needed to provide an EMS system that meets the communities needs and falls within a price range the citizen’s are willing to spend.

PFA Staff Organizing Committee

John Mulligan	Fire Chief
Mike Gress	Operations Chief
Kevin Wilson	Fire Marshal
Guy Boyd	Director Administrative Services/PFA
Tom DeMint	Battalion Chief/C Shift
Mary Makris	EMS Coordinator/Research Analyst & Author
Steve Miller	Captain/Strategic Plan Analyst & Author

EMS Planning Team

Jim Herrington, <i>Leader</i>	Captain
Judy Stachurski	Firefighter
Holger Durre	Firefighter
Jay Klassen	Captain
Mike Gavin	Battalion Chief/OEM Director
Bill Salmon	Captain
Matt Housley	Firefighter
Ryan McLean	Captain
Spencer Rice	Firefighter
Herb Brady	Ambulance Manager, Poudre Valley Health Systems
Dr. Dan Turner	Medical Director
Dr. Chris Cribari	Poudre Valley Health Systems Trauma Services

Community EMS Risk Assessment with 2006 Data

EMS Risk Factors

The following data encompasses the EMS community risk. PFA has evolved into a multi-risk agency. As well as the obvious risk of fire to the community, these risks also include injury and illness to the citizens. The EMS risk environment is a combination of the type and size of EMS incidents that may occur and the likelihood of their occurrence. The risk of injury and illness may have less catastrophic impact on the community as a whole; however, losses from these maladies do have an impact on the community. Injury and illness risk reduction in the community can have a significant impact on requests for service and this, in turn, will allow for more availability of resources, thus reducing response times for other emergencies.

Demographics

The population of the City of Fort Collins grew 24.5% between the years 1996 and 2006 to a population of 132,261. At the time of this printing the estimated population of the PFA area, including the areas governed by the PVFPD, is nearly 170,381. There are many elements that make up a community's demographic profile. They are:

- **Age**
The 2000 census estimates the median age of Fort Collins to be 28.2. This has increased approximately 17% since the last strategic plan (1990 census). Predictions regarding the 65 and older population indicate a growth rate twice that of the general population (county wide this equates to 39,000 in 2007 to 74,000 in 2020; a 53% increase). As the population grows older, PFA can expect higher incident rates and increased requests for multi-risk services. Fire and EMS data show that the elderly are at a higher risk for fire as well as emergency medical services.
- **Population**
Population of the community has been growing at a rate of 3.1%. Forecasts for growth between 2006 and 2020 indicate an average growth rate of 2.0% (4% for 65 and older). This growth rate has a direct impact on the number of requests for service received. As the population has increased so has traffic congestion in the jurisdiction. This has a direct impact on response time, which in turn increases the risk to the community. A recent study indicated that not only Fort Collins but other Front Range communities are experiencing increases in call volume greater than the increase in population.
- **Population density**
Current planning concepts call for an increased density in the urban area especially around employment centers. This, along with redevelopment of certain urban areas and a push for increased use of public transportation, could increase densities. Increased densities may not drive current indicators for new stations but may indicate a need to evaluate services in areas of infill and redevelopment.

- **Income and purchasing power**

The income and purchasing power of the average Ft. Collins area resident falls in the \$50,000-\$74,999 (\$59,332 median income) range, compared to the 2000 National Census average of \$35,000-\$49,999. This reflects the higher level of education and number of skilled jobs that are available through the largest employers in the area. Consequently, the standard of living in the area is relatively high, with an accompanying high housing cost (\$272,498 for new and \$235,722 resale; 2002 data).

Demographics describe the diversity, density, and economic condition of people living and working in a given jurisdiction. It is well documented that people living in poverty are disproportionately affected by medical issues which includes the geriatric, homeless, and illegal immigrant populations. The primary reasons for this include substandard housing, poor hygiene and nutrition, employment that is more labor intensive than the average middle class population, and more susceptible to exposure to the elements. In larger cities where this research has been conducted (2002 survey), EMS rates increase as the percentage of people below the poverty level increases. The following table demonstrates this:

City	Poverty Percentage	EMS/1,000 Population
Littleton	6.0%	36
Fort Collins (PFA)	14.0%	47
Greeley	16.9%	55
Boulder	17.4%	58

Response times

Overall response time has consistently remained in the 4:30 range throughout the last 10 years. This is the one indicator that we have consistently met. Rural response times continue to be a concern for PFA. The development of larger homes in remote areas has already been expressed as a concern. Additionally, the deployment of PFA forces is greatly impacted by incidents located in rural areas. City and County planners project that many of these areas will remain rural due to the establishment of community separators and open space dedication.

Staffing

The basic unit of fire service EMS delivery is the fire company. The number of firefighters assigned to a company is intended to maximize the efficiency of the unit and provide a reasonable level of safety for the firefighters, within the context of the risk environment. The standard unit staffing for PFA as of 2006 has been 3 for fire engines, 4 for ladder trucks.

Systems coverage

System coverage refers to the ability to maintain timely response by emergency personnel within PFA's jurisdiction. This is done by locating fire stations throughout the jurisdiction so that an average response time of five minutes within the urban response area for the first arriving

company is achieved. This is a standard PFA has successfully met for the ten years data was collected for this plan.

However, there are times when it becomes difficult to maintain this coverage due to high response periods. During these periods, PFA uses a concept known as system status management. An off-duty battalion chief is called in to manage the remaining available companies while a major incident is in progress or during extremely high call periods. Companies are relocated by the battalion chief to control response times as best they can with the resources that are available.

