IDENTIFYING EMERGENCY AND NON-EMERGENCY RESPONSE STANDARDS FOR THE FORT LUPTON FIRE PROTECTION DISTRICT

Identifying Emergency and Non-Emergency Response

Standards for the Fort Lupton Fire Protection District

Phillip A. Tiffany, Fire Chief

Fort Lupton Fire Protection District, Fort Lupton, Colorado

December 2009

CERTIFICATION STATEMENT

I herby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

Abstract

The problem was the Fort Lupton Fire Protection District (FLFPD), a combination volunteer and career department, did not have an effective response standard to identify the requirements for an emergent or non-emergent response for both medical and fire related incidents. The concern was that this placed the Fort Lupton community and the firefighters at an increased risk for potential injury or liability if they were involved in a crash while responding to a call. The purpose of this applied research project was to evaluate the current response practices and to determine what factors to consider in the development of effective response criteria to ensure the safety of the firefighters and residents of the FLFPD. The descriptive research method was conducted to answer the following research questions: What guidelines dispatch used to determine the priorities for emergent or non-emergent response? What were the response standards set forth by Colorado law, national firefighting organizations, and the community for incident response in order to determine whether members of the FLFPD respond emergent or non-emergent? What standards existed in other Colorado fire departments and how these standards determined if an apparatus responded emergent or non-emergent? Information was collected through procedures that included a general web search, literature research, and surveys of the FLFPD members, the employees of the Weld County Regional Communications Center (WCRCC), community members, and fire chiefs throughout Colorado. The results indicated that the FLFPD needed to evaluate the current response policy. Recommendations included that the FLFPD needed to develop guidelines and training that provided the members of the FLFPD and the WCRCC the needed information, computer software, and skills in order to determine the priority of a call.

This will assist in determining if the call requires an emergent or a non-emergent response to ensure a safe and timely arrival of personnel.

Table of Contents

Appendices

Introduction

The scene is all too common all over the United States. A fire apparatus running with emergency lights and sirens involved in an accident, which resulted in the death or injury of fire personnel or innocent bystanders while responding to a call. These types on incidents continue to occur daily. According to the United States Fire Administration (United States Fire Administration [USFA], 2006), vehicle crashes were the second leading cause of firefighter deaths in 2005. In fact, between 1994 and 2005, 250 firefighter deaths were attributed to vehicle collisions (USFA, 2006). An additional 74 deaths were reported related to vehicle collisions from 2006 until 2008 (USFA, 2009). This totaled 324 fatalities spanning a 15-year period. The USFA (2009) reported in 2008, 24 of 118 firefighters died while responding to or from emergency incidents. These numbers included crashes that involved six fire apparatus and six personal vehicles. The statistics appear to be consistent ranging from a low of 11 fatalities in 1999 to a high of 34 fatalities in 2003.

By examining these staggering statistics, it is apparent that when climbing into a personal vehicle or fire apparatus to respond to a call, the first responders are placing themselves and the motoring public at great risk in order to achieve the goal of protecting lives and property. Effective response can be a difficult balance between a safe timely response, while providing good customer service and the “get there fast” mentality. The perception by the firefighter and the community is that the greater the speed while displaying emergency lights and siren the quicker the response to the scene. However, we must ask ourselves if this is true and are the consequences worth the risk?

Dispatch personnel must know the correct questions to ask, gather the correct information, and convey the information to first responders. The first responder personnel making these decisions to drive emergent or non-emergent must be well-trained, experienced members, and have an effective policy that is coupled with the specific information needed in order to determine how to respond to a particular incident.

The research problem is that the Fort Lupton Fire Protection District (FLFPD), a combination volunteer and career fire department, does not have an effective response standard for emergency and non-emergency response for medical and fire related incidents. The concern is that the lack of this standard may be placing the residents of the Fort Lupton community and the firefighters at risk for potential injury or increased liability if they are involved in a crash while responding to a call.

The purpose of this applied research project is to evaluate current practices and determine what factors to consider in the development of an effective response criteria in order to ensure the safety of the firefighters and the residents of the FLFPD. Through a descriptive research approach, answers to the following questions were pursued: What guideline does dispatch use to determine if the response requires and emergent or non-emergent response? What does Colorado law, other national firefighting organizations, and the community recommend regarding emergency response for fire apparatus and personal vehicles for volunteers? What are the current considerations and determining factors regarding emergent or non-emergent response of the members of the FLFPD? What response standards exist in other fire departments in Colorado that determine if an apparatus responds emergent or non-emergent?

Background and Significance

The FLFPD is a special district located in Weld County Colorado, approximately 30 miles north of the Denver Metropolitan area. The district covers 78 square miles, which includes several major highways, a large portion of agricultural land, oil and gas production facilities, rural areas, and the City of Fort Lupton. The population is approximately 14,500. Currently, there are two stations in operation located centrally in the response area. The FLFPD provides basic life support (BLS) response and responds in conjunction with several advanced life support (ALS) ambulance agencies.

These resources include the Weld County Ambulance Service (WCAS), which is stationed in the FLFPD Station 2. Platte Valley Ambulance Service (PVAS), which is located approximately seven miles to the south and has a response time of about 15 minutes. Frederick-Firestone Fire Department Ambulance is located approximately, eight miles to the west and has an approximate response time of 15 minutes. Generally, the fire department will receive response in the order listed unless modified due to the location within the district. There are three medical transport helicopters within a 12-minute flight time to the district as well. The FLFPD will average about three patient transports per month via helicopter. This is attributed to our proximity to hospitals that can provide the appropriate level of care for the patient.

The department is comprised of 54 volunteers and 10 career personnel. The volunteer force is divided into two groups, which includes reserves and volunteers. The reserves reside outside of the district boundaries and are required to complete 36 hours of station shift time on a monthly basis. The volunteers live within the district boundaries and respond based upon availability. They are not required to complete any station shift

duty. The career personnel work 24-hour rotating shifts one day on duty and two days off. There are two career personnel assigned to each shift and one career firefighter designated to rotate in order to cover shift vacancies, vacations, and other coverage issues. Three administrative personnel, including the fire chief, captain, and training coordinator are on duty Monday through Friday. Response from the volunteer averages about seven personnel per call. The reserve personnel shift at the station and supplement the career response. The department responds to approximately 1000 service calls during a one-year period.

The FLFPD has four engines, one aerial platform, four water tenders, two rescue units, three brush trucks, three command units, two special operation trailers, and one reserve engine. Eight of these response apparatus are equipped with an Opticom system. The Opticom is an infrared system mounted on the emergency vehicle that transmits a visible flashing light or infrared signal to a receiver located on a traffic signal. Once activated, the emitter will send a signal to the receiver and provide a green traffic signal for the direction that the emergency vehicle is traveling and a red signal to crossing traffic. It will remain in this mode until the reception of the signal terminates. The system is designed to minimize the risk of emergency vehicle crashes at intersections by providing the green light in the direction that the emergency vehicle is traveling and limiting all other traffic.

The Weld County Regional Communications Center (WCRCC) is a county-based dispatch center that provides dispatch services for law enforcement, emergency medical services (EMS), and 23 fire departments utilizing the enhanced 911 system. The dispatch center employs 46 dispatch positions and has a designated fire team, who are responsible

for the handling of emergency phone traffic and fire dispatching services. There is a primary dispatcher and fire assistant assigned to the fire channel. Communications with field units is through a statewide interoperable 800 MHz trunked radio system backed up by a county wide repeated VHF system with voice paging. Dispatchers utilize the National Academy Medical Priority Dispatch System (2008) designed for medically related calls on behalf of the Weld County Ambulance Service, which evaluates the patient's chief complaint, age, level of consciousness, and status of breathing as a determinant of what type of response is required. However, the fire service has not formally adopted or recognized emergency medical dispatch. There is no priority system for responses outside of medical complaints.

The existing policy of the FLFPD allows for an emergent response while responding to an emergency within the parameters of Colorado law. This includes the use of audible and visible signals while driving no more than ten miles per hour above the posted speed limit and the safe operation of the fire apparatus, not endangering life or property (FLFPD, 2009). The operator of a fire apparatus must come to a complete stop at all red traffic signals and stop signs to ensure the intersection is safe before proceeding (FLFPD, 2009). Use of a seat belt is required for anyone riding in a moving vehicle.

When a call is paged out to the department, a system of response is set into motion that few people outside of the fire community understand. Within 90 seconds, the career crew initiates response in a marked apparatus. The volunteers then respond from home in their personal vehicles to the closest assigned station. Some of the volunteers have emergency lights and sirens on their vehicles and some do not. Emergency equipment is provided as an option for in district volunteers. The potential number of

responders in personal vehicles could be as high as 21. Based upon the member's interpretation of the general call information provided by the dispatcher, they respond either emergent or non-emergent. When you consider the likelihood for tragedy, there could possibly be 21 personal vehicles all trying to get to the same location in the shortest amount of time, converging on common intersections engaging with marked police and fire apparatus, all of which are asking for the right of way. The members operating the motor vehicles have varying levels of experience both in the fire service and in driving. Add to this changing weather conditions, school zones, cell phones, texting, and the motoring public who may be distracted. The volunteer then arrives at the station to respond in a marked fire apparatus emergent or find out that the call was a false alarm and they just drove in a manner that put themselves and the community at risk for no reason.

The International Fire Service Training Association (International Fire Service Training Association [IFSTA], 2000), identified statistics compiled by the National Fire Protection Agency (NFPA) show that between 15% and 20% of all firefighter injuries and deaths are caused by collisions while responding to or from emergency calls. This accounts for approximately 25 firefighter deaths per year and a comparable number of civilians. All responders have good intentions when they leave the house or station to assist a community member in their time of need. No one individual can forecast when a crash will happen. However, taking this opportunity to realize that there is a potential for a crash to occur and taking steps to minimize this exposure is everyone's responsibility. This has been and continues to be an issue on the forefront for the fire service and the FLFPD. The FLFPD does not presently have a means by which personnel can determine

if an emergent or non-emergent response is necessary, so the standard response is emergent. By creating a means by which to prioritize responses, this would reduce these liabilities and assist our responders in making decisions regarding emergent and non-emergent responses based upon the criteria for each.

This research project relates to the role of the Executive Fire Officer (EFO) in that executive level chief officers need to be proactive rather than reactive emphasizing leadership, development, prevention, and risk reduction (NFA, 2008, p. I-4). This is especially true at the executive leadership level, identifying a potential problem such as emergency driving and making the appropriate changes to minimize the risk before any further agencies experience a tragic event. This research also directly relates to the United States Fire Administration (USFA) operational objective in reducing the loss of life of firefighters and appropriate response in a timely manner to emerging issues in the fire service (NFA, 2008, p. II-2).

Literature Review

The purpose of the literature review was to gather the findings of others both within and outside of the fire service order to examine how other agencies and professional are addressing the issue of emergent and non-emergent response. This section will utilize current sources to address each of the research questions.

Every child can remember the vision of a big red fire truck rushing by with the lights flashing and the sirens blaring. The question that always followed was “where are they going?” There must be an emergency somewhere, right? The use of warning lights and sirens on fire and emergency medical service (EMS) has been a tradition in this country for many years (USFA, 2004). Yet according to the USFA in the publication

Emergency Vehicle Safety Initiative (2004), true emergencies for fire and EMS agencies are limited. Although, tradition dictates that apparatus respond to all calls initiated through 911 with lights and sirens, this behavior has resulted in numerous injuries and fatalities to both firefighters and civilians (USFA, 2004).

In almost every case, the emergency response begins with a call to 911. However, what happens when you call 911? The dispatcher is usually the first line contact with the person who is experiencing a life changing moment. According to the USFA (2004), a well-trained dispatcher who obtains accurate and complete information from the caller by asking preset, algorithmic questions can be the determining factor on whether or not the units respond with or without lights and siren.

The National Academy (2008) implemented a Medical Priority Dispatch System that is recognized by the National Academy of Emergency Medical Dispatch (NAEMD). With each incoming 911 call that is medically related, the dispatcher who is trained in the protocol of Emergency Medical Dispatching (EMD), refers back to case entry and begins asking the caller preset questions. These questions are similar to that of a first responder's primary survey and determine the chief complaint, age, level of consciousness, and status of breathing (National Academy, 2008). If the patient is determined to be unconscious or has ineffective breathing, a maximum response is immediately dispatched without further pre interrogation or instructions. Should the EMD learn that the patient is breathing, approximately 30 seconds of additional interrogation is required to complete the additional key questions to assign a proper determinant code (National Academy, 2008). This information is considered the equivalent of a secondary survey as completed by a first responder and provides a more accurate determination of the chief complaint. This

can usually be obtained in under a minute. Through this rapid assessment, the case is assigned a determinant response code after evaluation of the severity of the injury or illness.

According to the National Academy *Field Responder Guide* (2008), the determinant codes place the response priority in one of five levels of response: Alpha, Bravo, Charlie, Delta, and Echo. Each agency dictates their unique configuration (emergency vehicles and mode of response) based upon local medical control. Generally, Alpha and Bravo responses present a lesser threat to loss of life, which requires a non-emergent response. In comparison, Charlie and Delta responses present a more significant immediate threat to life, and require an emergency response by the responding agency. The Echo determinant identifies an extreme condition of a patient not breathing and immediate threat to the loss of life encouraging the closest emergent response of any trained crew with the proper equipment (National Academy, 2008). The dispatcher will remain on the phone with the patient or caller to give pre-arrival and post dispatch instructions. The National Academy (2008) re-arrival instructions include cardio pulmonary resuscitation (CPR), the Heimlich maneuver, and emergency childbirth procedures.

Priority dispatch has been a part of the Salt Lake City Fire Department for over 25 years. According to the USFA (2004), the practice of EMD was extended over time to fire calls. The dispatcher asks a series of pre-scripted questions in order to determine a priority dispatch code. Salt Lake County, Utah also utilizes closest unit dispatching through the use global positioning devices and cross-jurisdictional response through

automatic aide to ensure a timely response and minimizes the liability of emergent response over long distances.

Contrary to the Salt Lake City Fire Department, the Phoenix Fire Department initially dispatches fire units to respond with lights and sirens on a majority of calls. However, the first arriving apparatus downgrades the remaining responding units if they find nothing upon approach (USFA, 2004). The company officer can upgrade or downgrade a response at their discretion and are encouraged to do so for the sake of firefighter safety and to err on the side of caution. This is the same practice adopted by the Virginia Beach Fire Department.

In 1997, Virginia Beach Fire Department discovered that most of their vehicle and intersection crashes occurred during the low frequency, low severity types of calls such as odor investigations and downed power lines, which posed no immediate life threat. A structure fire with people trapped is and example of a low frequency high severity response. The agencies were forced to reevaluate the commonly adopted risk assessment matrix in Figure 1, and develop a priority dispatch policy, which contains the classifications of emergency and non-emergency fire responses (USFA, 2004).

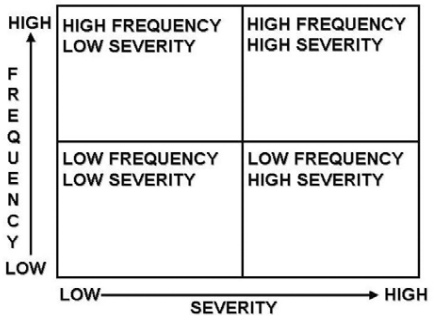

Figure 1 Previous Risk Assessment Matrix (USFA, 2004)

Stephanie Graves (n.d.) raises the question why do we need to prioritize calls in public safety. It is because everyone who calls 911 believes they have an emergency and they require a timely response. The law enforcement profession has adopted a call prioritization scheme to determine a hierarchy of calls for service, ranking types of calls from the most urgent to the least urgent. For example, Graves (n.d.) identified that an officer needing assistance, violent crimes in progress, incidents involving personal injury require an immediate emergent response. As well, Graves (n.d.) also identified that property loss in progress calls, property loss incidents not in progress, officer initiated field activity, and nuisance calls all take a lower priority. Using a no nonsense approach, the call with the most threat to loss of life requires a more expedient response. However, the type response and priority circles back to the questions asked by the dispatcher and the information gathered at the time of the 911 call.

In summary, the number of emergency calls to dispatch are rising at an incredible rate and the dispatchers, communications equipment, as well as technology must continue to progress in order to utilize the resources more efficiently, improve the response times, accuracy, accountability, and coordination to prevent tragic failures of the system. Effective communication between the call taker and the dispatcher, which is then transmitted to the emergency responder, is essential in generating an effective, appropriate, and safe response. The use of Emergency Fire Dispatch (EFD), the equivalent of EMD, could benefit fire personnel. This process includes asking pre scripted questions and rapidly classifying the call into a predetermined response type ensuring a consistent and appropriate type of response. This process assists fire personnel

in determining the severity of the circumstances surrounding the call and assigning a level of priority.

Colorado law allows for certain exceptions for the drivers of emergency vehicles when responding to but not upon returning from an emergency. Colorado Revised Statute (C.R.S.) 42-4-108 (1995) identifies the exceptions to Colorado state law regarding emergency vehicles while responding to an emergency while displaying audible and visual signals. The content of this statute allows the driver of an emergency vehicle to:

(2)(a) Park or stand irrespective of the provisions set forth.

(2)(b) Proceed past a red or stop signal but only after slowing down as may be necessary for safe operation.

(2)(c) Exceed lawful speeds as long as the driver does not endanger life or property.

(2)(d) Disregard regulations governing directions of movement or turning in specified directions.

C.R.S. 42-4-108(5) (1995), also defines an emergency vehicle and designates that classification of vehicle as necessary to the preservation of life or property or to the execution of emergency governmental functions. However, C.R.S. 42-4-108(4) (1995), does not relieve the driver of an authorized emergency vehicle from the duty to drive with due regard for the safety of all persons, nor shall such provisions protect the driver from the consequences of such driver's reckless disregard for the safety of others.

Colorado Revised Statute section 42-4-222(1)(a) (1995), also allows for a privately owned vehicle (POV) of volunteer firefighters to equip their automobiles with a signal lamp or a combination of signal lamps capable of displaying flashing, oscillating,

or rotating red lights visible to the front and rear at five hundred feet in normal sunlight. In addition to the red light, flashing, oscillating, or rotating signal lights may be used that emit white or white in combination with red lights. Said automobiles may be equipped with audible signal systems such as sirens, whistles, or bells. This equipment may be used when a member is responding to or attending to an alarm, other emergency, or when a member of an ambulance service is responding to an emergency requiring the member's services. These signals shall not be used for any other purpose. Knowledge of the laws and regulations in conjunction with a well-structured departmental response guideline governing the operation of emergency vehicles is instrumental in the being an effective driver of fire apparatus. This also gives the operator the proper parameters for safe operation of the emergency vehicle.

The National Fire Protection Association (National Fire Protection Association [NFPA], 2002), specifically addresses drivers and operators of fire department apparatus under NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program* in section 6.2. The standard identifies that fire apparatus shall be operated by those members who possess a valid driver's license and have successfully completed an approved driver-training program or are a trainee driver under the supervision of a qualified driver. The vehicles shall be operated within compliance of all traffic laws, operated safely, and prudently. All occupants must be seated with seat belts fastened. The safe arrival of the apparatus at any scene is the first priority (NFPA, 2002). During an emergency response, the driver of any apparatus shall bring the vehicle to a complete stop under the following circumstances:

1) When directed by a law enforcement officer.

2) Red traffic lights
3) Stop signs.
4) Negative right of way intersections.
5) Blind intersections.
6) When the driver cannot account for all lanes of traffic in an intersection.
7) When other intersection hazards are present.
8) When encountering a stopped school bus with flashing warning lights.

Drivers shall proceed through intersections only when the driver has accounted for all lanes of traffic. During either emergent or non-emergent response, drivers of fire apparatus shall come to a complete stop at all unguarded railroad crossings and use caution at all guarded crossings (NFPA, 2002).

The NFPA addresses drivers and operators of fire department apparatus under NFPA 1451 *Standard for a Fire Service Vehicle Operations Training Program* (2007) and emphasizes much of what NFPA 1500 identifies. The intent of NFPA 1451 originated from a 1991 request by the National Transportation Safety Board (NTSB), to the Technical Committee on Fire Service Training, which identified that the safe arrival of fire apparatus at an emergency was the first priority. This was further accentuated in the 1995 statistics that revealed 23.9% of the firefighter fatalities were in motor vehicle crashes (NFPA, 2007). The first edition of this standard was issued in 1997. It should be noted that in 2002 the terminology was updated the change the original wording from “accident” to “crash”. The term accident perceived by some as unavoidable or chance occurrence while crashes can be avoided through training and education (NFPA, 2007).

NFPA 1451 (2007) identifies that members of fire departments shall be provided with a driver training and education program prior to being able to operate fire department apparatus. This shall also include training on the duties and functions that they will be expected to perform to ensure that they do not pose a risk or hazard to themselves, the public, or other members (NFPA, 2007). The training shall be provided at least twice per year using actual fire apparatus and apart from a virtual driver simulator, whenever driving procedures or technology changes, and finally whenever a new vehicle is introduced into the fleet. NFPA 1451 cross references NFPA 1002 (2009), *Standard for Fire Apparatus Driver/Operator Professional Qualifications* which identifies the requisite skills and knowledge required for the maintenance and operation of engines, aerial/tiller devices, aircraft, and wild land fire apparatus. Specifically, NFPA 1002 (2009) requires that the driver/operator operate a fire department vehicle on a public roadway in compliance with state and local laws, and departmental regulations. The requirements include:

1) Four left turns and four right turns.
2) A straight section of urban business street or two-lane road at least one mile in length.
3) One through intersection and two intersections where a stop has to be made.
4) One railroad crossing.
5) One curve, either left or right.
6) A section of limited access highway that includes a conventional ramp entrance and exit a section of road long enough to allow two lane changes.

7) A downgrade steep enough and long enough to require downshifting and braking.
8) An upgrade steep enough and long enough to require gear changing to maintain speed.
9) One underpass or low clearance bridge.

Additional requirements include backing, using mirrors, apparatus turning radius, handling liquid surge, use of a spotter, and maintaining proper control during acceleration, deceleration, turning, adverse weather conditions, and use of the passenger restraint systems. However, there is no reference in NFPA 1002 to emergency driving and the requirements for this type of response.