Training

All fire fighting personnel must be trained to a high degree of competency, and these skills must be maintained over the course of a firefighting career. As the need for EMS responses increase, and skill requirements become more complex, the need for additional training will stress the training component of the organization.

Service Expansion

Providing fire protection, EMS, and related emergency services to newly developed areas has been a major challenge for many years. Since 1980, the total fire protection system has grown from 7 career stations and 2 volunteer stations to 10 career and 3 volunteer stations. During this same period, uniformed firefighters have increased from 90 to 156. When compared to population growth (76,800 in 1980, and 179,591 in 2006; 234% increase), the number of firefighters have fallen behind (90 in 1980, and 156 in 2006; 75% increase). This has led to uniformed personnel per 1,000 population reduction from 1.17 in 1980 to .86 in 2006.

In the 1987 Strategic Plan, a Resource Implementation Criteria model was adopted. This located new fire stations in accordance with four factors – emergency response criteria, workload constraints, opportunity benefits, and system impact.

This model proposed that new fire stations (engine companies) be provided in new areas when the urban portion of an area to be served is approximately one-half developed. Based on the past 20 years, this equates to a population base of 10,000-15,000 citizens, with a call load of 400-500 incidents per year. Since 1980, four fire stations have been implemented under this criterion.

The emergency response criterion is generally recognized as the most important. Included is response time, arrival of secondary support units, and risk environment.

Community Growth

Growth in terms of population, housing units, commercial buildings, businesses, and government facilities has been one of the defining characteristics of the Fort Collins area for many years. As regards population, the area has grown from approximately 25,000 in the 1960's to 170,381 in PFA's jurisdiction in 2006. And considering the urban growth area, the City of Fort Collins has grown from 10 square miles to 75. During this time, the fire service has expanded from 1 fire station in downtown Fort Collins to 10 within the urban area.

This planning assumption describes two aspects of growth that impact fire and emergency services, population growth and development patterns. In recent years, the City of Fort Collins' elected officials have pursued the development of an open space barrier between the urban area of the City and development areas in Larimer County. The long-term impact on growth and development is yet to be determined, but the clear intent of the City's council members is to limit growth. Previously ignored spaces within the urban area are now included in planning for residential or commercial development. As the density of the City core area increases, new challenges will confront PFA. The areas outside the open space barrier will likely continue to grow and be developed as in the past. Regardless, the underlying assumption concerning community growth is that growth will continue to be a defining characteristic of the Fort Collins area; but the rate of growth and development patterns may vary due to the combination of political and market forces.

Population growth will continue within the foreseeable future as it has in the past.

The population of the Fort Collins area has increased at a constant rate for many years. The population statistics are provided by the Larimer County planning department. In 2006, the total PFA population was estimated to be 170,381; 132,261 residents were within the City (77.60%). Shown below is City population data from 1996-2006.

Fort Collins Population 1996-2006

Year	US Census	City Population Estimates
1996		106,220
1997		109,356
1998		112,335
1999		115,937
2000	118,652	118,652
2001		122,521
2002		124,425
2003		125,461
2004		126,903
2005		132,171
2006		132,261

The population within the PVFPD is more difficult to assess because population statistics are compiled on a County-wide basis. However, an analysis of current PFA maps and 2000 census data indicates that the 2000 population of the PVFPD is approximately 31,582.

Based on current population growth projections of 2%, the table on the next page shows the potential population of PFA, if growth follows a similar pattern.

Year	PFA Estimated Population	City Estimated Population	Fire District Est. Population
2000	150,234	118,652	31,582
2005	167,040	132,171	34,869
2010	181,662	143,164	38,498
2015	200,570	158,065	42,505
2020	252,242	205,314	46,928

These estimates must be qualified as future population growth estimates tend to be highly speculative. Population growth is influenced by many factors beyond local conditions, and local consensus on growth management may change over time. From an EMS perspective, the total population is important as there is a correlation between population growth, and increased demands for EMS services.

Residential Density

Residential density is an important factor in fire protection planning as it directly affects the cost of providing services. Because response time is such a critical consideration in defining service levels, better use of fire protection services can be realized with higher numbers of residents served.

Incident Rates

In the 11 year period since 1996, PFA has experienced a 52.2% (8,087 to 12,309) increase in incidents, while the population served has increased only 25.9% (135,030 to 170,381). Even though EMS responses, which began in 1977, contributed greatly to this increase, it is still a pronounced phenomenon. This is not unique to PFA; increases of this magnitude are common in all growing metropolitan areas. While there is no definitive information on why this occurs, it is reasonable to expect that greater residential densities, wider economic diversity, and urban congestion contribute to these increasing rates.

Incident rates are represented in 4 primary categories:

- Total incidents
- Fires – structure, vehicle and outside fires
- Medical emergencies
- Non-fire/EMS – includes false alarms, good intent, service, hazardous conditions and miscellaneous incidents

The table below shows the number of incidents in each category in 2006, their rate per 1000 population and percentage of total incidents.

2006 Incident Rates

Category	Number	Rate Per 1000 Pop.	Percent of Total
Incidents	12,309	73.34	
Fires/Explosions	510	3.04	4.1%
Medicals	9,099	46.64	73.9%
False alarms	951	5.67	7.7%
Service calls	599	3.57	4.8%
Good intent calls	768	12.15	6.5%
Hazard conditions	350	2.08	2.8%
Other	31	.18	.3%

Non-fire/EMS incidents have increased faster than the population but less so than medical emergencies. Some of this increase may be due to the reclassification of certain incidents some of which may have been recorded as fires in the past.