According to the USFA (2004), an effective training program is the foundation for all safe practices. This includes the quality/type of the course, integration of the classroom and applied practice, and the quality of the instructor. Expanding on this concept, the USFA (2004) identified four human factors that contributed to vehicle crashes: knowledge base, skills, ability, and attitude. The drivers may lack knowledge of the traffic laws and the awareness of the potential dangers in operating a fire apparatus. Inadequate skills in handling the apparatus may be the result of an insufficient training program with a lack of practical evolutions, inexperience, slowed reaction time, and poor judgment. The USFA (2004) reported that the attitude of the drivers played a major role in safe vehicle operations. Failure to obey traffic laws, take proper precautions, improper use of the roadway, or allowing impulsive actions/excitement to lead to shortcuts, and reckless behavior that all contribute to apparatus crashes and fatalities. Other factors included inattentiveness while returning to the station after the emergency is over and

because the elevated sense of awareness has diminished (USFA, 2004). As well as the emotional sense of power and urgency while responding with emergency lights and siren blocks out reason and prudence, leading to apparatus handled in a reckless manner. According to the USFA (2004), the statistics reflect that age, both younger and older, is a factor in fire apparatus and ambulance crashes. The younger driver may only have several years of driving experience while the older driver may have diminished responses. Thus, structured training with required refreshers on an annual basis plays an integral role in the development of an effective and safe fire apparatus operator (USFA, 2004).

A significant stakeholder in emergency response is the community served by the responders. In many areas, the public has a perception that they are paying taxes for emergency services and when they call 911, the expectation is that the equipment shows up rapidly displaying lights and sirens. After all, it is an emergency to them. In the article, "It's No Longer Always Red Lights and Sirens", Susan Kyle (2006) identified that fire trucks blending into traffic in St. Louis, Salt Lake City, and Anne Arundel County, Maryland maybe headed to an incident. Many fire agencies across the nation are starting to deviate from the norm of emergency lights and sirens on every call and evaluating response policies due to the increasing number of apparatus crashes. The call takers and dispatchers in the communications centers are carefully screening the calls and determining rather the units will run "on the quiet" or use the emergency lights and sirens (Kyle, 2006). St. Louis is in its 10^{th} year of such a policy and it seems to have been readily accepted by the community even though there was some skepticism in the beginning. Kyle (2006) pointed out that Anne Arundel County Fire implemented a three-tiered response of hot, warm, or cold in 2006. They surveyed the community and found

that 96 percent of the community was in favor of a reduced response for fire related calls and 86 percent supported the handling of EMS calls in the same manner (Kyle, 2006). Dispatchers used response criteria gathered from the call to determine that on a warm response the first unit runs with lights and sirens the others without. Quiet or cold calls were for wires down, pull station activations, lockouts, and smoke detectors sounding (Kyle, 2006). Calls that generated an emergency response included working fires, cardiac or breathing problems, and situations with serious trauma. Any situation could be upgraded to an emergency based upon additional information received without needlessly risking lives with emergency response. Although no data was provided, the statistics in Maryland revealed that there was not a significant difference in the arrival time of units when they respond without lights and sirens as opposed to with lights and sirens (Kyle, 2006).

Salt Lake City officials reported that they have received many positive comments regarding the reduced use of lights and sirens and found that response times were increased between 51 seconds and two minutes in most cases (Kyle, 2006). This compared similarly to a 1995 study regarding the transport of patients in North Carolina that revealed that the use of lights and sirens saved an average of 43.5 seconds (Hunt et al., 1995). In very few clinical circumstances would this 43.5 second difference significantly change the outcome (Hunt et al., 1995). Although, this same study did reveal the greatest amount of time saved with a lights and siren response was five minutes 11 seconds and the second greatest time saving being two minutes 42 seconds. The conclusion drawn from this study demonstrated that the minimal average

timesavings of 43.5 seconds did not warrant use of emergency lights and sirens during transport except in rare situational and clinical circumstances (Hunt et al., 1995).

Why do firefighters feel the urgency to rush to the scene? Michael Dallessandro (2009) in his journal article *Lights, Sirens…Accidents,* identifies that the statistical information and geographical issues force this issue. Responses times are one of the statistics evaluated in order to determine the quality of service provided to the community and the means by which to evaluate the approval of funding consideration (Dallessandro, 2009). Many of the firefighters who drive apparatus at least consider the importance of response time on a regular basis (Dallessandro, 2009). The farther the apparatus must travel the longer the response times. Using speed to compensate for the difference, the potential for a speed related crash increases. Television theatrics portray the firefighter as rushing to the scene exceeding the speed limit in emergency vehicles. In the volunteer sector, firefighters often use speed in both personal vehicles and department apparatus to make up for the delay in response (Dallessandro, 2009). Volunteers must drive in their personal vehicles to the station or in some cases, the scene, and then gear up. After arriving approximately 10 minutes or more after the initial 911 call, the volunteers try to make up for the loss of time in a rapid response in the fire apparatus. In fact, between 1990 and 2001, personal vehicles accounted for 42.3 percent of the total fatality crashes. The mathematics is logical due to the increased potential number of volunteer firefighters responding in their personal vehicles to the station and then responding in one engine (USFA, 2003). These numbers reveal that combination and volunteer departments are at significant risk to suffer a fatality accident when members respond to emergency calls in their personal vehicles. The probability of an accident is increased due to the large

number of volunteer firefighters in the United States as well as also factoring in the varying amounts of experience and age factors of volunteers in combination departments as they struggle to retain and recruit members.

According to the USFA (2003), the single most important issue that affects the crash is the manner in which the apparatus is driven both to and returning from the incident. Safe driving practices of the vehicle operators will significantly reduce the probability of the apparatus being involved in a crash resulting in injury or a fatality. Only five percent of the total number of apparatus crashes is caused by mechanical failures (USFA, 2003). Fire tankers account for the largest number of firefighter crash deaths of fire department apparatus while they only account for three percent of all apparatus in the United States (USFA, 2003). This number is a rather staggering statistic to absorb and identifies that there is a significant problem in not only the operation of engines and ambulances but also the operators of the fire tankers in our volunteer departments. In a case study conducted between 1990 and 2001, 38 fatality crashes resulted in 42 total deaths (USFA, 2003). This number included no career personnel, and all 42 fatalities were volunteers. Four of the 38 crashes resulted in multiple fatalities. The casual factors (which may include multiple factors in a single crash) in each of these 42 fatality crashes, revealed the following (USFA, 2003):

1) Thirty-one firefighters failed to wear their seat belt.
2) Twenty-five had wheels that left the right side of the road.
3) Twenty-one were driving at an excessive speed.
4) Twenty firefighters were ejected from the tanker.

5) Nineteen overcorrected when attempting to bring the right wheels back onto the roadway.
6) Seventeen failed to negotiate a curve.

Technology may assist in the pursuit of safety with such developments such as the computer driving simulator, in cab cameras, and the on board computers known as the "little black box" similar to the well-known aircraft flight data recorders. According to Kupietz (2007), the on board cameras are triggered by a marker event such as a rapid acceleration, extreme braking, or gravitational force in any direction and will record ten seconds prior to and after this triggering event. These events can then be reviewed to prevent future similar events. Kupietz (2007) also identified that the "little black box" on board computer not only records the information of vehicle speed, position of seat belts, braking, and gravitational forces but also will sound an alarm if a driver is in violation of a parameter and store it in the computer as an event. These have proven effective in the evaluation of the driver's capabilities, while enhancing safety and performance (Kupietz, 2007).

In order to reduce the number of fire apparatus crashes, operators must participate in a quality and annual apparatus operator-training program. Firefighters must wear their seat belts and adopt the culture of safe operation of emergency apparatus by the leaders of the department reinforced with departmental response guidelines. However, without addressing the root causes of unsafe driving practices the fire service will continue to experience injuries and fatalities from apparatus crashes. These include the operator's attitude, unsafe driving behaviors, and failure to use the proper safety equipment.

In summary, as demonstrated by the detailed literature regarding the importance and number of considerations with emergency vehicle response while utilizing emergency lights and sirens, it is apparent that fire agencies must evaluate their current response procedures. This is essential to the safe operation of fire department personnel and the community while driving fire apparatus during an emergency response. There are many factors to consider. One significant point is that while a timely response is essential in an emergency response, a safe response is essential in every response. In comparison, while responding without emergency equipment appears to impact the overall incident arrival time by less than one minute and rarely affects the outcome of the event. In addition, the impact of a firefighter or citizen fatality because of an emergency vehicle crash can be devastating and far-reaching. Ensuring the safe arrival of the first responders through effective communication of the event, the personnel making the decision to respond in the appropriate manner, with a well-trained individual to operate the apparatus safely, and following the prescribed departmental policy should be every agency's goal.

Procedures

This applied research paper used the descriptive method in the collection of data. This method focused on what considerations should be evaluated in the development of emergency and non-emergency response criteria for the FLFPD and the fire service as it related to the reduction of injuries and deaths of firefighters during emergency response.

In collecting information for this subject, a search of materials at the Learning Resource Center (LRC) located at the National Fire Academy (NFA) in Emmitsburg, Maryland was completed both in person and via the internet. The LRC offers the most comprehensive number of books, reports, magazines, and other sources of information

related to emergency services. The search was completed using the catalog computer search services of the LRC utilizing the key words of emergency response, emergency vehicle accidents, firefighter fatalities, and several other variations of key words. While at the NFA, several publications were located at the USFA Publications Center, which proved to be valuable.

The FLFPD receives many journals, periodicals, fire service magazines, and other correspondence such as brochures. Several related articles related to emergency response and vehicle safety were located in Fire Chief, Fire Rescue, Firehouse, and Fire Engineering magazines.

The local public libraries as well as the library at the University of Northern Colorado were searched for additional literature on emergency vehicle response. These locations revealed several sources and some duplicate references to the government publications that were obtained at the NFA.

A search of the World Wide Web was also completed via the internet and several search engines using the keywords of emergency response, emergency vehicle accidents, firefighter fatalities, and prioritization of emergency calls. This resource provided a diverse and large number of references regarding emergency vehicle response.

An internal survey was developed and distributed via web link in September 2009 to the members of the Fort Lupton Fire Protection District. The rationale of this survey was to develop a sample of the internal attitudes and knowledge of the FLFPD personnel regarding emergency response in both their personal vehicles as well as marked fire apparatus. The survey is included in Appendix A.

A second survey was developed and distributed via web link in September 2009 to the WCRCC supervisors, dispatchers, and call takers. The purpose of this survey was to gather information on dispatch procedures, considerations, and attitudes regarding their role in the system of ensuring a proper response by the responsible agencies. The survey is included in Appendix C.

A third survey was developed and distributed via web link in September 2009 to 105 fire departments throughout Colorado. The purpose of this survey was to gather information on the response guidelines they utilize within their agency, emergency response in personal vehicles for volunteers, fire alarm response policies, and overall attitudes regarding emergency response. The survey is included in Appendix E.

A fourth survey was developed and distributed via web link in September 2009 to the Fort Lupton Chamber of Commerce Members. The purpose of this survey was to determine the attitudes and acceptance from the community stakeholders regarding the current type of response provided to the community. Would the community support the fire department if they were to include a non-emergent response to those situations that provided a less severe risk to life safety or loss of property? This survey is included in Appendix H.

Several limitations were identified while working towards the completion of this project. One limitation identified involved the survey sent to the fire chiefs or command personnel of Colorado fire departments. In question number 12, the survey incorrectly asked leaders if they had been involved in an accident in an emergency vehicle during their career. The question would have been more effective to address the agency or agencies that they have been affiliated with over their career rather than limiting the

response to a personal experience. This clarification of terms would gather a more diverse and accurate representation of emergency vehicle accidents on a broader spectrum.

Another limitation was addressing the term for emergency vehicle crashes as "accidents" in the surveys that were sent out. The term accident could give the reader some perception that emergency vehicle crashes were not preventable. Although to the average person this most likely had little effect on their answer to the questions posed and was more a matter of semantics.

A final limitation would be that due to copyright and licensing laws the author was unable to obtain a copy or specific information on Fire Priority Dispatch System. The company was contacted and there was a significant amount of legal issues to address to allow the researcher to review the guidelines or the documents. The times frames for this research project did not allow this to be completed and the general idea of priority dispatch was communicated through alternate sources.

Results

Research Question 1. What guidelines does dispatch use to determine if the response requires an emergent or non-emergent response?

Obviously, dispatch does not dictate whether a fire engine will respond emergent or non-emergent, or do they? Almost all calls for the fire service are generated through a 911 call center with the exception of field generated activity, station walk-ins, or calls directly to the station. Thus, the dispatch center is a vital link in the information gathering, severity, and effective communication of the event to the responders.

In order to evaluate the dispatchers understanding of their role in the system, a survey was distributed via web link to the 52 personnel comprised of supervisors,

dispatchers, and call takers in the WCRCC. There were 36 responses to the survey. The level of emergency services dispatching experience is broken down below:

- Less than 1 year 2.8% (1)
- 1 to 5 years 41.7% (15)
- 6 to 10 years 25.0% (9)
- 11 to 15 years 19.4% (7)
- 16 to 20 years 5.6% (2)
- More than 20 years 5.6% (2)

Thirty-eight point two (14) of the dispatchers identified that the WCRCC currently have a policy or guideline in place to make a recommendation on whether or not the fire department responds emergent or non-emergent to medical calls only. Twenty-seven point eight or 10 personnel believe that the policy addressed both fire and medical related calls while 11.1% identify that they did not have a policy for either. Nineteen point four percent (7) of the dispatchers responded that it was up to the fire department's discretion to respond emergent or non-emergent and one person, or 2.8% did not know about a communications center policy.

When a medical related call is received at the dispatch center, 66.7% (24) of the dispatchers that agreed that the EMD is the most important factor in the type of response by EMS and fire. The EMD process, as previously described, classified the severity of the call based upon a predetermined set of questions. There was no process in place for a fire or other type of call to identify a priority. When a fire or other related call was processed, the view of the dispatchers was more widespread. Thirty-six point one percent or 13 of the dispatchers felt that the most important factor was the general nature of the call. Twenty-seven point eight (10) left the type of response up to the discretion of the fire agency, while 25% (9) felt that it was based on the information provided by the caller. Only 11.1% (4) felt that the most important factor was the information provided by

the dispatcher to the firefighters. This finding was rather unexpected as the survey results of both the external fire agencies (48.4%) and internal FLFPD (48.8%) survey results both identified this as the most important factor as a determinant for the type of response. None of the dispatchers felt that a previous history of calls to the location helped to determine the type of response in fire or medical related responses.

Of these 36 responses, 97.2% (35) of the personnel stated that they would ask other relevant questions in a non-medical type call in order to determine the priority of the call and relay that information to the fire department in order to assist them in determining the priority of the response. Fifty-eight point three percent (21) of the dispatch personnel identified that they were aware of the Emergency Fire Dispatch program that would assist them in more efficiently communicating the response priority and recommend and emergent or non-emergent response

The dispatch personnel appeared to recognize the importance of call prioritization and were in agreence that emergent response by fire apparatus poses an increased liability to the fire agency 97.2%, and the community 88.9%. However, the same group, when asked if an emergent response significantly reduces the travel time to an incident were divided on their answers with 36.1% identifying that it did, 22.2% that it did not, and the largest number were unsure at 41.7%.

Research Question 2. What does Colorado State Law, other national firefighting organizations, and the community recommend regarding emergency response for fire apparatus and personal vehicles for volunteers?

Statistics from 1995 that revealed 23.9% of the firefighter fatalities were in motor vehicle crashes (NFPA, 2007) thus identifying emergency response as a leading factor in

firefighting deaths. Therefore, the firefighting culture must effect change to reduce these numbers. There does not appear to be any standard or law that precludes a non-emergent response to an emergency call. Colorado affords the privilege for a designated emergency vehicle, which responds for the preservation of life or property (C.R.S. 42-4-108 (5), 1995) the ability to run displaying emergency lights and sirens. According to Colorado Revised Statute (C.R.S.) 42-4-108 (1995) this provision allows for certain exceptions for the drivers of emergency vehicles while responding to an emergency call while displaying audible and visual signals but not upon returning. The content of this statute allows the driver of an emergency vehicle to:

> (2)(a) Park or stand irrespective of the provisions set forth.
>
> (2)(b) Proceed past a red or stop signal but only after slowing down as may be necessary for safe operation.
>
> (2)(c) Exceed lawful speeds as long as the driver does not endanger life or property.
>
> (2)(d) Disregard regulations governing directions of movement or turning in specified directions.

The driver of an authorized emergency vehicle must operate the vehicle with due regard for the safety of all persons, and they shall not be provided governmental immunity due to a driver's reckless disregard for the safety of others. They also must wear their safety belt if one is provided in the vehicle.

Colorado Revised Statute section 42-4-222(1)(a) (1995) also allows for a POV of volunteer firefighters to equip their personal automobiles with a signal lamp or a combination of signal lamps capable of displaying flashing, oscillating, or rotating red

lights visible to the front and rear at five hundred feet in normal sunlight. In addition to the red light, flashing, oscillating, or rotating signal lights may be used that emit white or white in combination with red lights. The vehicle would then meet the requirement as an emergency vehicle as described in C.R.S. 42-4-108(2) (1995).

NFPA 1500 (2002) specifically addresses drivers and operators of fire department apparatus. The standard identifies that fire apparatus shall be operated by those members who possess a valid driver's license and have successfully completed an approved driver-training program or are a trainee driver under the supervision of a qualified driver in compliance with all traffic laws, operated safely, and prudently. All occupants must be seated with seat belts fastened. The safe arrival of the apparatus at any scene is the first priority.

NFPA 1451 (2007) addresses drivers and operators of fire department apparatus identifies that members shall be provided with a driver training and education program prior to operating fire department apparatus. The program must also identify the duties and functions that the personnel will be expected to perform to ensure that the drivers do not pose a risk or hazard to themselves, the general public, or other members. The training shall be provided at least twice per year using actual fire apparatus and excluding a virtual driver simulator, whenever driving procedures or technology changes, and finally whenever a new vehicle is introduced into the fleet.

Regardless of who is driving, the emergency vehicle operator must have the knowledge of the Colorado laws and statutes pertaining to emergency vehicle response, drive with due regard for their safety, and the safety of others. Operators must also continuously train in the area of emergency vehicle operations with refreshers at least

annually to develop and maintain the skills necessary to safely operate fire apparatus. Following these guidelines shall help prevent needless firefighter deaths related to traffic crashes.

In order to obtain what the community attitudes were regarding emergency response of fire apparatus a survey was distributed via web link to the to the 65 members of the Fort Lupton Chamber of Commerce. There were 47 responses received that were comprised of residents of the fire district 34% (16), both a business owner and resident of the fire district 23.4% (11), business owners in the fire district 21.3% (10), and 21.3% (10) which were neither a business owner or resident of the fire district. The responses indicated that 78.7% (37) of individuals surveyed did not believe that there was an increased liability for the fire agency when an apparatus responds with emergency lights and sirens. While only 21.3% (10) did feel there was an increased amount of liability. A very similar number 23.4% (11) did not believe there was an increased liability for the community when a fire apparatus responds with emergency lights and sirens. Seventy six point six percent (36) did not feel there was an increased amount of liability for the community.

When asked if the community members who responded to the survey believed that an emergency response with lights and sirens significantly reduced the travel time to an incident 76.6% (36) believed that it did reduce the travel time, 10.6% (5) did not believe that it affected the travel time, and 12.8% (6) were unsure. A considerable number, 87.2% acknowledged that they would support the Fort Lupton Fire Department responding non-emergent to those types of calls that did not present an immediate threat

to life safety or property loss. Twelve point eight percent identified that they would not support a response without lights or sirens to these types of calls.

Research Question 3. What are the current considerations and determining factors regarding emergent or non-emergent response of the members of the FLFPD?

In order to determine what considerations and determining factors that the members of the FLFPD evaluated when to utilize emergency lights and sirens, a survey was sent out via web link to the 64 members of the agency. There were 42 responses to the first five questions and then one respondent skipped question six through 13. The following is a breakdown of the number of years of experience in the fire service:

- 9.5% (4) Less than 1 year
- 40.5% (17) 1 to 5 years
- 14.3% (6) 6 to 10 years
- 21.4% (9) 11 to 15 years
- 4.5% (2) 16 to 20 years
- 9.5% (4) More than 20 years

When asked if during their emergency services career if they felt that they had received an appropriate amount of training on what type of response to use based upon the call information provided by dispatch, 85.7% (36) of the respondents felt that they had been trained sufficiently while 14.3% (6) did not believe they had. The members were also asked about the practical training and the training regarding state laws governing emergency driving. Sixty-nine percent (29) of the respondent felt that they had been sufficiently trained while 31% (13) felt that they had not.

Four volunteers reported having emergency lights and sirens on their vehicles while 12 identified that they chose not to place any emergency equipment on their personal vehicle. This did not apply to 26 members, as they were either career or reserve members who shift at the station and did not have a need for the emergency equipment.

Of the 12 members who did not have any emergency equipment on their vehicle, 75% (9) stated that they could get to the station just as efficiently without lights and siren. Two members (16.7%) did not use emergency lights and sirens due to increased liability and one member (8.3%) did not know that they could place emergency equipment on their personal vehicle.

When responding to a fire related call, the members of the FLFPD identified the following as the most important factor in determining an emergency or non-emergency response:

- 43.9% (18) The nature of the call
- 48.8% (20) The information provided by dispatch to the firefighters
- 4.9% (2) My discretion as a firefighter
- 2.4% (1) The information provided by the caller
- 0.0% (0) Previous calls to the location

When responding to a medically related call, the members of the FLFPD identified the following as the most important factor in determining an emergency or non-emergency response:

- 26.8% (11) The nature of the call
- 41.5% (17) The information provided by dispatch to the firefighters
- 4.9% (2) My discretion as a firefighter
- 2.4% (1) The information provided by the caller
- 0.0% (0) Previous calls to the location
- 24.4% (10) Emergency Medical Dispatch (EMD) Code

One hundred percent (41) of the respondents believed that here was an increased risk for both the community and the fire agency when a fire apparatus responded with emergency lights and sirens. Fifty-one percent (21) of the members did not believe that an emergency response significantly reduced the travel time to an incident while 34.1%

(14) felt that and emergent response did reduce travel time. Six respondents (14.6%) were unsure.

Sixty-one percent (25) of the respondents reported that they had not been involved in a motor vehicle accident while responding emergent in a marked fire apparatus to a call. Seventeen point one percent (7) stated that they had been involved in an accident and 22% (9) reported a near miss during their career.

When asked if a standard operating guideline that clearly defined the expectations of when to respond emergent or non-emergent would assist them in deciding whether or not to do so 73.2% (30) reported that indeed it would aid them while 26.8% (11) felt that it would not. The members were also asked if the department currently had a response guideline. Forty-eight point eight (20) of the respondents stated that the department had a policy in place for both fire and medical responses. Nine point eight percent of the responses (4) identified that the department does not have a policy and 24.4% (10) of the responses reported that the department only responds emergent at the direction of dispatch. Seven respondents (17.1%) did not know if the FLFPD had a policy on response.

Research Question 4. What response standards exist in other fire departments in Colorado that determines if an apparatus responds emergent or non-emergent?

In order to evaluate the best practices of other agencies in Colorado, a survey was distributed to the fire chiefs of 105 fire departments in the state via web link. There were 67 responses and a detailed list of the participating agencies found in Appendix G. The agency type of the respondents included 13 volunteer departments, 14 career departments, and largest group comprised of 40 combination departments. Of the 53

departments that have volunteers, 64.2 % (34) did not allow the use of emergency lights or sirens on their personal vehicles, 28.3% (15) allowed the use of both, and 7.5% (4) only allow the use of emergency lights. Of the 34 departments that did not allow for the use of emergency lights and sirens, they identified the following as the primary reason:

- 17.6% (6) Increased liability
- 38.2% (13) Personnel can get to the station just as efficiently without the equipment
- 23.5% (8) Too dangerous
- 0.0% (0) Cost of equipment
- 2.9% (1) Insurance concerns
- 0.0% (0) Getting a permit issues by the State of Colorado is difficult
- 17.6% (6) Other: Please Explain

The "other" responses included that responders drive to fast, which increases the possibility of an accident, three agencies identified that the equipment was not needed because the volunteers work shifts at the stations, the citizens complained that the response was unsafe, and that equipment was not needed due to the lack of traffic in their community.

Of the departments surveyed, 65.6% (42) had a response policy in place for both fire and medical response, 20.3% (13) did not have a policy in place, 9.4% (6) only responded emergency at the direction of dispatch, and 4.7% (3), had a policy for fire response only. The respondents reported that the most important factor in determination of an emergent or non-emergent response to a fire related call included the following:

- 23.4% (15) The nature of the call
- 48.4% (31) The information provided by dispatch to the firefighters
- 6.3% (4) The fire crew's discretion
- 4.7% (3) The information provided by the caller
- 0.0% (0) Previous calls to the location
- 17.2% (11) Agency policy

The respondents reported that the most important factor in determination of an emergent or non-emergent response to a medically related call included the following:

- 23.4% (15) The nature of the call
- 39.1% (25) The information provided by dispatch to the firefighters
- 4.7% (3) The fire crew's discretion
- 1.6% (1) The information provided by the caller
- 0.0% (0) Previous calls to the location
- 18.8% (12) Emergency medical Dispatch (EMD) Code
- 12.5% (8) Agency policy

The most significant piece of the communication chain is what information dispatchers gathered during the 911 call and communicated to the responding fire departments. The survey completed by the FLFPD members and the fire chiefs both identified this as a key factor in the mode of response. However, according to the survey results from the WCRCC, the dispatchers identified that the general nature of the call generated the type of response.

When questioned about response policy to fire alarms was asked, the fire departments reported the following:

- 14.1% (9) All units respond emergent
- 7.8% (5) All units respond non-emergent
- 43.8% (28) First unit responds emergent and all others respond non-emergent
- 15.6% (10) All units respond emergent until the arrival of the first unit
- 3.1% (2) No policy on fire alarm response
- 15.6% (10) Other (please specify)

The responses in the "other" category included that the type of response depended on the type of structure, type of call (life safety issue), it was left up to the officer's discretion,

all apparatus responded emergent unless it is a “nuisance” alarm, additional information from dispatch dictated the response such as smoke showing or water flow alarms.

Sixty-eight point eight percent (44) of the respondents did not believe that an emergent response significantly reduces the travel time to an incident. Twenty-five percent (16) felt that it would reduce the travel time while 6.3% (4) were unsure. There was significant agreement amongst the fire chiefs that emergency response increased the liability for the community (87.5%) and the fire agency (85.9%). In fact, 40.6% (26) had experienced a motor vehicle accident while responding in an emergent mode while 29.7% (19) had experienced a near miss. The remaining 29.7% (19) of the fire chiefs had not been involved in an emergent response accident.

Eighty-nine point one percent (57) of the fire chiefs agreed that a standard operating guideline that clearly defined the expectations of when to respond emergent or non-emergent would assists personnel in making this critical decision. Ten point nine percent (7) of the fire departments surveyed did not feel that they have an effective policy and 12.5% did not have any policy addressing emergency response.

Discussion

Based upon the information gathered in this research project, the data indicates a need for an effective response policy that addresses the criteria for emergent and non-emergent responses by the FLFPD. The FLFPD must take every necessary step in providing the highest level of service in a timely manner while exposing the community, including the firefighters, to the least amount unnecessary risk or harm. Rarely does the incident come to the fire department, so the fire department must respond to the incident. They must respond in a timely but even more importantly, safe manner. The USFA

(2009) reported that in 2008, there were 14 firefighter fatalities in non-aircraft related vehicle accidents. This places emergency vehicle accidents as the second leading cause of fatal injuries for firefighters second only to stress/overexertion. In 2007, a Connecticut career Captain died and the engineer was seriously injured when two fire trucks collided at an intersection headed to a report of a kitchen fire according to the National Institute for Occupational Safety and Health (National Institute for Occupational Safety and Health [NIOSH], 2009). NIOSH identified the contributing factors as failure to stop at a red traffic signal and a failure to wear seat belts. The engineer and the captain were both unrestrained and ejected from the vehicle. The remaining six firefighters who were involved in the collision and wearing seat belts all received non-life threatening injuries and were released (NIOSH, 2009). Citizens also tragically die because of fire apparatus related motor vehicle accidents. In 2005, a Traverse City, Michigan firefighter who was also the battalion's safety officer allegedly failed to slow at a red light controlled intersection and drove at a reckless speed and without due regard striking a sport utility vehicle killing a 28-year old female and an 11-month old child (Storey, 2005). The husband and father of the victims, who was driving at the time of the accident, filed a civil suit and the Michigan State Attorney's Office filed misdemeanor criminal charges, which could result in a prison sentence of up to 2 years if found guilty. These types of incidents are all too common in the fire service today.

According to the National Academy (2008), they developed the guidelines of the EMD responder guide on 30 years of intensive field use in order to determine the appropriate level and type of response for medical emergencies based the information provided by the caller. Priority Dispatch provides a means by which the dispatcher

obtains complete and accurate information from the caller and then is able to determine if the condition warrants an emergent response (USFA, 2004). The preset questions that the dispatcher asks are available for both fire and EMS conditions and some departments have developed their own criteria for these questions (USFA, 2004). The dispatcher was identified as the vital link to the incident. This research showed that the dispatcher from the WCRCC relied on the information provided to the firefighter through the general nature of the call type as the key determinant for the type of response. Whereas the firefighters in the study identified they relied significantly on the additional information obtained by dispatch beyond that of the general nature of the call. Remaining on the phone line with the caller and asking a set of pre-scripted questions was vital to the chain of communications in an incident. This is information, based upon the study, which the dispatcher may not be obtaining, receiving, or communicating to the firefighters. This would indicate a formal standardized protocol necessary in order to accurately prioritize each type of call received by dispatch.

The literature review demonstrated that Colorado State law provides for certain exceptions under the law for emergency vehicles, which would seem appropriate. In NFPA 1451, *Standard for a Fire Service Vehicle Operations Training Program* (2007), guidelines were identified for training, driver qualifications, crash/injury prevention, apparatus maintenance, emergency response, and policymaking. The information discovered in this study also revealed that there is significant agreement that the emergency service drivers must meet certain proficiencies both in practical and academic requirements. Personnel must be trained in the areas of the constraints placed upon them

by the law as well as the responsibilities to ensure the safe operations for both the firefighters and the motoring public.

No guidelines were located that required fire apparatus to respond emergent to a call. Therefore, there would appear to be a line of discretion based upon the nature of the call, firefighter attitudes, and the community attitudes. The literature in this area found that when an individual calls 911 they believe they have an emergency. Many callers expect the fire truck to arrive with red light and sirens while others requesting assistance downplay the response and specifically request no lights or sirens. According to a 1995 study (Hunt et al., 1995), the transport times of ambulances determined that a response with lights and sirens saved on average 43.5 seconds. Thus, the outcome of this 1995 study determined that this amount of time would have a significant clinical impact in very few cases (Hunt et al., 1995). This reduction of time can easily be addressed with an expedient turnout time (getting dressed and boarding the apparatus), compared to the risk of an emergency response with lights and sirens. In the present study, the survey results of the Fort Lupton community revealed that a belief that an emergency response would save a significant amount of time. However, they were very willing to support the fire department in non-emergency response at their discretion for calls that posed little risk to life safety or property loss.

Many departments such as Anne Arundel County, Maryland, St. Louis, and Salt Lake City began using response without lights and siren use as many as ten years ago (Kyle, 2006). The agencies report receiving many positive compliments on the reduced response, which affected arrival, times from just 51 seconds to two minutes (Kyle, 2006). According to survey results in this study, many Colorado fire departments are addressing

the response issues with multi tiered responses and the consideration that not every call is a true emergency that requires a fire truck speeding to the scene with lights and sirens.

An area of discussion that appears to be essential is the emergency vehicle operator's attitude. One issue addressed less frequently is the emergency vehicle operator's mindset of "hurry up and get there", according to Dallessandro (2009). Firefighters can place themselves or others at unnecessary risk while responding to a call. They try to compensate for the geographic location or time response standards. The risk of not wearing a seat belt, running a red light, speeding, or unsafe acts occurred in a large majority of the cases studied during the preparation of this research project. The aforementioned acts are not unforeseen circumstances but a choice according to Dallessandro (2009). Therefore, as a firefighter culture are we doing and saying all the right things but not practicing them? Based upon all of the information analyzed in the literature review and results section in this research project, the information challenges the norm and accepted practice of running emergent to every call. The fire service experiences a consistent number of deaths each year from vehicle crashes. There must be a change in how emergency services conducts business and a responsibility for changing the culture of response standards by wearing seat belts, reducing speed, stopping at intersections, and making decisions based upon effective communication. This includes an effective response policy and driver training program.

One of the implications of this research project is a fear of changing the "way we have always done it" mentality of the fire service. Driving a fire truck with the lights and sirens is described by some as an adrenalin rush or exciting. Frequently you can hear the disappointment over the radio when a responding unit is advised to continue responding

without lights and sirens. The theatrics of television tell firefighters that they must respond quickly even when they know what is right and to slow down (Dallessandro, 2009). Usually the engineer has many years of experience and telling them to slow down or respond non-emergent is the last thing a new officer wants to do. The repercussion is much greater than that and the fire service must take the correct course of action in this matter. The fire service must change the way they respond and prioritize calls.

Another implication may be that of increased response times. Although generally found to be less than one minute in most cases the perception of fire truck arriving without lights and sirens can offend some customers (Kyle, 2006). The community often evaluates the fire service the based on their response times and increases are hard to justify in comparison to the services demanded by the community. In short, the community demands a rapid response from public safety. Educating the community on the dangers of emergency response and the needless deaths of firefighters and community members is a key to successfully reducing the level of response.

Lastly, the FLFPD has experienced no apparatus related crashes during emergency responses over the past 20 years. Most of the incidents involving apparatus damage involved minor backing related non-injury events. Members of the department may view a reduced response as a punitive or restrictive measure as opposed to proactive approach to reducing the potential of tragic accident in the FLFPD. This is a common obstacle must be overcome by the leaders in the fire service for the greater good of the department and the community.

In summary, when evaluating the numbers of injuries and deaths associated with emergency vehicle crashes it is quite clear that there is agreement between the literature and this study that the fire service must evaluate how they are doing business.

Recommendations

The problem was that the FLFPD, a combination volunteer and career department, did not have an effective response standard for emergency and non-emergency response for medical and fire related incidents. The lack of this standard may be placing the residents of the Fort Lupton community and the firefighters at risk for potential injuries or increased liability if involved in an accident while responding to a call. The purpose of this applied research project was to evaluate the current practices and determine what factors to consider in the development of an effective response criterion to ensure the safety of the firefighters and residents of the FLFPD.

The information provided in this research project supported the development and implementation of a response guideline that creates the criteria for call prioritization, effective communication, education on liability, laws pertaining to emergency vehicle operations, and emergency driving/training. The data presented in this research demonstrated that currently there is not an effective manner to prioritize the 911 call based upon a qualitative analysis which provides a coordinated response in the appropriate manner. Presently, the assigned fire officer, uses personal discretion on what type of response is necessary based upon the best estimation of the problem through second hand information. According to the makeup of personnel for the day, that firefighter may have a number of years of prior experience or very little experience. This raises concern and potentially increases the risk for a tragic oversight.

The process for change and development of a response standard operating guideline should begin with a cross section representation of Weld County Fire Chiefs Association working in conjunction with dispatch personnel to develop a call priority list based upon the major call types dividing into priority categories. However, there is still the problem of forcing a broad spectrum of call types into a specific category. According to the data, the most effective information is the information that dispatch provides after the initial type of call is determined. That is what the responders base their type of response on. However, due to increased workload, inexperience, or other environmental factors, the dispatcher views the additional information as non-essential. The call starts with dispatch and the dispatchers must be trained to ask a standardized set of secondary critical questions such as identifying the hazards, if people are trapped, or any special circumstances of the incident. This can be equated to a “size up” over the phone. A fire is an emergency, although a fire with someone trapped changes the priority of the actions upon arrival and expediency of the response.

A more costly route although a more appropriate solution is to purchase a standardized call priority system for both fire and medical calls such as Priority Dispatch and implement this type of program into the standard operating guideline. This approach is a systematic time tested method that addresses all of the concerns and provides a policy and procedure on the call priority and secondary questions. This would appear to be the most effective solution in achieving the desired outcome. The process provides for a methodical approach to information gathering, which can be completed rapidly, and provides clear direction for the responder while also leaving for some level of discretion

if the type of response needs to be upgraded or downgraded. It would also shift liability and accountability of to the Priority Dispatch Corporation.

Training plays a key role and the members of the FLFPD must be educated in the limitations set forth by Colorado State Statutes. Operators must be trained properly in the operation of fire equipment with strict selection of who should and should not drive fire apparatus. This includes annual evaluations of driver's skills, simulator exercises, monitoring devices such as the black boxes, and video cameras to evaluate the performance of emergency vehicle operators. Reckless behavior or a lack of due regard for safety cannot be tolerated as the attitude of firefighters play an essential role in preventing accidents and line of duty deaths. The fire service must adopt and enforce the use of seat belts, reduced speed responses, and coming to a complete stop at all controlled intersections. A timely, yet safe arrival should be the goal of every fire department in the country. The community attitudes support a non-emergent response for those calls, which present a reduced risk to life safety or property loss and studies have shown that the time saved during an emergency response is less than one minute in most cases. The fire community has realized that the liability to the community and the firefighter is too significant to continue at the current pace. According to the results of this research, Colorado departments are reducing their responses in many categories of incidents unless there are additional factors that demand an increased emergent response. Every time the alarm sounds an emergency response system is set into motion, the possibility for a vehicle related death or injury occurs. It is everyone's responsibility to minimize the possibility of further deaths or injuries related to fire apparatus crashes.

As with any problem, it is essential to logically follow the steps to correct any identified unresolved issue. Once changes have been implemented, it is essential to revisit the issue to determine if there has been any change or impact to the problem. Ongoing evaluation of this policy is recommended, as with any policy due to the dynamic changes and current trends. This cost is too substantial not to act proactively.

For those individuals who may want to replicate this study within their own organization, this author would offer the following general information. One recommendation would be a thorough review of the reference literature prior to seeking information. This will allow the researcher to be prepared to address challenges they may encounter. An additional recommendation would be inquiring as to both internal and external knowledge of NFPA 1002, 1451, and 1500. These are three primary sources from which the information was derived and help to map the future of firefighter safety and health as well as fire service vehicle operations and training. Future researchers must observe and be cognizant of the organization's behaviors and practices while operating in training and emergency operations. Utilize surveys or questionnaires of local fire service leaders, firefighters within individual organizations, and the community stakeholders for assistance in order to determine the expectations and desired service levels within the community.

References

Colorado Revised Statutes. (1995). *Title 42 vehicle and traffic code.* Retrieved August 25, 2009 from http://www.michie.com/colorado/lpext.dll?f=templates&fn=main-h.htm

Dallessandro, M. P. (2009, July). *Lights, sirens...accidents!* Firehouse, 18-19.

Fort Lupton Fire Protection District. (2009). *Standard operating guidelines*. Fort Lupton, CO: Author.

Graves, S. (n.d.). *Why prioritize?* Retrieved August 25, 2009 from http://www.apco911.org/institute/emd_pdf/CallPrioritization.pdf

Hunt, R. C., Brown, L. H., Cabinum, E. S., Whitley, T. W., Prasad, H., Owens, C. F., et al. (1995). *Is ambulance transport time with lights and siren faster than without?* Retrieved October 23, 2009 from http://www.emergencydispatch.org/articles/ambulancetransporttime1.htm

Kupietz, K. (2007). *When will we have to bury one of our own?* Retrieved August 25, 2009 from http://www.fireengineering.com/index/articles/display/302941/articles/fire-engineering/apparatus-__tools/driving/2007/08/when-will-we-have-to-bury-one-of-our-own.html

Kyle, S. (2006). *It's no longer always red lights and sirens.* Retrieved October 20, 2009, from http://cms.firehouse.com/web/online/News/Its-No-Longer-Always-Red-Lights-and-Sirens/46$47235

International Fire Service Training Association (2000). *Aerial apparatus driver/operator handbook* (1st ed.). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

National Academy. (2008). *Field responder guide, medical priority dispatch system* (V12). [Brochure]. Salt Lake City, UT: Priority Dispatch Corporation.

National Fire Academy. (2008, March). *Executive fire officer program operational policies and procedures applied research guidelines*. Emmitsburg, MD: Author.

National Fire Protection Association. (2007). *NFPA 1451 Standard for a fire service vehicle operations training program, 2007 edition*. Quincy, MA: National Fire Protection Association.

National Fire Protection Association. (2007). *NFPA 1500 Standard on fire department occupational safety and health program, 2007 edition*. Quincy, MA: National Fire Protection Association.

National Fire Protection Association. (2009). *NFPA 1002 Standard for fire apparatus driver/operator professional qualifications, 2009 edition*. Quincy, MA: National Fire Protection Association.

National Institute for Occupational Safety and Health. (August 2009). *Firefighter fatality investigation and prevention program.* (Investigation Report #F2007-17). Cincinnati, OH: Author.

Story, I. (2005). *Michigan firefighter charged with homicide, fire truck crash.* Retrieved October 20, 2009, from http://www.firehouse.com/node/44963

United States Fire Administration. (2003). *Safe operations of fire tankers.* (FEMA Publication No. FA-248). Washington, DC: U.S. Government Printing Office.

United States Fire Administration. (2004). *Emergency safety vehicle safety initiative.* (FEMA Publication No. FA-272). Washington, DC: U.S. Government Printing Office.

United States Fire Administration. (2006). *Firefighter fatalities in the united states in 2005.* (FEMA Publication No. FA-306). Washington, DC: U.S. Government Printing Office.

United States Fire Administration. (2009). *Firefighter fatalities in the united states in 2008.* FEMA Publication. Retrieved October 18, 2009, from http://www.usfa.dhs.gov/downloads/pdf/publications/ff_fat08.pdf

Appendix A

National Fire Academy Research
Emergency Response Internal Firefighter Survey

Please answer the following questions based upon your understanding of Emergency Response as it relates to you as a volunteer member or career firefighter of Fort Lupton Fire Protection District.

1. Please describe your level of firefighting experience in terms of years of service.

   ___ Less than 1 year
   ___ 1 to 5 years
   ___ 6 to 10 years
   ___ 11 to 15 years
   ___ 16 to 20 years
   ___ More than 20 years

2. During your emergency services career, have your received an appropriate amount of training to determine how to respond (emergent or non-emergent) to a dispatched call based upon the information provided by dispatch?

   YES _____ NO _____

3. During your emergency services career, have you received an appropriate amount of driver/operator training, which includes information on the state laws governing emergency driving?

   YES _____ NO _____

4. Do you have emergency response equipment on your personal vehicle?

   ___ Emergency lights
   ___ Emergency lights and siren
   ___ Neither lights or siren
   ___ Does not apply, I am a Career or Reserve Firefighter

5. If you answered "neither" to the previous question what is the PRIMARY reason that you choose not to have emergency response equipment on your personal vehicle?

___ Increased liability
___ The department never issued the equipment to me
___ I can get to the station just as efficiently without it
___ Too dangerous
___ Cost of equipment
___ Insurance concerns
___ I did not know I could put emergency equipment on my personal vehicle
___ Getting a permit issues by the State of Colorado is difficult

6. Does the Fort Lupton Fire Department presently have a response guideline to determine whether you respond emergency or non-emergency in marked fire department vehicles?

___ Fire response only
___ Medical response only
___ Both Fire and Medical responses
___ Only at the direction of dispatch
___ We do not have a policy
___ I do not know

7. When responding in a marked fire department vehicle to a FIRE call, which of the following do you consider the most important factor in determining whether you will respond emergency or non emergency?

___ The nature of the call
___ The information provided by dispatch to the firefighters
___ My discretion as a firefighter
___ The information provided by the caller
___ Previous calls to the location

8. When responding in a marked fire department vehicle to a MEDICAL call, which of the following do you consider the most important factor in determining whether you will respond emergency or non emergency?

___ The nature of the call
___ The information provided by dispatch to the firefighters
___ My discretion as a firefighter
___ The information provided by the caller
___ Previous calls to the location
___ Emergency medical Dispatch (EMD) Code

9. Do you believe that when responding emergent to a call that there is increased liability for the fire agency?

   YES _____ NO _____

10. Do you believe that when responding emergent to a call that there is increased liability for the community?

    YES _____ NO _____

11. Do you believe that when responding emergent significantly reduces the travel time to an incident?

    YES _____ NO _____ UNSURE _____

12. If a standard operating guideline clearly defined the expectations of when to respond emergent or non emergent, would this assist you as a firefighter in deciding whether or not to do so?

    YES _____ NO _____

Appendix B

National Fire Academy Research

Emergency Response Internal Firefighter Survey Results

42 Responses Received

1. Please describe your level of firefighting experience in terms of years of service.

9.5%	(4)	Less than 1 year
40.5%	(17)	1 to 5 years
14.3%	(6)	6 to 10 years
21.4%	(9)	11 to 15 years
4.5%	(2)	16 to 20 years
9.5%	(4)	More than 20 years

2. During your emergency services career, have your received an appropriate amount of training to determine how to respond (emergent or non-emergent) to a dispatched call based upon the information provided by dispatch?

YES 85.7% (36) NO 14.3% (6)

3. During your emergency services career, have you received an appropriate amount of driver/operator training, which includes information on the state laws governing emergency driving?

YES 69.0% (29) NO 31.0% (13)

4. Do you have emergency response equipment on your personal vehicle?

0.0%	(0)	Emergency lights
9.5%	(4)	Emergency lights and siren
28.5%	(12)	Neither lights or siren
61.9%	(26)	Does not apply, I am a Career or Reserve Firefighter

5. If you answered "neither" to the previous question what is the PRIMARY reason that you choose not to have emergency response equipment on your personal vehicle?

16.7%	(2)	Increased liability
0.0%	(0)	The department never issued the equipment to me
75.0%	(9)	I can get to the station just as efficiently without it
0.0%	(0)	Too dangerous
0.0%	(0)	Cost of equipment
0.0%	(0)	Insurance concerns
8.3%	(1)	I did not know I could put emergency equipment on my personal vehicle
0.0%	(0)	Getting a permit issues by the State of Colorado is difficult

6. Does the Fort Lupton Fire Department presently have a response guideline to determine whether you respond emergency or non-emergency in marked fire department vehicles?

0.0%	(0)	Fire response only
0.0%	(0)	Medical response only
48.8%	(20)	Both Fire and Medical responses
24.4%	(10)	Only at the direction of dispatch
9.8%	(4)	We do not have a policy
17.1%	(7)	I do not know

7. When responding in a marked fire department vehicle to a FIRE call, which of the following do you consider the most important factor in determining whether you will respond emergency or non emergency?

43.9%	(18)	The nature of the call
48.8%	(20)	The information provided by dispatch to the firefighters
4.9%	(2)	My discretion as a firefighter
2.4%	(1)	The information provided by the caller
0.0%	(0)	Previous calls to the location

8. When responding in a marked fire department vehicle to a MEDICAL call, which of the following do you consider the most important factor in determining whether you will respond emergency or non emergency?

26.8%	(11)	The nature of the call
41.5%	(17)	The information provided by dispatch to the firefighters
4.9%	(2)	My discretion as a firefighter
2.4%	(1)	The information provided by the caller
0.0%	(0)	Previous calls to the location
24.4%	(10)	Emergency medical Dispatch (EMD) Code

9. Do you believe that when responding emergent to a call that there is increased liability for the fire agency?

   YES 100% (41) NO 0.0% (0)

10. Do you believe that when responding emergent to a call that there is increased liability for the community?

    YES 100% (41) NO 0.0% (0)

11. Do you believe that when responding emergent significantly reduces the travel time to an incident?

    YES 34.1% (14) NO 51.2% (21) UNSURE 14.6% (6)

12. During your career, have you ever been involved in a motor vehicle accident or a near miss while responding emergent in a marked vehicle to a call? A near miss is defined an unplanned event that did not result in injury, illness, or damage - but had the potential to do so.

    YES 17.1% (7) NO 61.0% (21)

    NO, but experienced a near miss 22.0% (9)

13. If a standard operating guideline clearly defined the expectations of when to respond emergent or non emergent, would this assist you as a firefighter in deciding whether or not to do so?

    YES 73.2% (30) NO 26.8 (11)

Appendix C

National Fire Academy Research
Weld County Regional Communications Center Survey

Please answer the following questions based upon your understanding of Emergency Response as it relates to you as an employee of the Weld County Regional Communications Center.

1. Please describe your level of emergency services dispatching experience in terms of years of service.

   ___ Less than 1 year
   ___ 1 to 5 years
   ___ 6 to 10 years
   ___ 11 to 15 years
   ___ 16 to 20 years
   ___ More than 20 years

2. Does the Weld County Regional Dispatch Center presently have a response guideline or policy to make a recommendation on whether the fire department responds emergency or non-emergency in marked fire department vehicles?

   ___ Fire response only
   ___ Medical response only
   ___ Both Fire and Medical responses
   ___ We do not have policy
   ___ We do not make recommendations, it is their discretion
   ___ I do not know

3. When responding in a marked fire department vehicle to a FIRE call, which of the following do you consider as a COMMUNICATIONS CENTER EMPLOYEE, as the most important factor in determining whether the fire unit will respond emergency or non emergency?

   ___ The nature of the call
   ___ The information provided by dispatch to the firefighters
   ___ The discretion of the agency firefighters
   ___ The information provided by the caller
   ___ Previous calls to the location

4. When responding in a marked fire department vehicle to a MEDICAL call, which of the following do you consider as a COMMUNICATIONS CENTER EMPLOYEE, as the most important factor in determining whether the fire unit will respond emergency or non emergency?

    ___ The nature of the call
    ___ The information provided by dispatch to the firefighters
    ___ The discretion of the agency firefighters
    ___ The information provided by the caller
    ___ Previous calls to the location
    ___ Emergency medical Dispatch (EMD) Code

5. Do you believe that when responding emergent to a call that there is increased liability for the fire agency?

    YES _____ NO _____

6. Do you believe that when responding emergent to a call that there is increased liability for the community?

    YES _____ NO _____

7. Do you believe that when responding emergent significantly reduces the travel time to an incident?

    YES _____ NO _____ UNSURE _____

8. When call taking or dispatching for fire agencies, do you ask additional relative questions and relay that information to the fire department in order to assist the fire department in making the decision to respond emergent or non emergent to NON MEDICAL types of calls?

    YES _____ NO _____ If NO, please describe why: _____

9. Are you aware of any computer programs or training that would assist Communications Center Employees in gathering the information needed at the time of the 911 call, similar to Emergency Medical Dispatching (EMD) Protocols, to more efficiently communicate the priority for fire related responses and recommend an emergent or non-emergent response?

    YES _____ NO _____ If YES, please describe: _____

Appendix D

National Fire Academy Research
Weld County Regional Communications Center Survey Results

36 Responses Received

1. Please describe your level of emergency services dispatching experience in terms of years of service.

2.8%	(1)	Less than 1 year
41.7%	(15)	1 to 5 years
25.0%	(9)	6 to 10 years
19.4%	(7)	11 to 15 years
5.6%	(2)	16 to 20 years
5.6%	(2)	More than 20 years

2. Does the Weld County Regional Dispatch Center presently have a response guideline or policy to make a recommendation on whether the fire department responds emergency or non-emergency in marked fire department vehicles?

0.0%	(0)	Fire response only
38.9%	(14)	Medical response only
27.8%	(10)	Both Fire and Medical responses
11.1%	(4)	We do not have policy
19.4%	(7)	We do not make recommendations, it is their discretion
2.8%	(1)	I do not know

3. When responding in a marked fire department vehicle to a FIRE call, which of the following do you consider as a COMMUNICATIONS CENTER EMPLOYEE, as the most important factor in determining whether the fire unit will respond emergency or non emergency?

36.1%	(13)	The nature of the call
11.1%	(4)	The information provided by dispatch to the firefighters
27.8%	(10)	The discretion of the agency firefighters
25.0%	(9)	The information provided by the caller
0.0%	(0)	Previous calls to the location

4. When responding in a marked fire department vehicle to a MEDICAL call, which of the following do you consider as a COMMUNICATIONS CENTER EMPLOYEE, as the most important factor in determining whether the fire unit will respond emergency or non emergency?

11.1%	(4)	The nature of the call
5.6%	(2)	The information provided by dispatch to the firefighters
5.6%	(2)	The discretion of the agency firefighters
11.1%	(4)	The information provided by the caller
0.0%	(0)	Previous calls to the location
66.7%	(24)	Emergency medical Dispatch (EMD) Code

5. Do you believe that when responding emergent to a call that there is increased liability for the fire agency?

YES 97.2% (35) NO 2.8% (1)

6. Do you believe that when responding emergent to a call that there is increased liability for the community?

YES 88.9% (32) NO 11.1% (4)

7. Do you believe that when responding emergent significantly reduces the travel time to an incident?

YES 22.2% (8) NO 36.1% (13)

UNSURE 41.7% (15)

8. When call taking or dispatching for fire agencies, do you ask additional relative questions and relay that information to the fire department in order to assist the fire department in making the decision to respond emergent or non emergent to NON MEDICAL types of calls?

YES 97.2% (35) NO 2.8% (1)

If NO, please describe why: (1)

There was one response in this area and that respondent stated that although the dispatch center does not have a protocol for this they always put the basic problem, which should be used by the fire department to determine their response.

9. Are you aware of any computer programs or training that would assist Communications Center Employees in gathering the information needed at the time of the 911 call, similar to Emergency Medical Dispatching (EMD) Protocols, to more efficiently communicate the priority for fire related responses and recommend an emergent or non-emergent response?

   YES 58.3% (21) NO 41.7% (15)

   If YES, please describe: (20)

   There were twenty responses in this area and all twenty identified Emergency Fire Dispatching (EFD), which is very similar to Emergency Medical Dispatching (EMD)

Appendix E

National Fire Academy Research
Colorado Fire Chief's External Survey

Please answer the following questions based upon your role as a Fire Chief or Command Officer for your agency regarding Emergency Response.

1. Please enter your contact information:

   Name: _____
   Department: _____
   City/Town: _____

2. Please describe you agency.

   ___ All Volunteer
   ___ Combination
   ___ All Career

3. If your agency was identified as volunteer or combination, do you allow your volunteers to have emergency response equipment on their personal vehicles?

   ___ Emergency lights
   ___ Emergency lights and siren
   ___ Neither lights or siren

4. If you answered "neither" to the previous question, what is the PRIMARY reason that you choose not to allow emergency equipment on the personal vehicles of volunteers?

   ___ Increased liability
   ___ The department never issued the equipment to me
   ___ Personnel can get to the station just as efficiently without the equipment
   ___ Too dangerous
   ___ Cost of equipment
   ___ Insurance concerns
   ___ Getting a permit issues by the State of Colorado is difficult
   ___ Other: Please Explain:

5. Does your agency presently have a response guideline to determine whether you respond emergency or non-emergency in a marked fire department vehicle for the following types of calls?

___ Fire response only
___ Medical response only
___ Both Fire and Medical responses
___ Only at the direction of dispatch
___ We do not have a policy in place

6. When responding in a marked fire department vehicle to a FIRE related call, which of the following do you consider as the most important factor in determining whether you will respond emergency or non emergency?

___ The nature of the call
___ The information provided by dispatch to the firefighters
___ The fire crew's discretion
___ The information provided by the caller
___ Previous calls to the location
___ Agency policy

7. When responding in a marked fire department vehicle to a MEDICAL related call, which of the following do you consider the most important factor in determining whether you will respond emergency or non emergency?

___ The nature of the call
___ The information provided by dispatch to the firefighters
___ The fire crew's discretion
___ The information provided by the caller
___ Previous calls to the location
___ Emergency medical Dispatch (EMD) Code
___ Agency policy

8. What is your response policy for Fire Alarms?

___ All units respond emergent
___ All units respond non-emergent
___ First unit responds emergent and all others respond non-emergent
___ All units respond emergent until the arrival of the first unit
___ No policy on fire alarm response
___ Other (please specify)

9. Do you believe that when responding emergent significantly reduces the travel time to an incident?

YES _____ NO _____ UNSURE _____

10. Do you believe that when responding emergent to a call that there is increased liability for the community?

    YES _____ NO _____

11. Do you believe that when responding emergent to a call that there is increased liability for the fire agency?

    YES _____ NO _____

12. During your career, have you ever been involved in a motor vehicle accident or a near miss while responding emergent in a marked vehicle to a call? A near miss is defined an unplanned event that did not result in injury, illness, or damage - but had the potential to do so.

    YES _____ NO _____ NO, but experienced a near miss _____

13. If a standard operating guideline clearly defined the expectations of when to respond emergent or non-emergent, would this assist you and your personnel in deciding whether or not to do so?

    YES _____ NO _____

14. As a Chief or Command Officer, do you feel that the response policy for your agency is effective and provides clear direction for your personnel on whether to respond in an emergent or non-emergent manner for all types of calls?

    YES _____ NO _____ Do not currently have a policy _____

    Comments: _____

Appendix F

National Fire Academy Research
Colorado Fire Chief's External Survey Results

67 Responses Received

1. Please enter your contact information:

   Please see Appendix G

2. Please describe you agency.

   19.4% (13) All Volunteer
   59.7% (40) Combination
   20.9% (14) All Career

3. If your agency was identified as volunteer or combination, do you allow your volunteers to have emergency response equipment on their personal vehicles?

   7.5% (4) Emergency lights
   28.3% (15) Emergency lights and siren
   64.2% (34) Neither lights or siren

4. If you answered "neither" to the previous question, what is the PRIMARY reason that you choose not to allow emergency equipment on the personal vehicles of volunteers?

   17.6% (6) Increased liability
   38.2% (13) Personnel can get to the station just as efficiently without the equipment
   23.5% (8) Too dangerous
   0.0% (0) Cost of equipment
   2.9% (1) Insurance concerns
   0.0% (0) Getting a permit issues by the State of Colorado is difficult
   17.6% (6) Other: Please Explain:

   - Responders drive to fast and increases the possibility of an accident
   - Volunteers work shifts at the station (3)
   - Citizens complaints that the response was unsafe
   - Due to the lack of traffic, equipment not needed

5. Does your agency presently have a response guideline to determine whether you respond emergency or non-emergency in a marked fire department vehicle for the following types of calls?

4.7%	(3)	Fire response only
0.0%	(0)	Medical response only
65.6%	(42)	Both Fire and Medical responses
9.4%	(6)	Only at the direction of dispatch
20.3%	(13)	We do not presently have a policy in place

6. When responding in a marked fire department vehicle to a FIRE related call, which of the following do you consider as the most important factor in determining whether you will respond emergency or non emergency?

23.4%	(15)	The nature of the call
48.4%	(31)	The information provided by dispatch to the firefighters
6.3%	(4)	The fire crew's discretion
4.7%	(3)	The information provided by the caller
0.0%	(0)	Previous calls to the location
17.2%	(11)	Agency policy

7. When responding in a marked fire department vehicle to a MEDICAL related call, which of the following do you consider the most important factor in determining whether you will respond emergency or non emergency?

23.4%	(15)	The nature of the call
39.1%	(25)	The information provided by dispatch to the firefighters
4.7%	(3)	The fire crew's discretion
1.6%	(1)	The information provided by the caller
0.0%	(0)	Previous calls to the location
18.8%	(12)	Emergency medical Dispatch (EMD) Code
12.5%	(8)	Agency policy

8. What is your response policy for Fire Alarms?

14.1%	(9)	All units respond emergent
7.8%	(5)	All units respond non-emergent
43.8%	(28)	First unit responds emergent and all others respond non-emergent
15.6%	(10)	All units respond emergent until the arrival of the first unit
3.1%	(2)	No policy on fire alarm response
15.6%	(10)	Other (please specify):

- Depends on if it is commercial or residential and time of day.
- Depends on the type of call, emergent if life threatening.
- Fire Officer's discretion.
- All units respond emergent until the arrival; and size up of first unit.
- All units are emergent unless it is a nuisance alarm.
- Only one fire alarm in our district. We respond non-emergent unless there is a confirmed fire.
- Depends on the facility and the alarm.
- First engine emergent on automatic alarms. On 911 calls or any mention of smoke then three engines and a truck.
- Filter false alarms and only respond top multiple zones, devices, high hazard, etc. Modeled after the False Alarm Reduction Strategy website.
- Based upon dispatch information.

9. Do you believe that when responding emergent significantly reduces the travel time to an incident?

YES 25.0% (16) NO 68.8% (44)

UNSURE 6.3% (4)

10. Do you believe that when responding emergent to a call that there is increased liability for the community?

YES 87.5% (56) NO 12.5% (8)

11. Do you believe that when responding emergent to a call that there is increased liability for the fire agency?

YES 85.9% (55) NO 14.1% (9)

12. During your career, have you ever been involved in a motor vehicle accident or a near miss while responding emergent in a marked vehicle to a call? A near miss is defined an unplanned event that did not result in injury, illness, or damage - but had the potential to do so.

YES	40.6% (26)	NO	29.7% (19)
NO, but experienced a near miss	29.7% (19)		

13. If a standard operating guideline clearly defined the expectations of when to respond emergent or non-emergent, would this assist you and your personnel in deciding whether or not to do so?

YES	89.1% (57)	NO	10.9% (7)

14. As a Chief or Command Officer, do you feel that the response policy for your agency is effective and provides clear direction for your personnel on whether to respond in an emergent or non-emergent manner for all types of calls?

YES	76.6% (49)	NO	10.9% (7)
Do not currently have a policy	12.5% (8)		

Comments:

(5) Responses identified that it is officer discretion
(1) Response indicated that they are re evaluating the current policy
(1) Response indicated that they utilize the opticom system
(1) Response indicated that emergent response is not an issue because of the size, number of calls, and the speeds on the highway are greater than the governed speed of the trucks.

Appendix G

National Fire Academy Research
Participating Colorado Fire Agencies

Grand Junction Fire Department
North-West Fire Protection District
Pueblo West Fire Department
City of Salida, South Arkansas FPD
Burning Mountains Fire Department
Grand Lake Fire Department
Norwood Fire Protection District
Glacier View Fire Protection District
Greater Brighton Fire Protection District
Arrowhead Volunteer Fire Department
Westminster Fire Department
Big Sandy Fire Protection District
Federal Heights Fire Department
North Routt Fire Protection District
Tri-Lakes Monument Fire
Sterling Fire Department
Loveland Fire & Rescue
West Park Fire
Aurora Fire Department
Sterling Fire Department
Lafayette Fire Department
Union Colony Fire/Rescue Authority
Ute Mountain Ute Fire/Rescue
Mancos Fire Protection District
Mountain View Fire District
Air Force Academy Fire Department
Stonewall Fire Protection District
Northern Saguache County Fire District
Frederick-Firestone Fire District
Prowers County Rural Fire Department
Stratmoor Hills Fire Protection District
Falcon Fire Protection District
Black Forest Fire Rescue
Durango Fire and Rescue
Louisville Fire Rescue
Pagosa Fire Protection District
City of Pueblo Fire Department
Poudre Canyon Volunteer Fire
Buckley Fire and Emergency Services
Boulder Fire Department
Rock Creek Volunteer Fire Department
Arvada Fire Protection District
East Grand Fire Protection District
Berthoud Fire Protection District
Broadmoor Fire Protection District
Aspen Fire Protection District
Carbondale & Rural Fire Protection
Larkspur Fire Protection District
Clifton Fire Protection District
Windsor-Severance Fire Department
Hanover Fire Protection District
Gateway Unaweep Fire Department
Platteville/Gilcrest Fire District
Montrose Fire Protection District
Fort Lewis Mesa Fire Protection District
Platte Valley Fire Protection District
Snowmass Wildcat Fire Protection
Hudson Fire Department
West Metro Fire Rescue
Glenwood Springs Fire Department
Canon City Fire District
Englewood Fire Department
Lower Valley Fire District
Rist Canyon Volunteer Fire Department
Rocky Mountain Fire District
Evans Fire Rescue
Thornton Fire Department

Appendix H

National Fire Academy Research
Community Survey

Please answer the following questions based upon your relation to the fire district as a community member.

1. I am currently _____.

   ____ A business owner in the fire district

   ____ A resident of the fire district

   ____ Both a business owner and a resident

   ____ Neither

2. Do you believe that if a fire apparatus responds with emergency lights and sirens to a call that there is increased liability for the FIRE AGENCY?

   YES _____ NO _____

3. Do you believe that if a fire apparatus responds with emergency lights and sirens to a call that there is increased liability for the COMMUNITY?

   YES _____ NO _____

4. Do you believe that if a fire apparatus responds with emergency lights and sirens that this significantly reduces the travel time to an incident?

   YES _____ NO _____ UNSURE _____

5. When someone calls 911, they feel they have an emergency. In order to reduce liability and potential risk for the firefighters and the community, would you support the fire department responding in a non-emergent manner (No lights or sirens) to those types of calls which present little threat to life safety or property loss?

   YES _____ NO _____

Appendix I

National Fire Academy Research
Community Survey Results

47 Responses Received

1. I am currently _____.

   21.3% (10) A business owner in the fire district

   34.0% (16) A resident of the fire district

   23.4% (11) Both a business owner and a resident

   21.3% (10) Neither

2. Do you believe that if a fire apparatus responds with emergency lights and sirens to a call that there is increased liability for the FIRE AGENCY?

   YES 21.3% (10) NO 78.7% (37)

3. Do you believe that if a fire apparatus responds with emergency lights and sirens to a call that there is increased liability for the COMMUNITY?

   YES 23.4% (11) NO 76.6% (37)

4. Do you believe that if a fire apparatus responds with emergency lights and sirens that this significantly reduces the travel time to an incident?

   YES 76.6% (37) NO 10.6% (5) UNSURE 12.8% (6)

5. When someone calls 911, they feel they have an emergency. In order to reduce liability and potential risk for the firefighters and the community, would you support the fire department responding in a non-emergent manner (No lights or sirens) to those types of calls which present little threat to life safety or property loss?

   YES 87.2% (41) NO 12.8% (6)